

BIJLAGEN

Kansenkaarten voor schelpdieren op basis van abiotiek en hun relatie tot het voorkomen van zwarte zee-eenden

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Rapport C042/11



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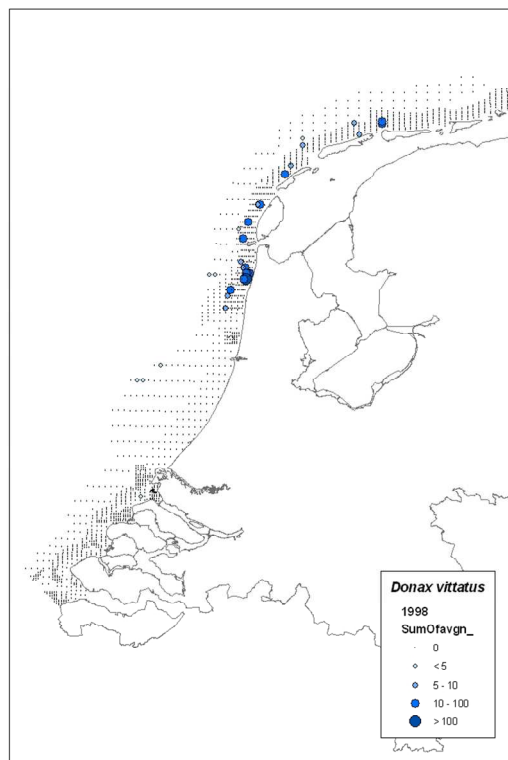
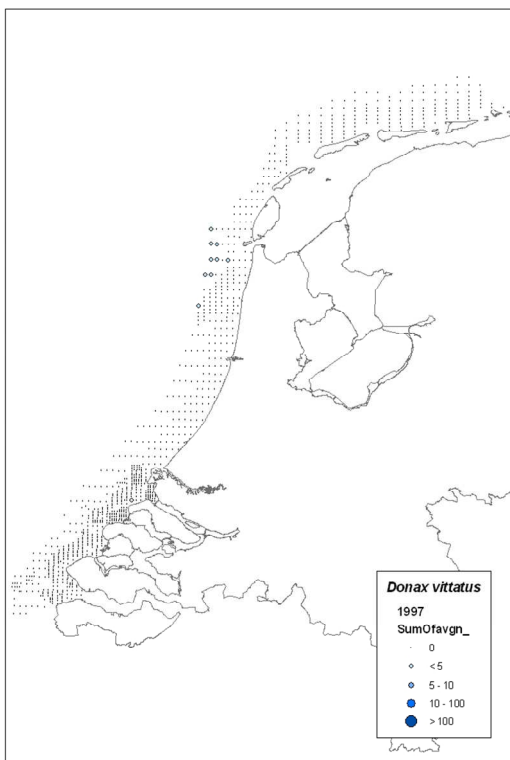
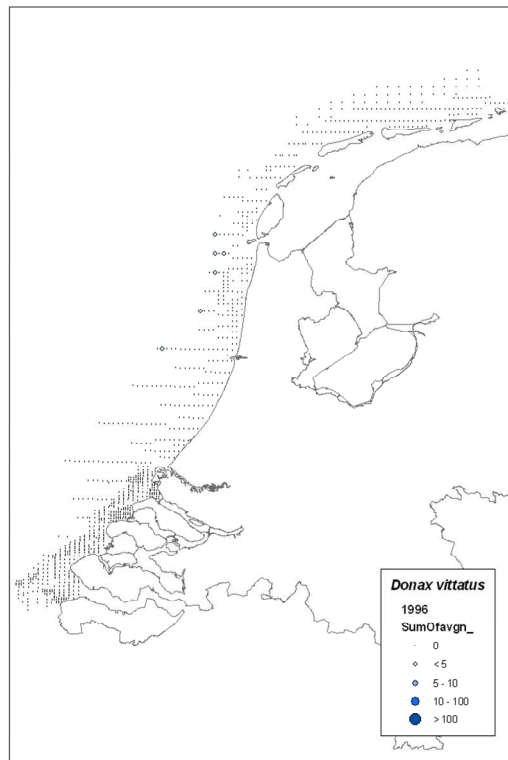
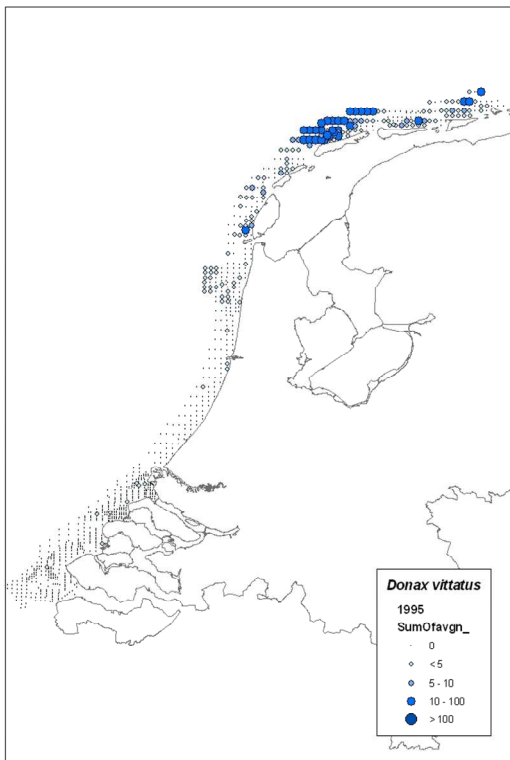
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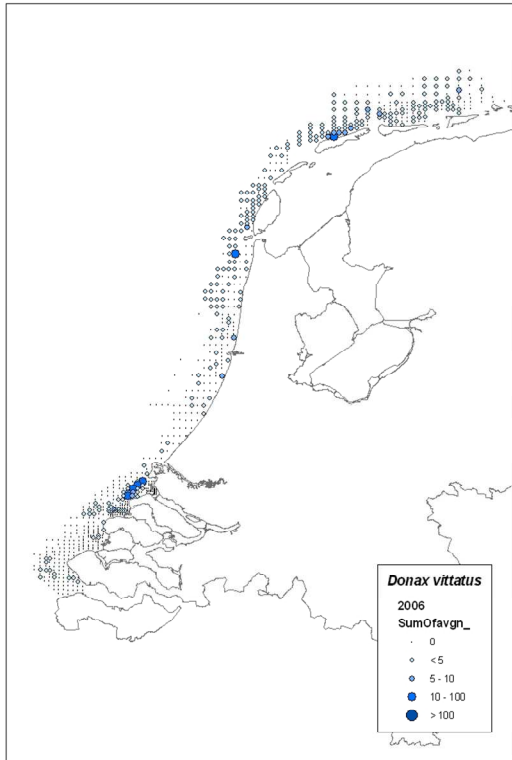
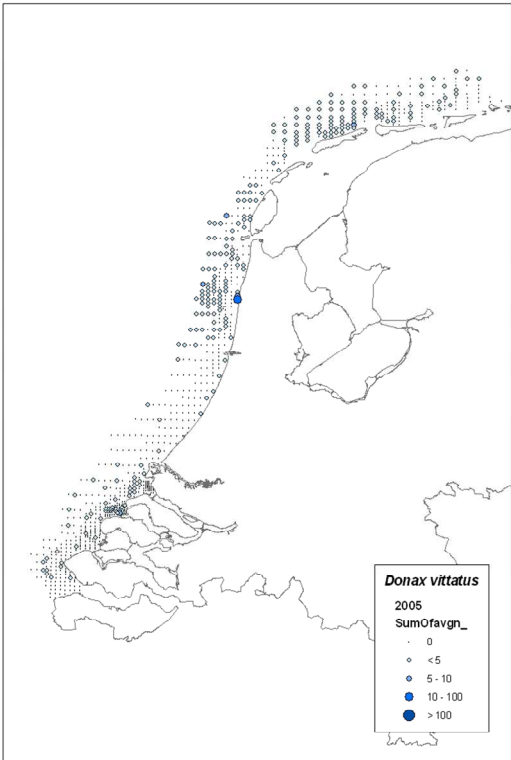
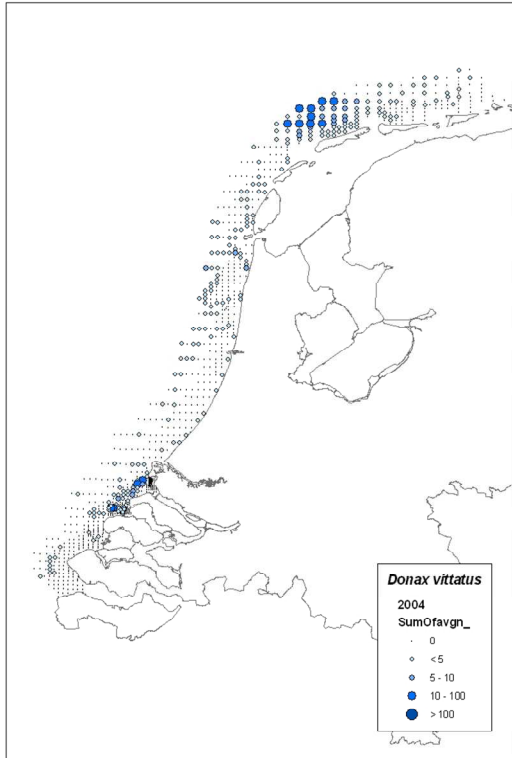
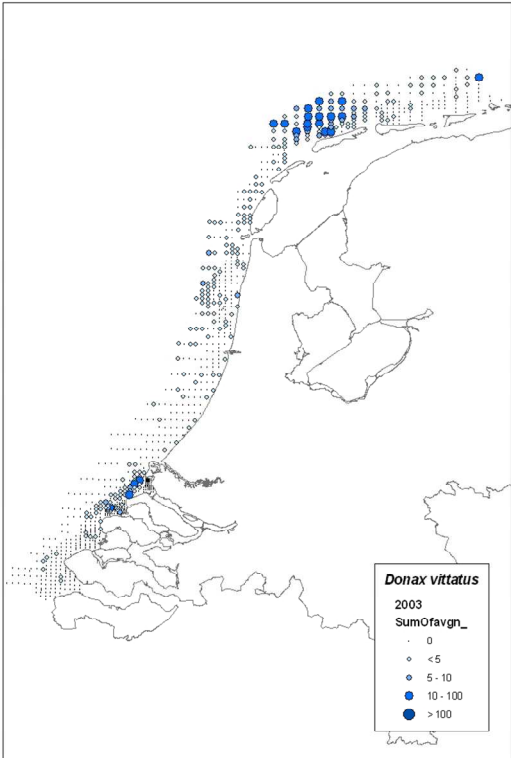
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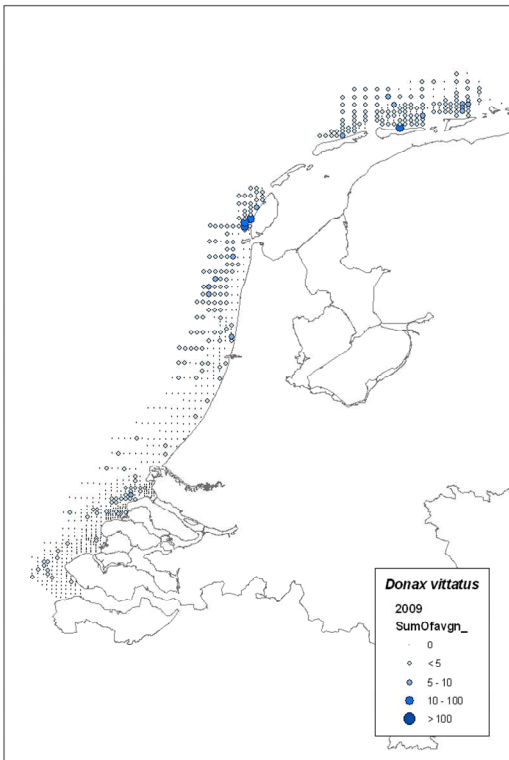
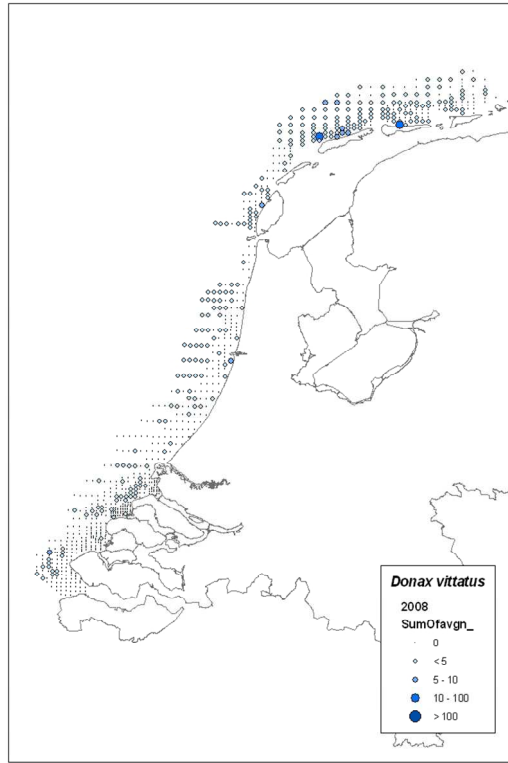
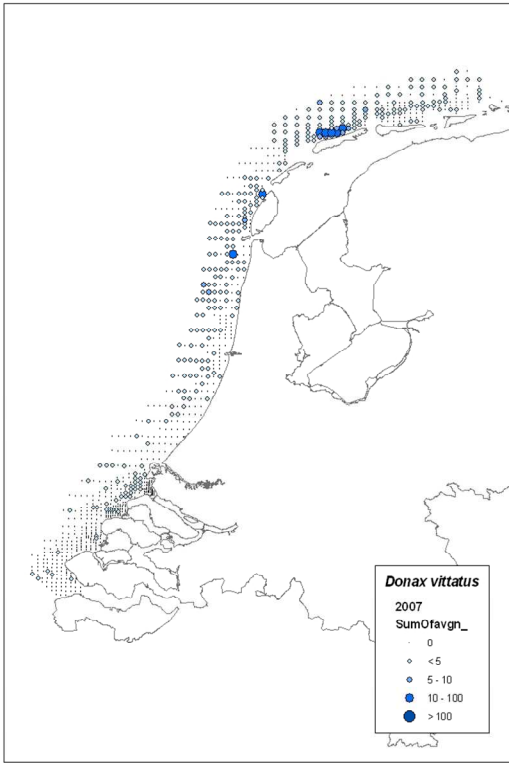
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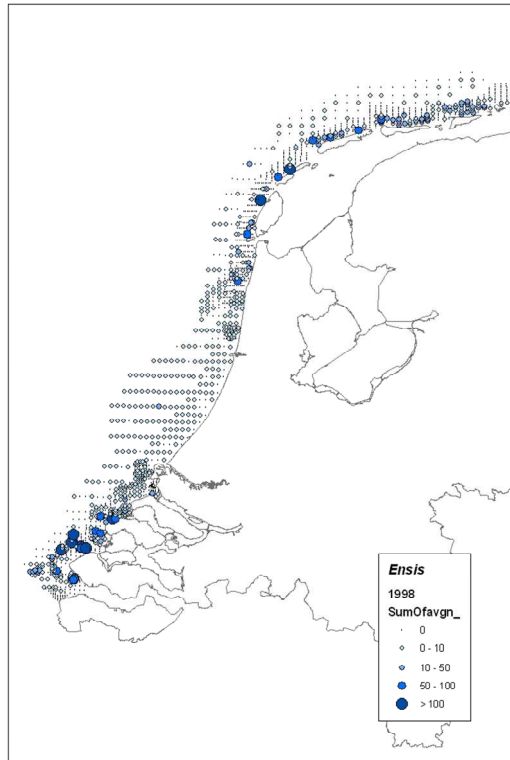
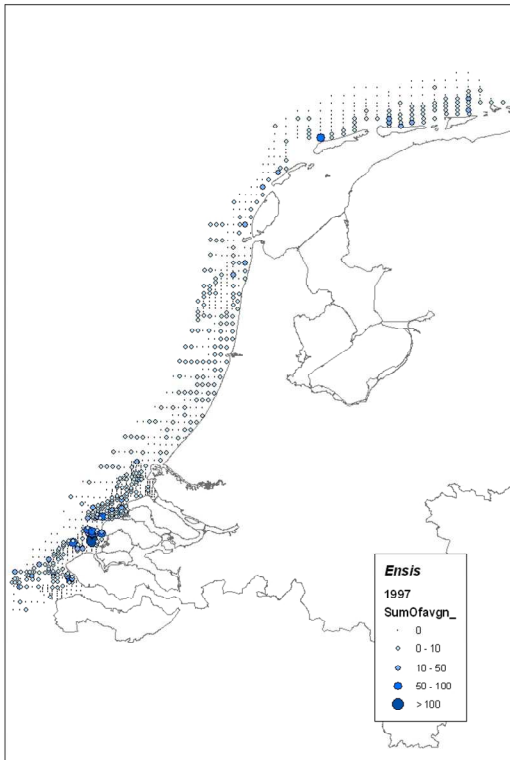
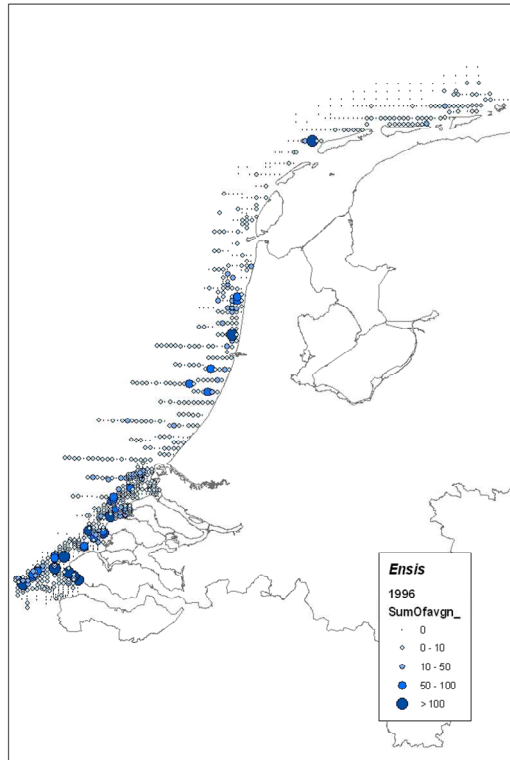
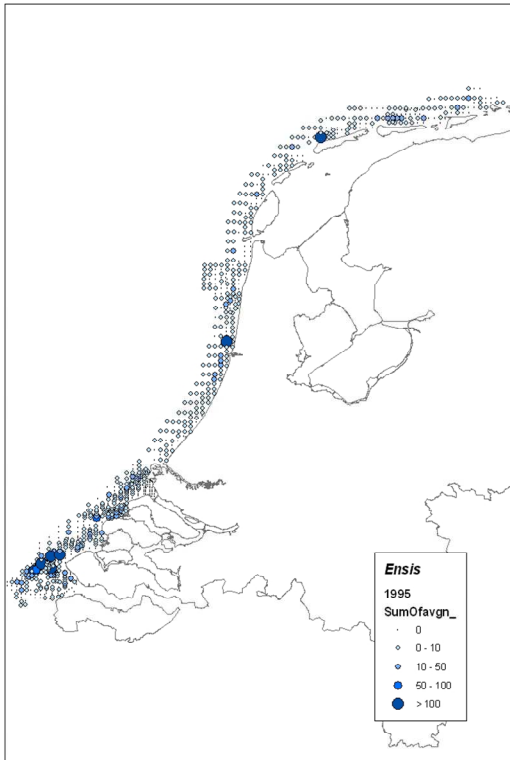
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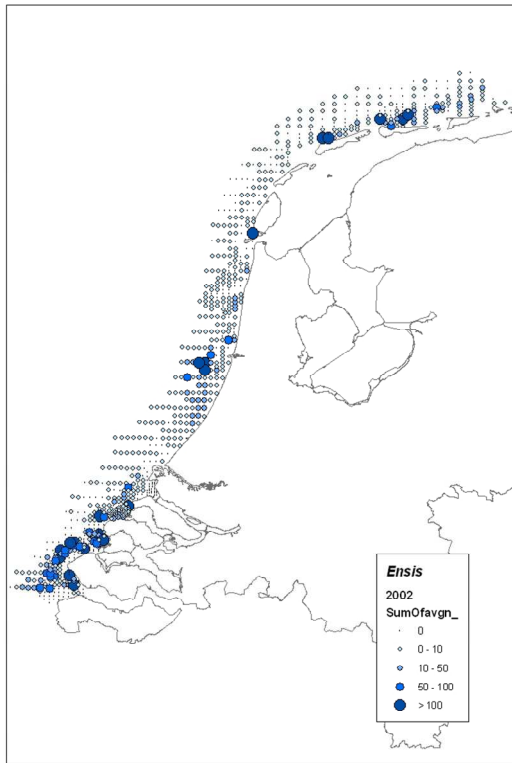
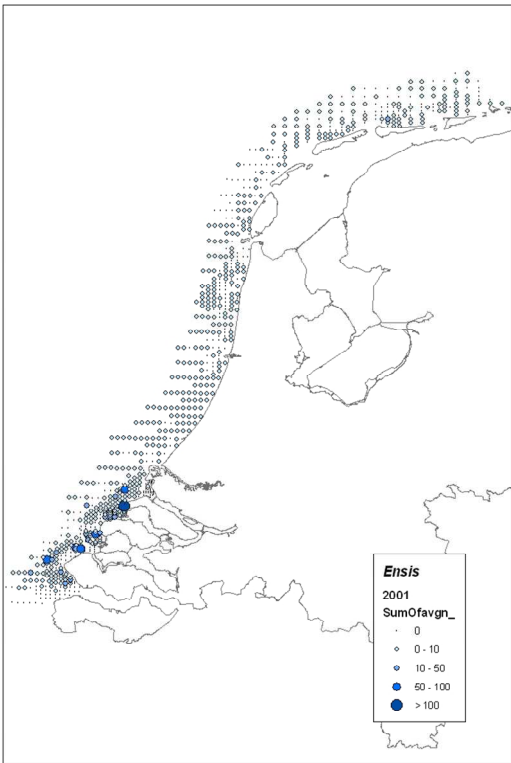
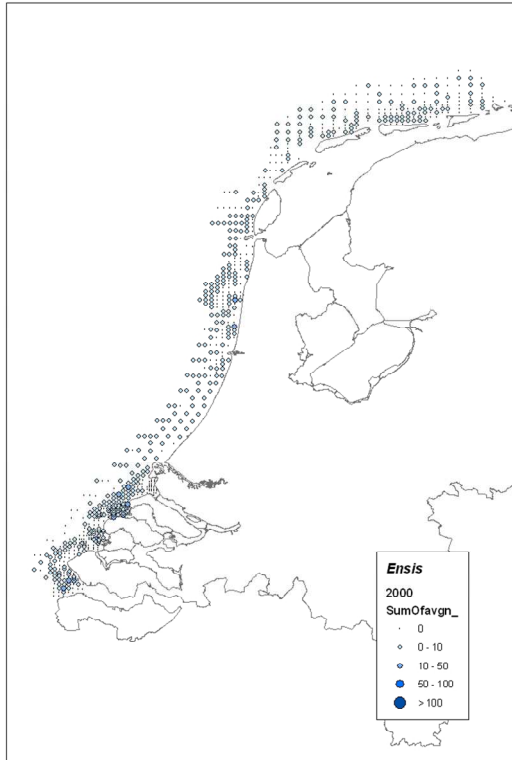
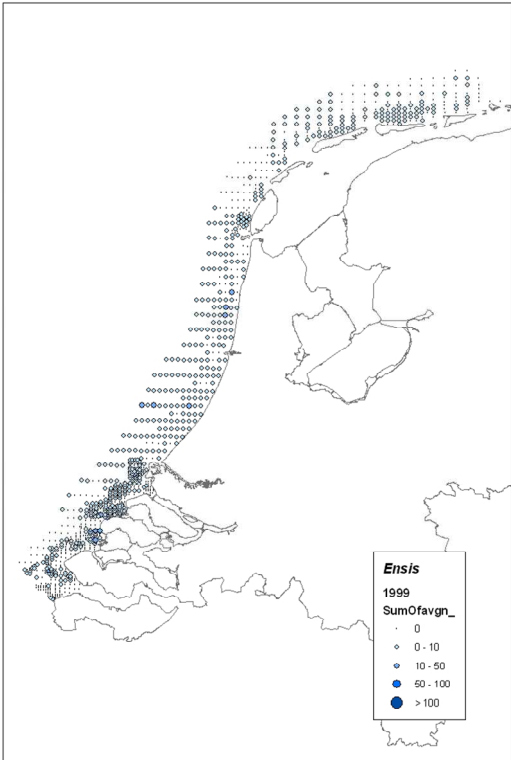
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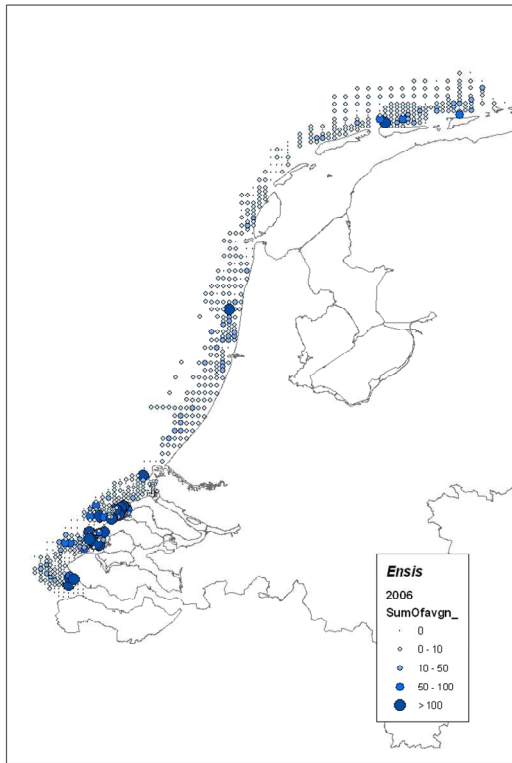
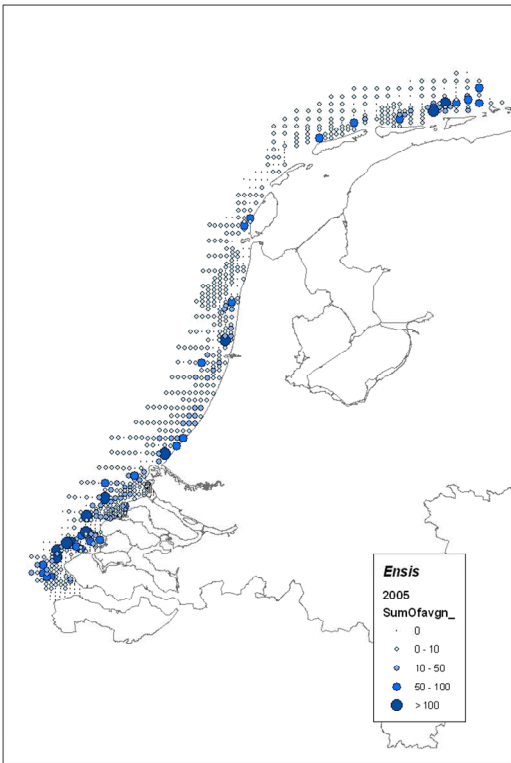
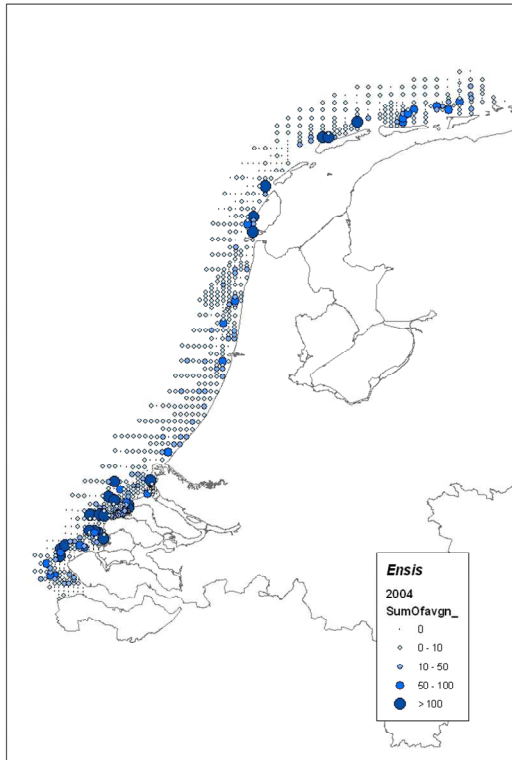
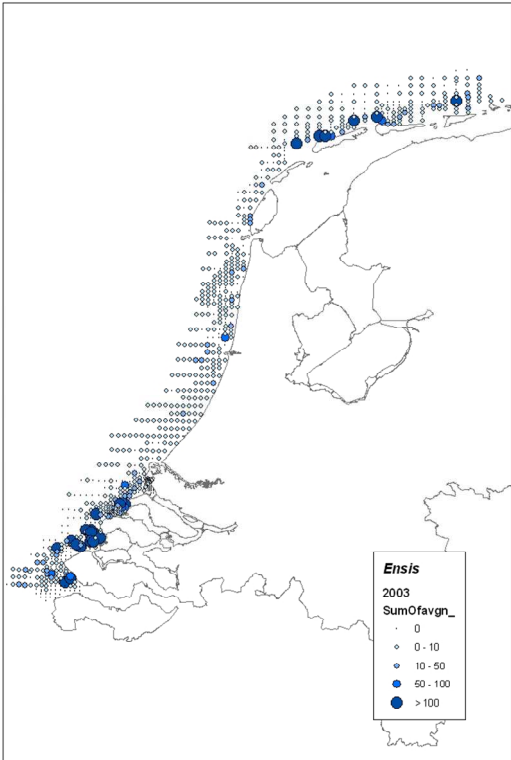


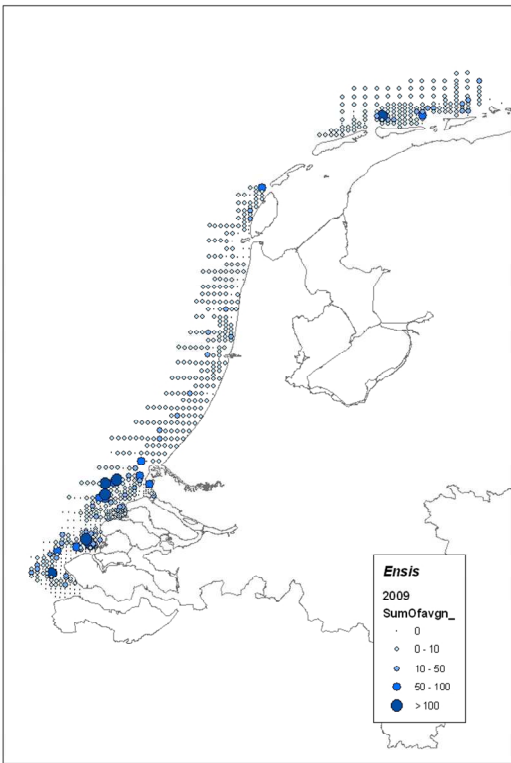
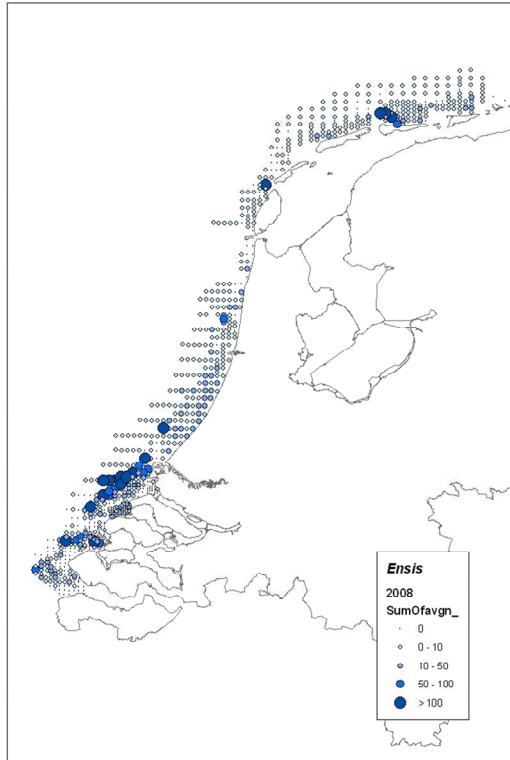
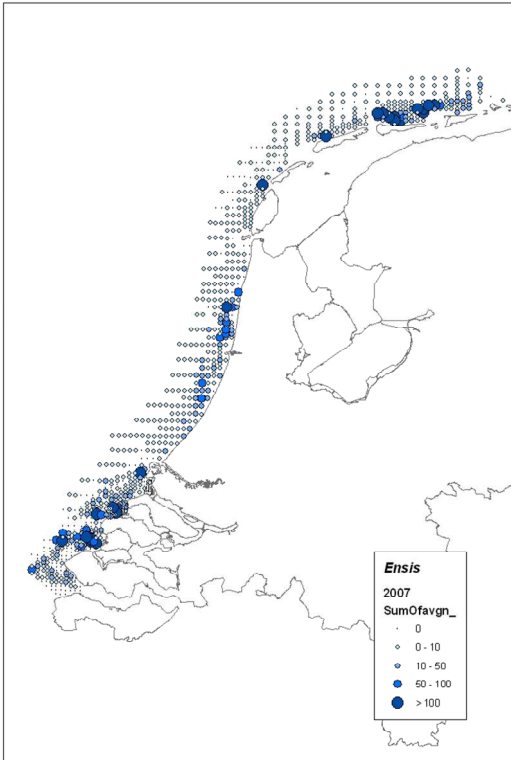


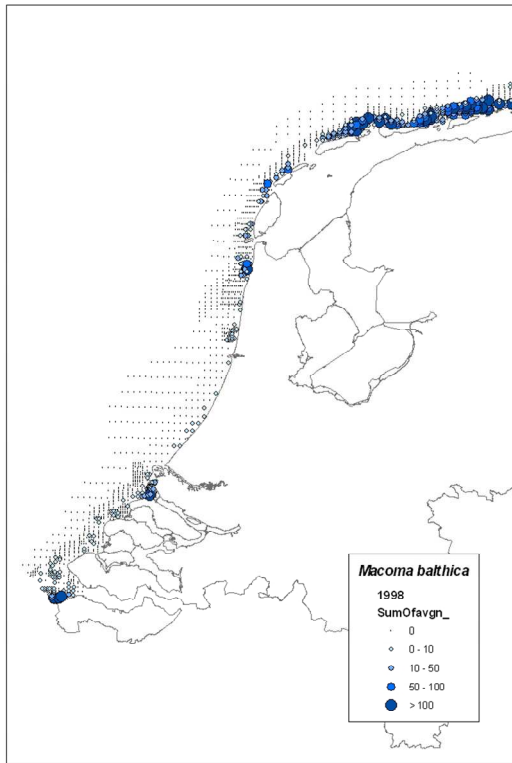
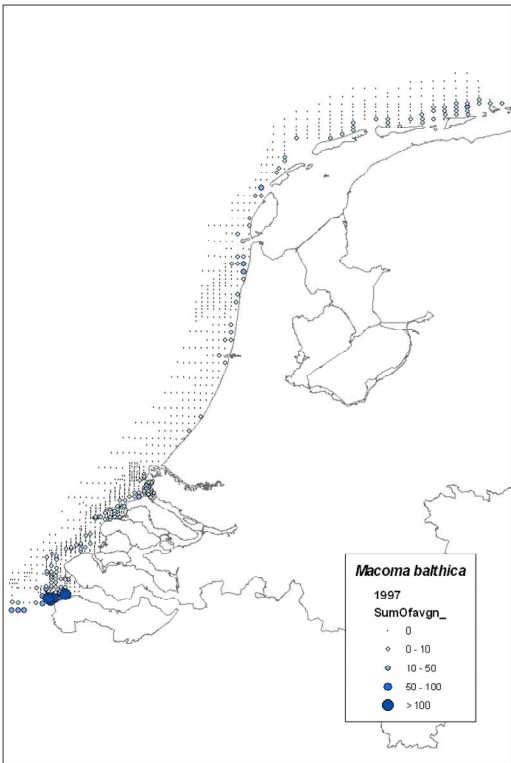
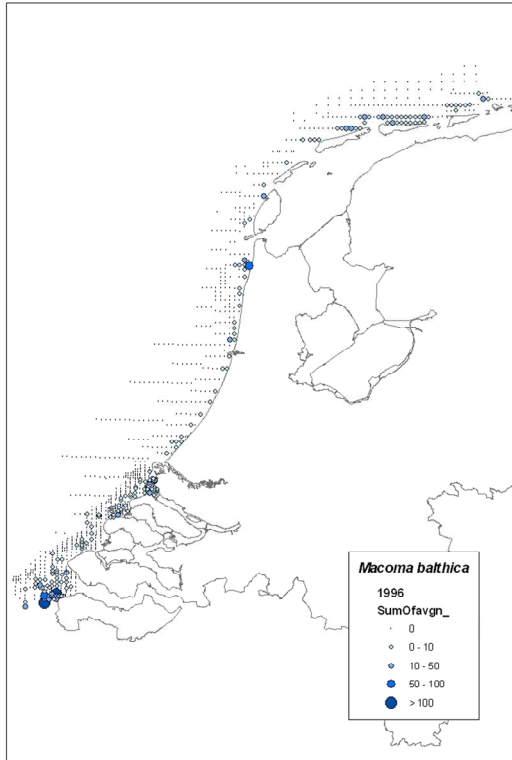
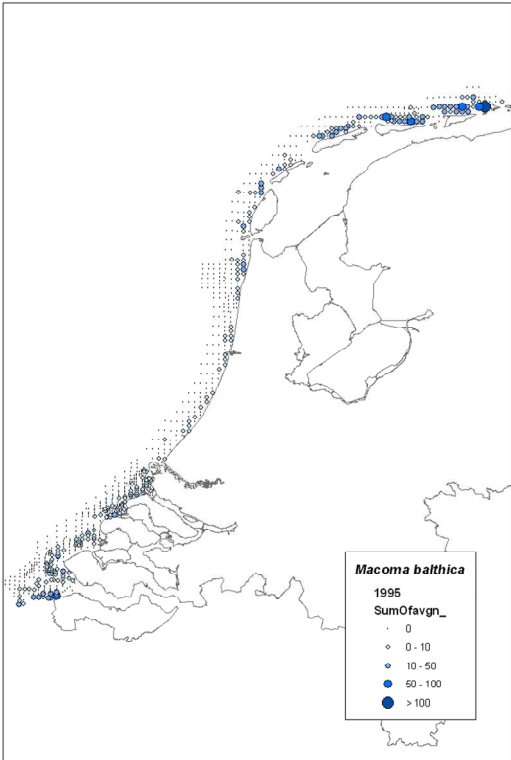


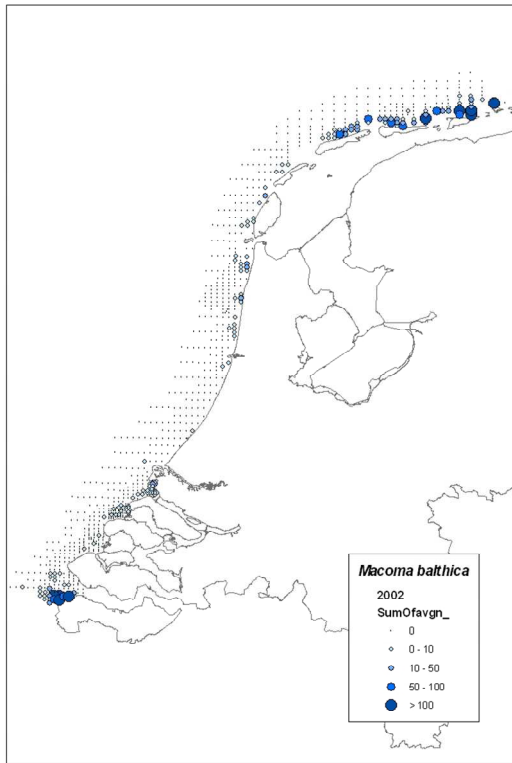
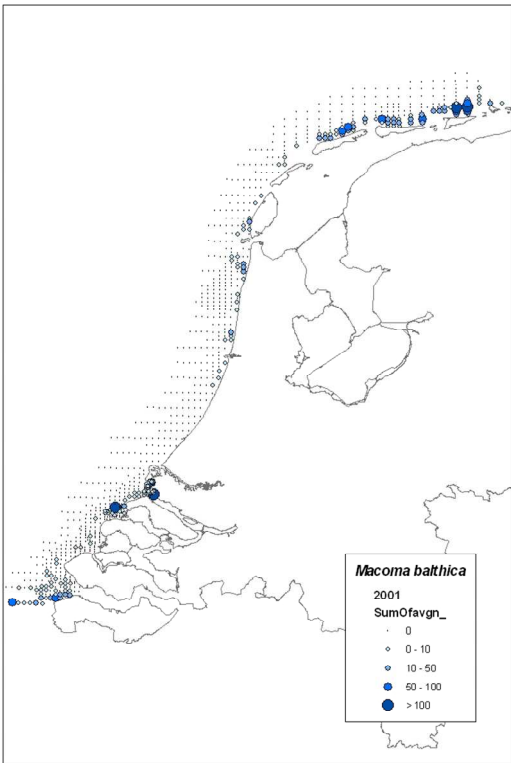
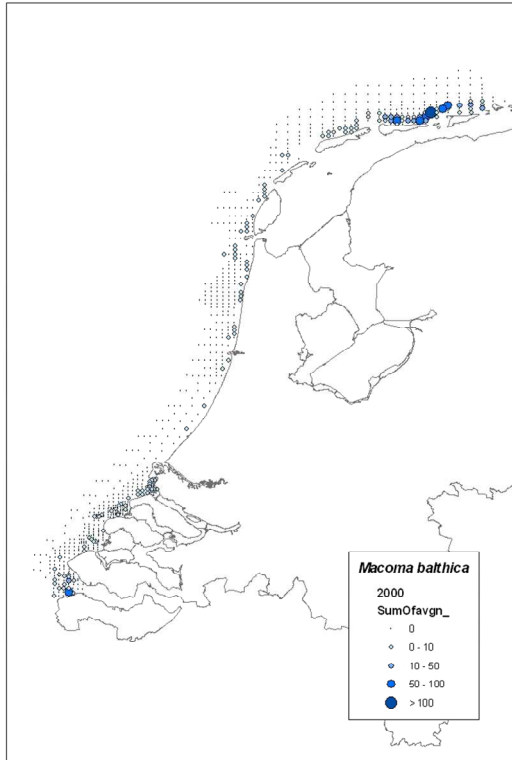
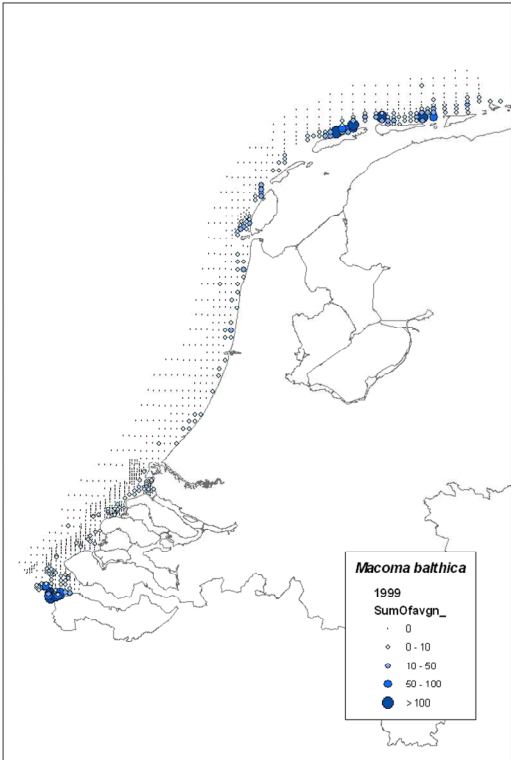


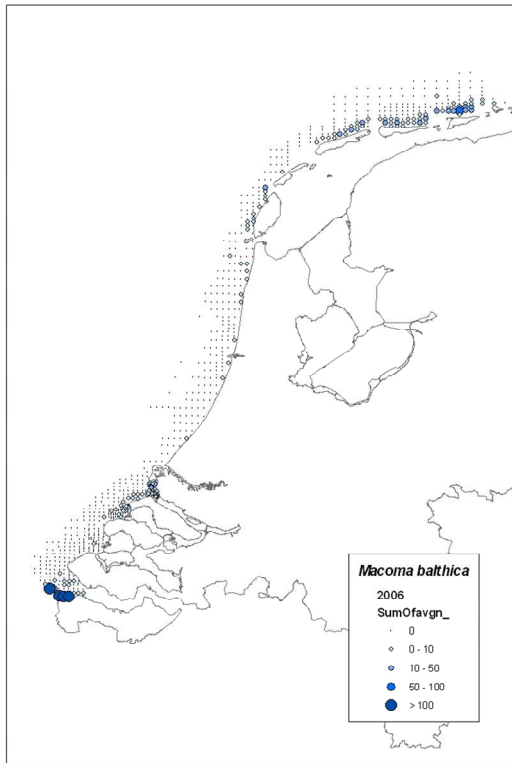
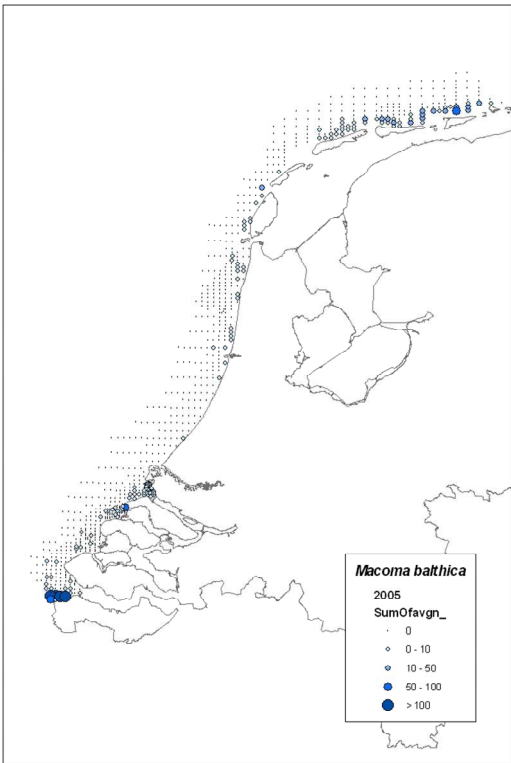
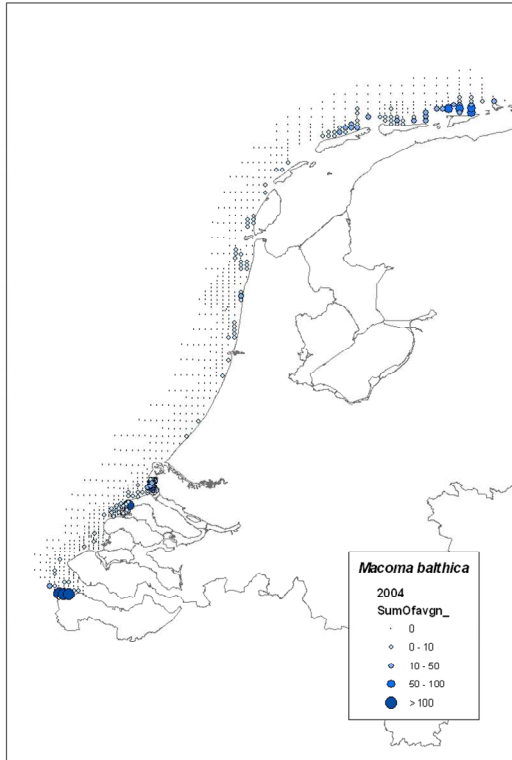
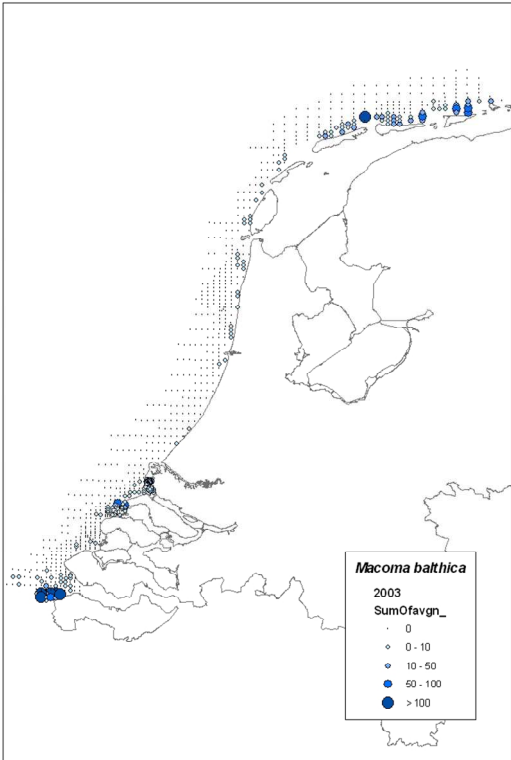


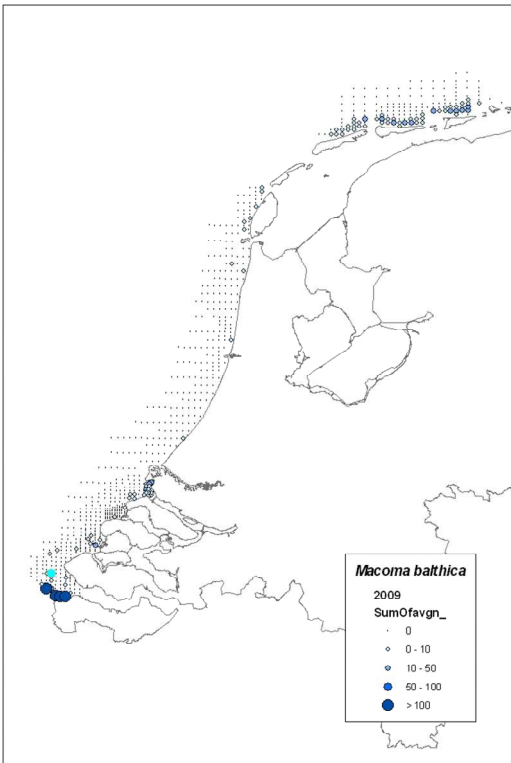
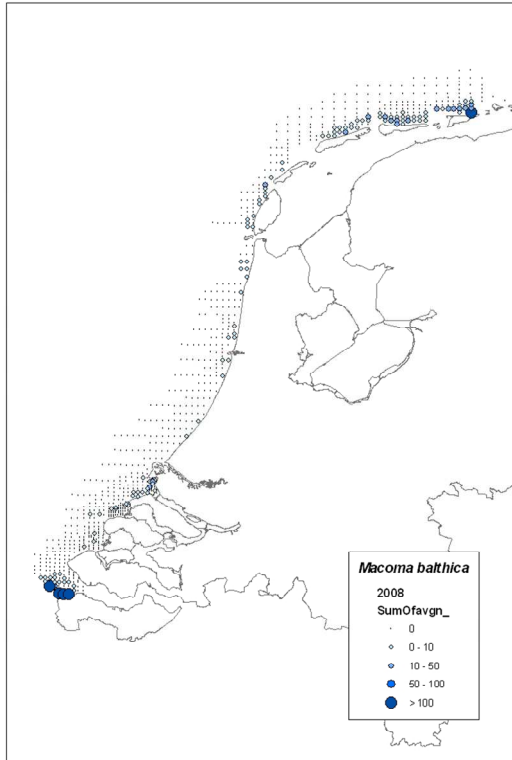
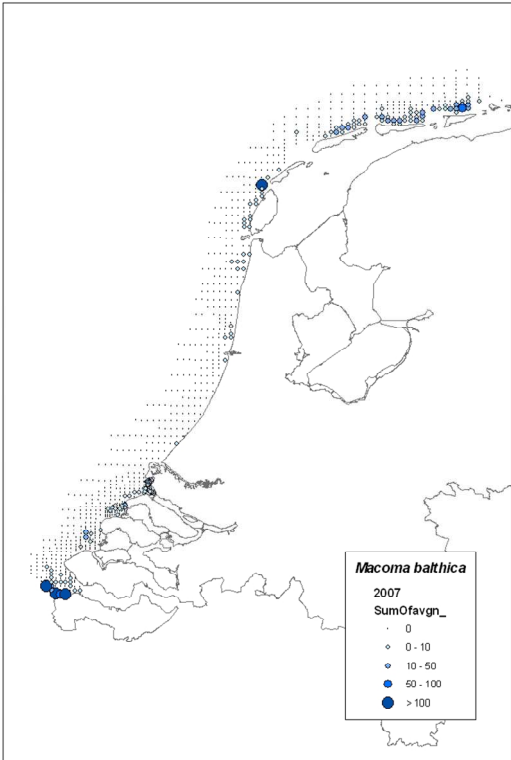


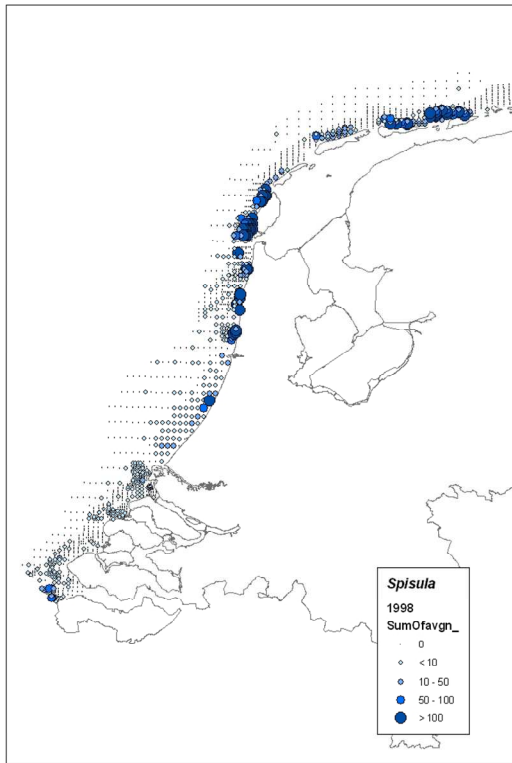
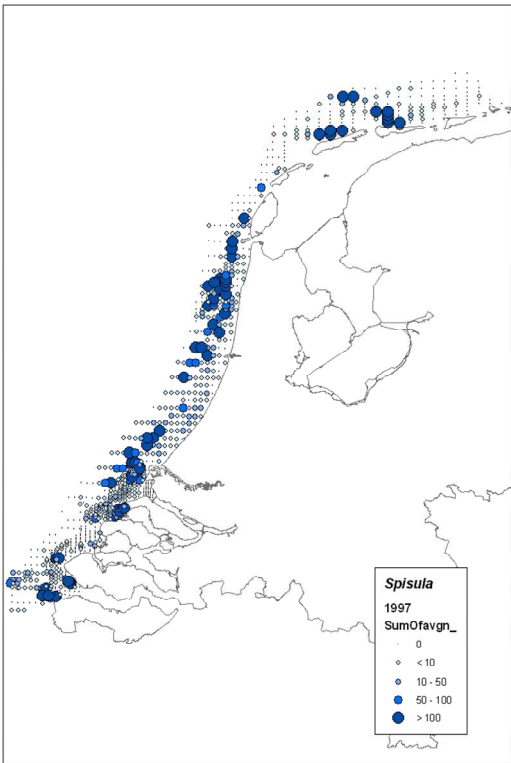
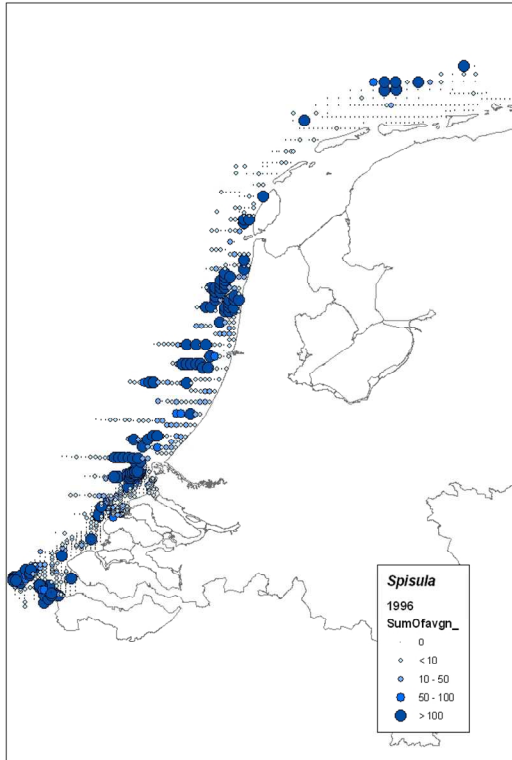
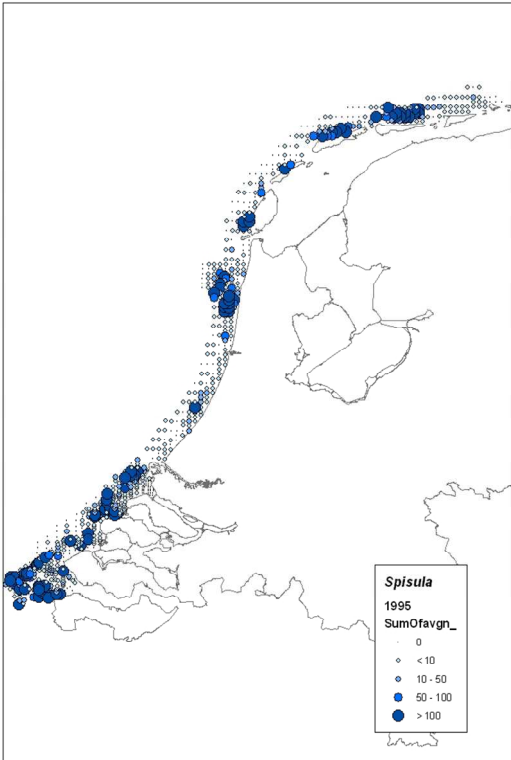


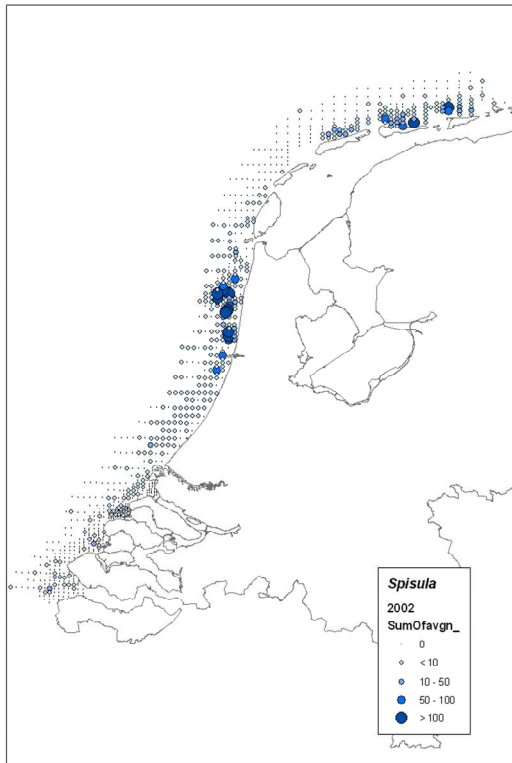
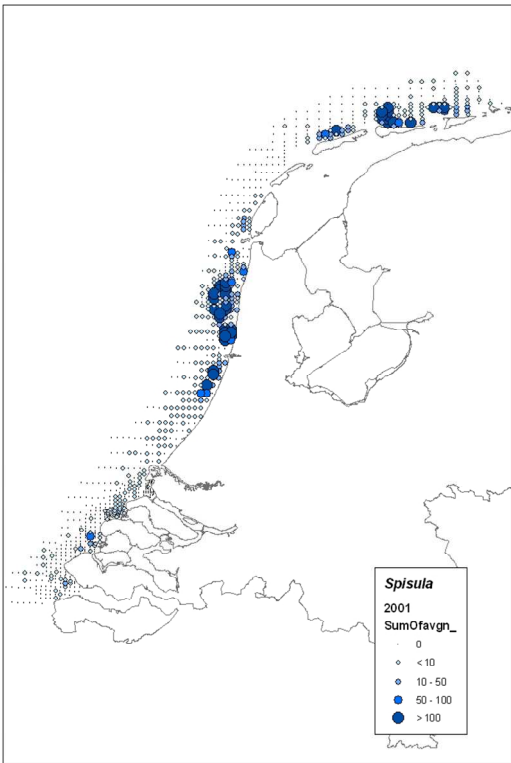
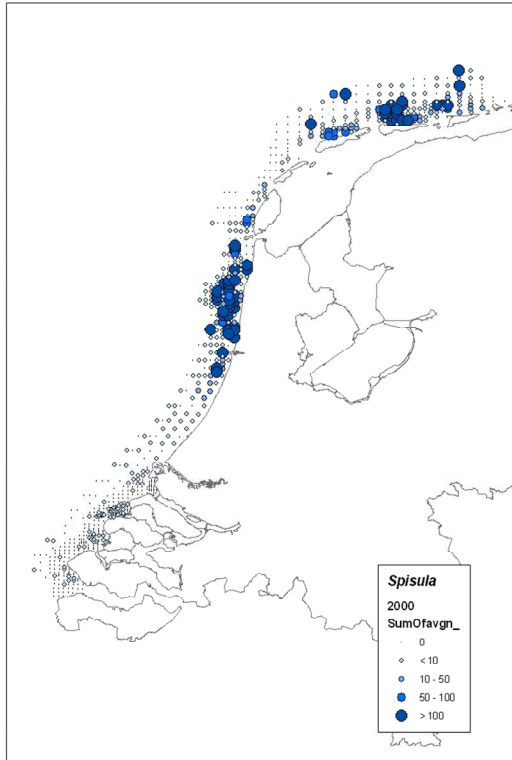
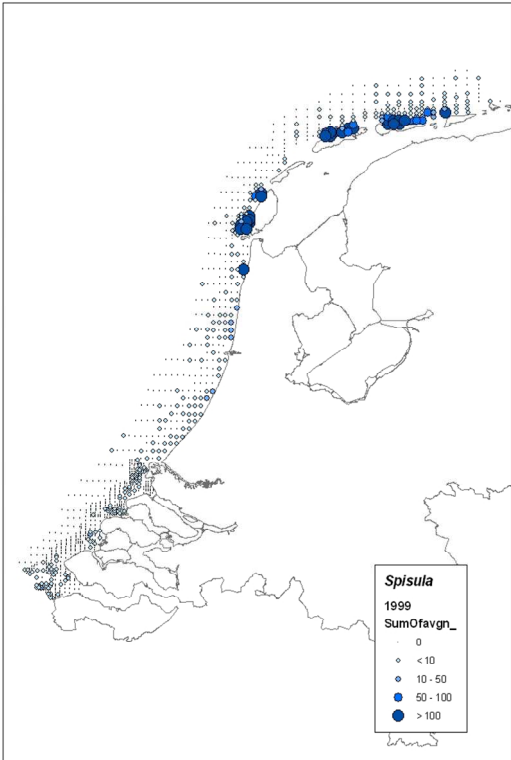


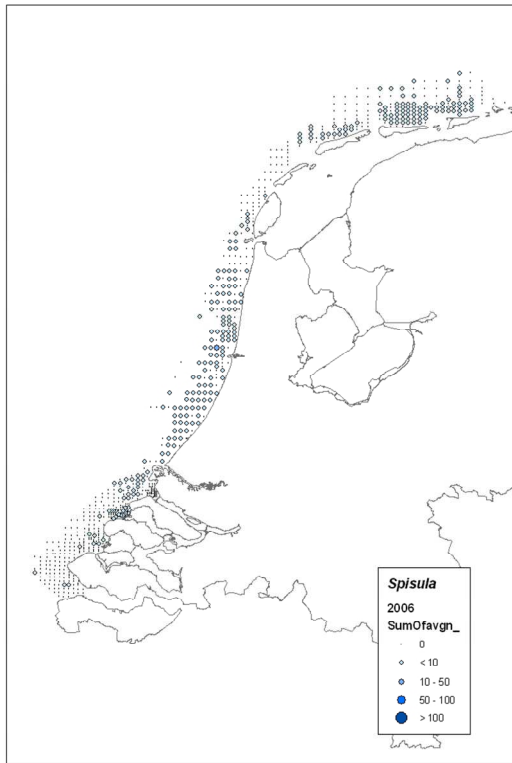
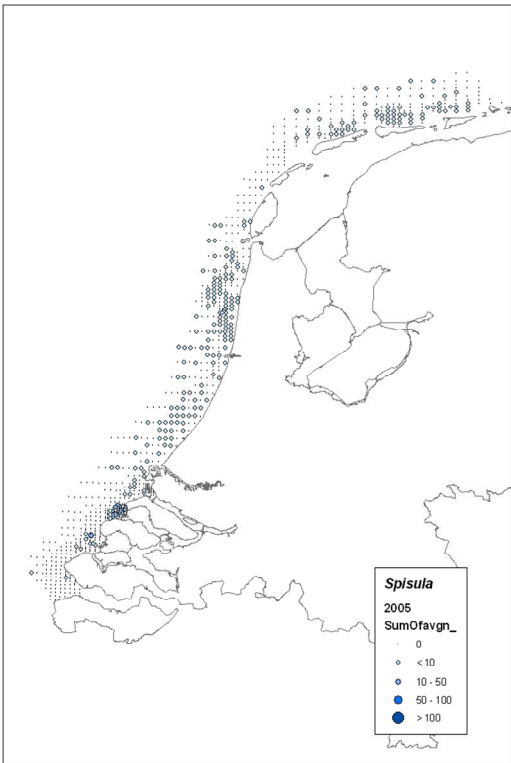
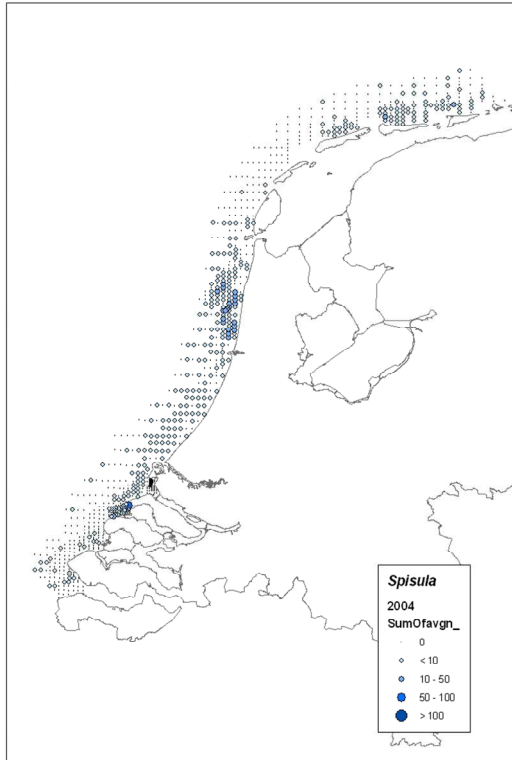
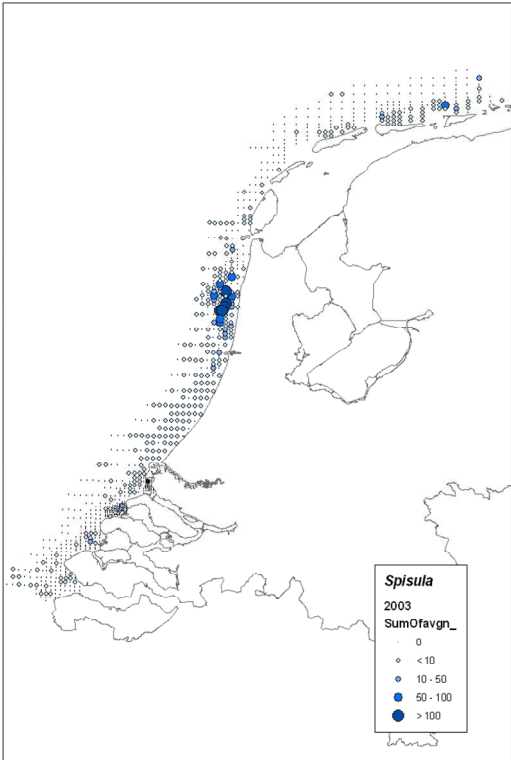


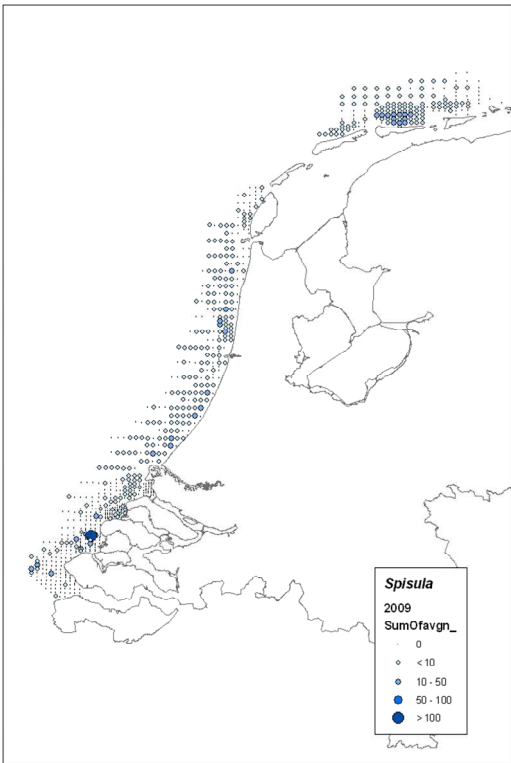
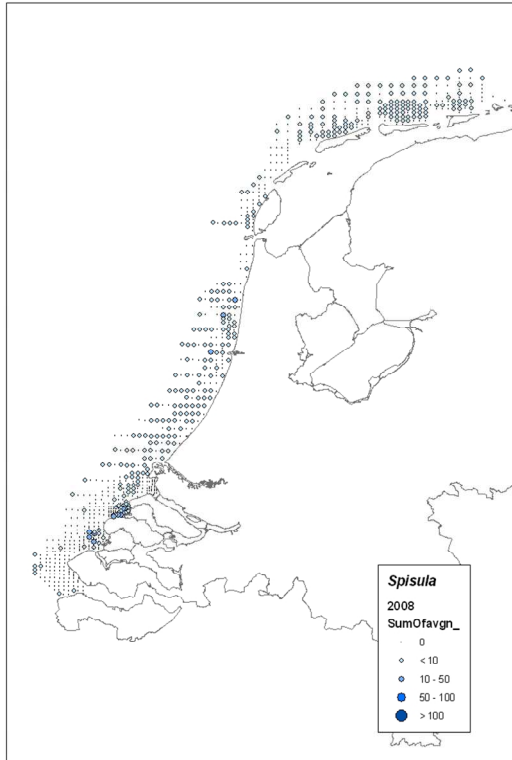
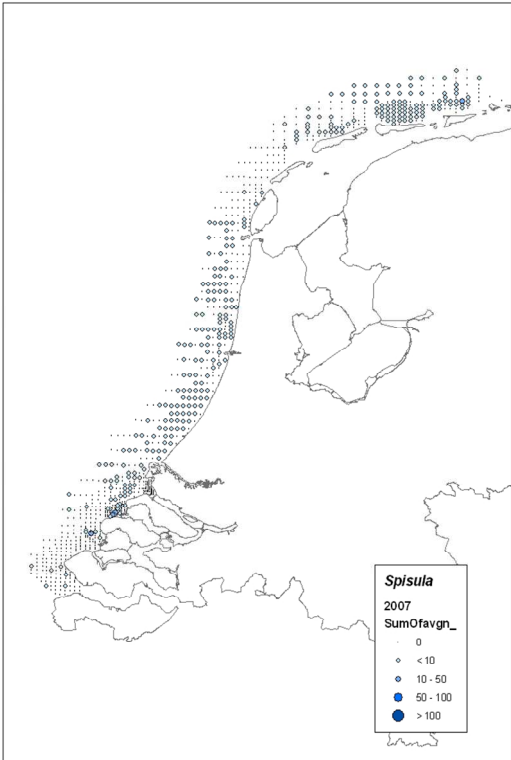


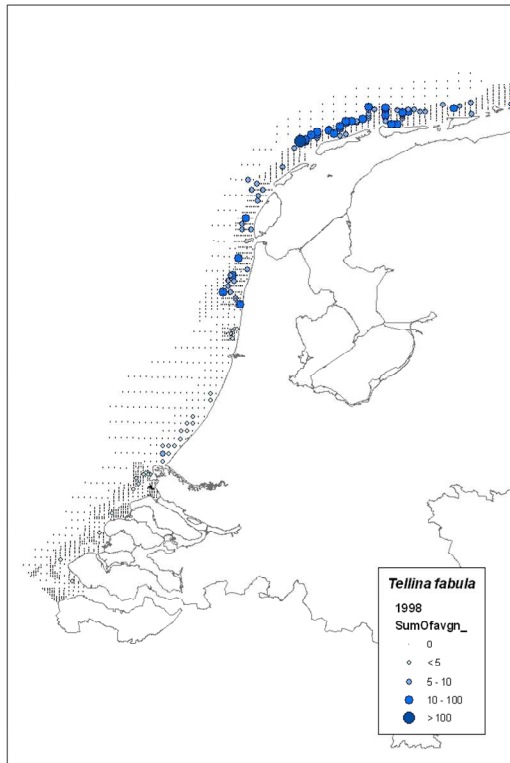
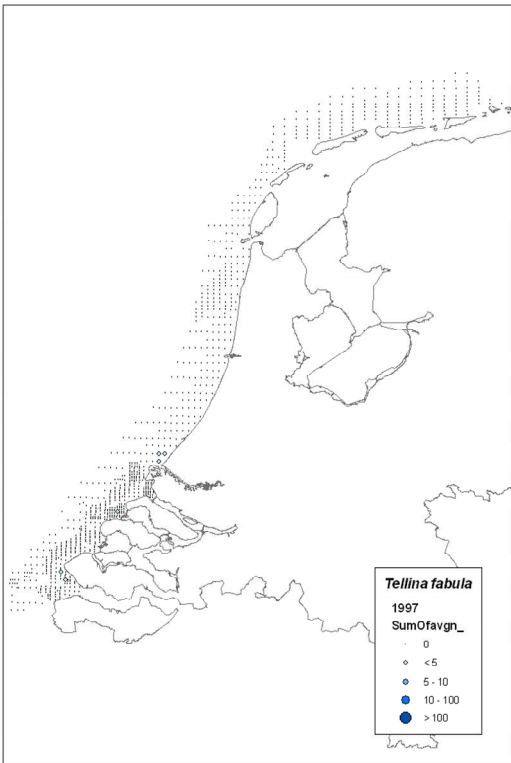
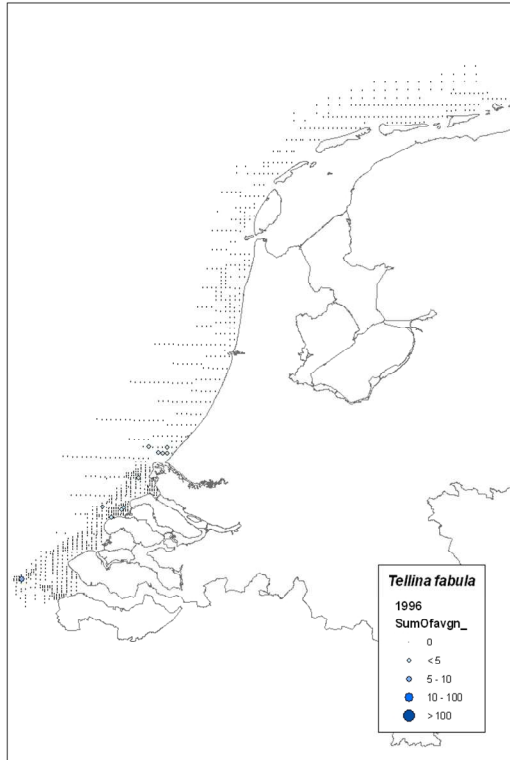
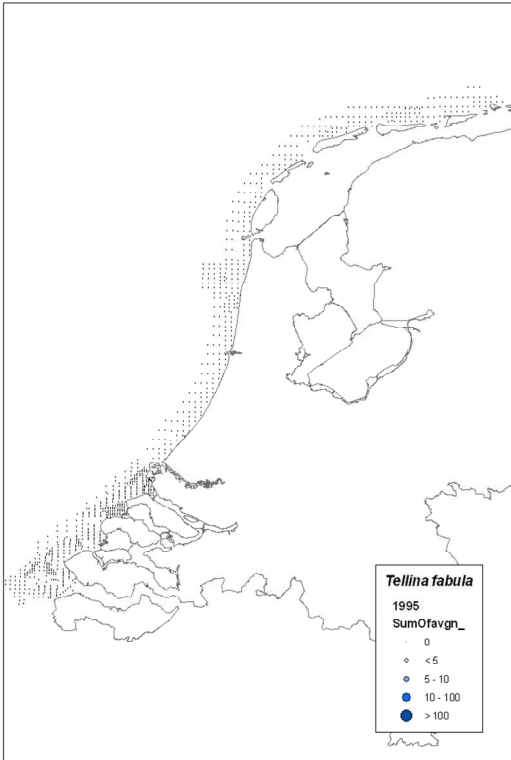


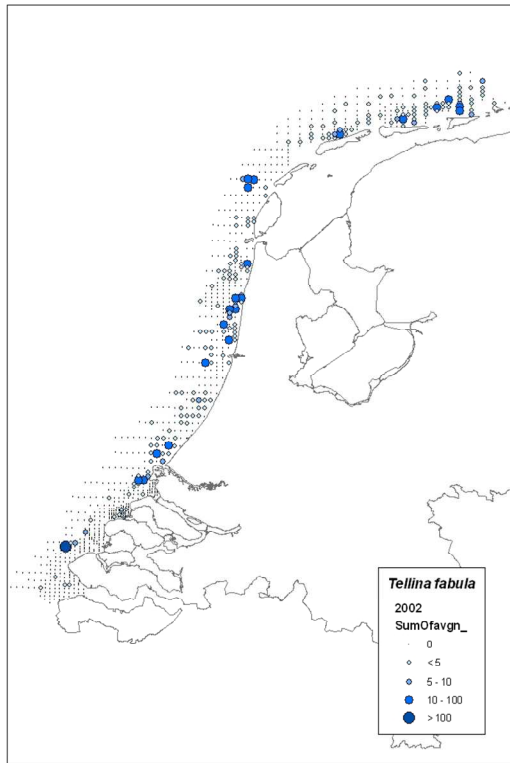
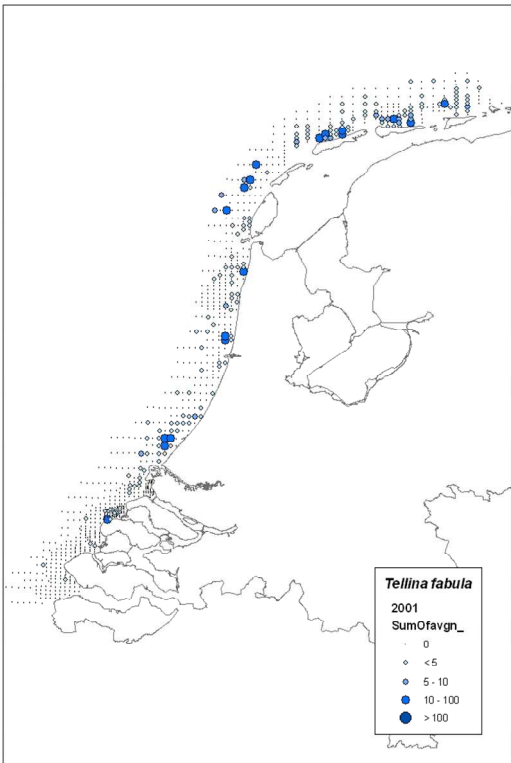
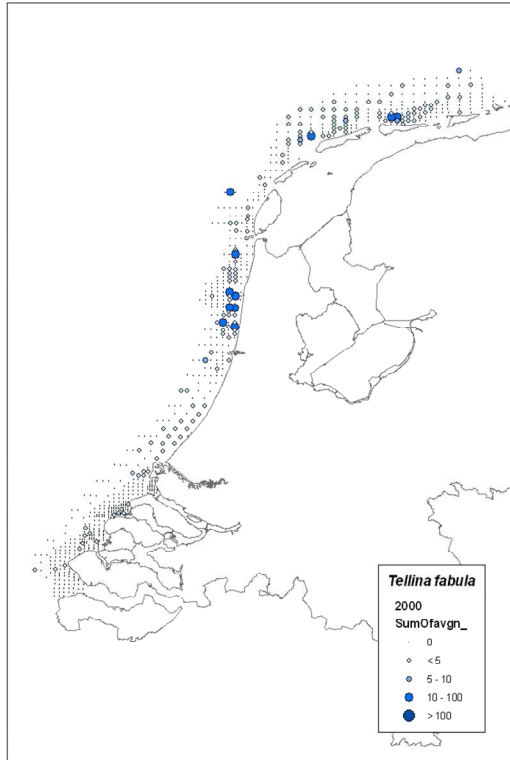
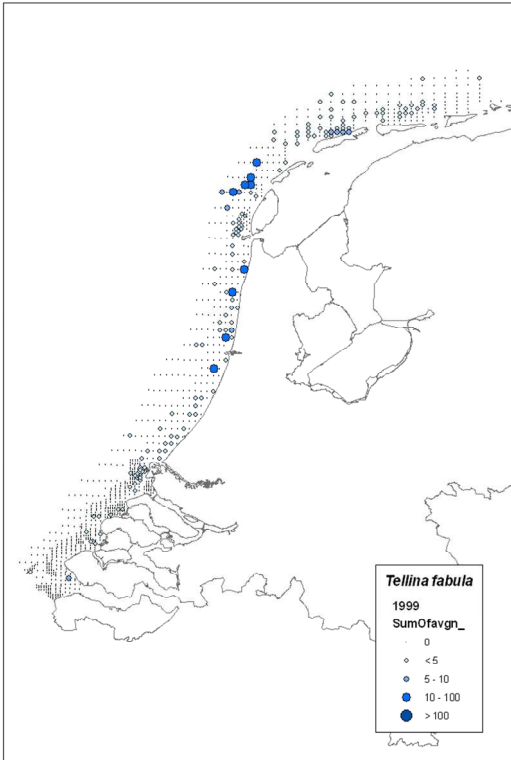


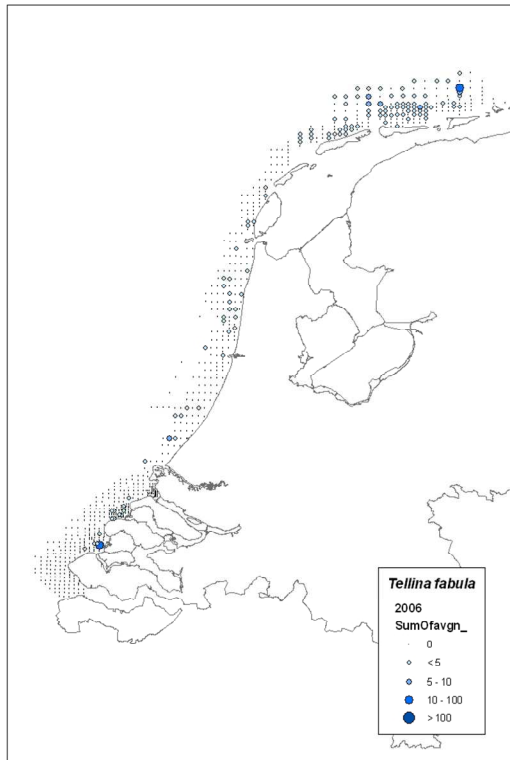
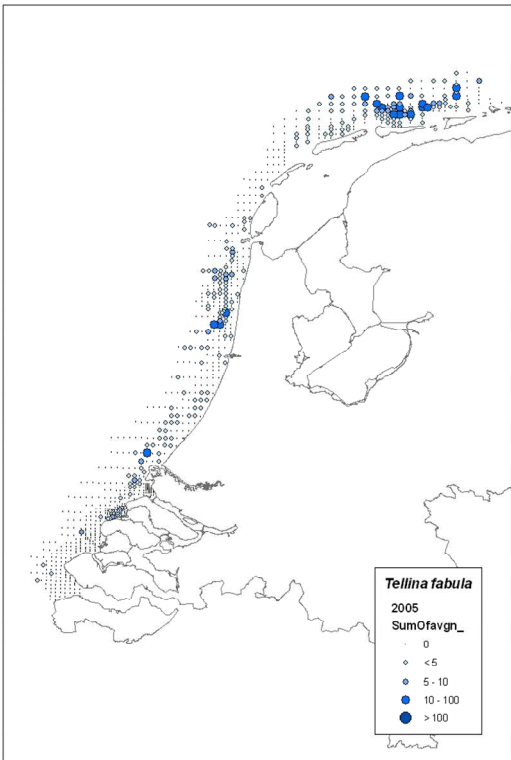
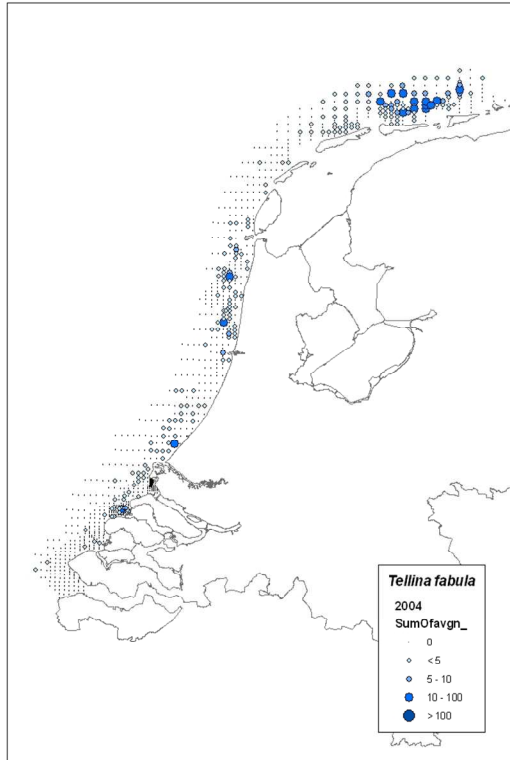
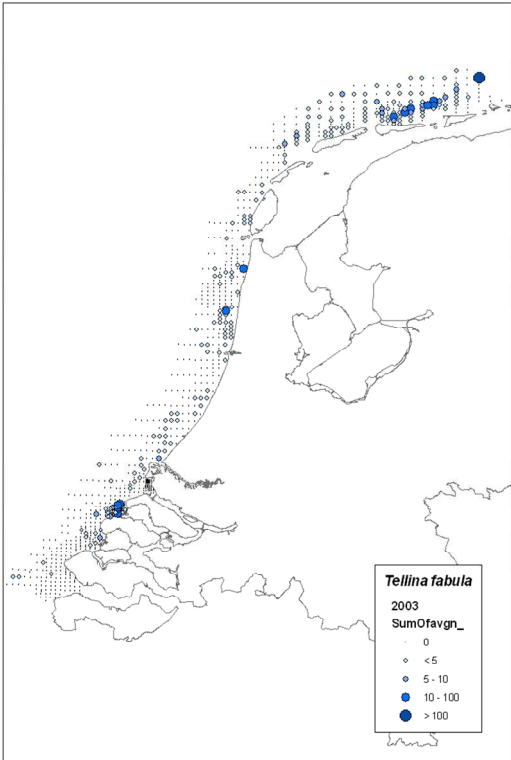


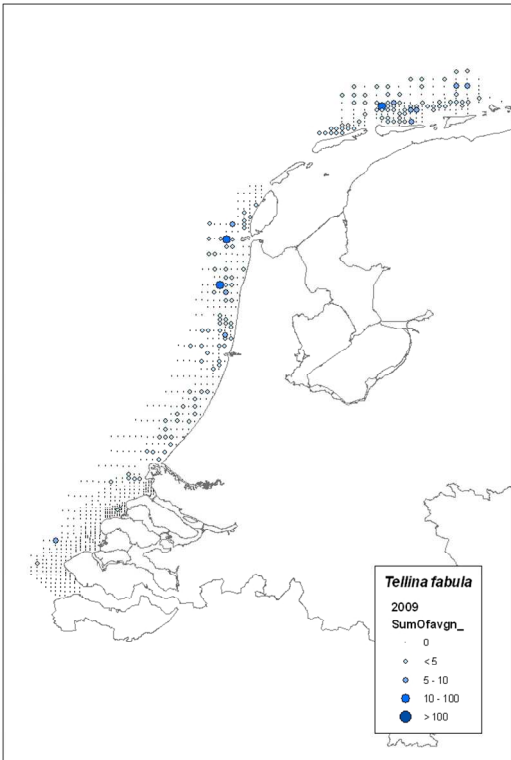
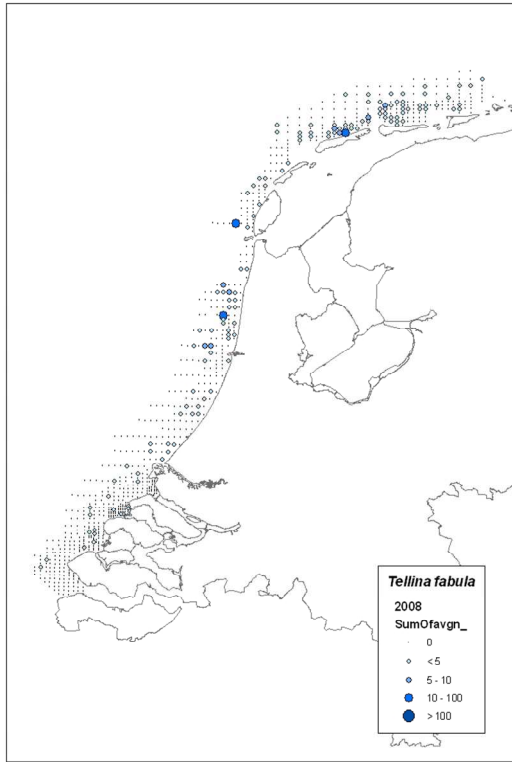
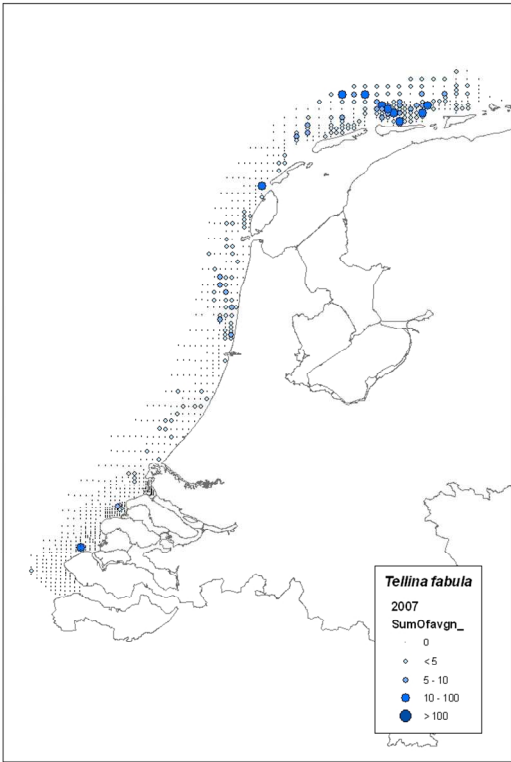




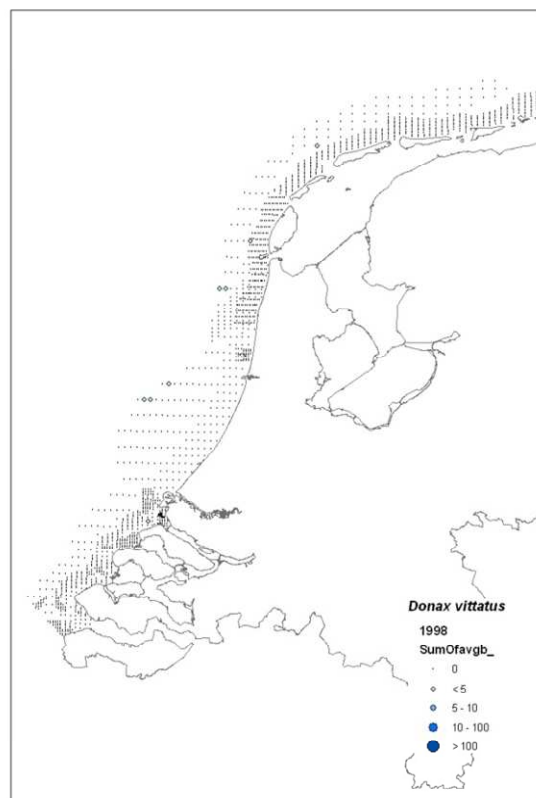
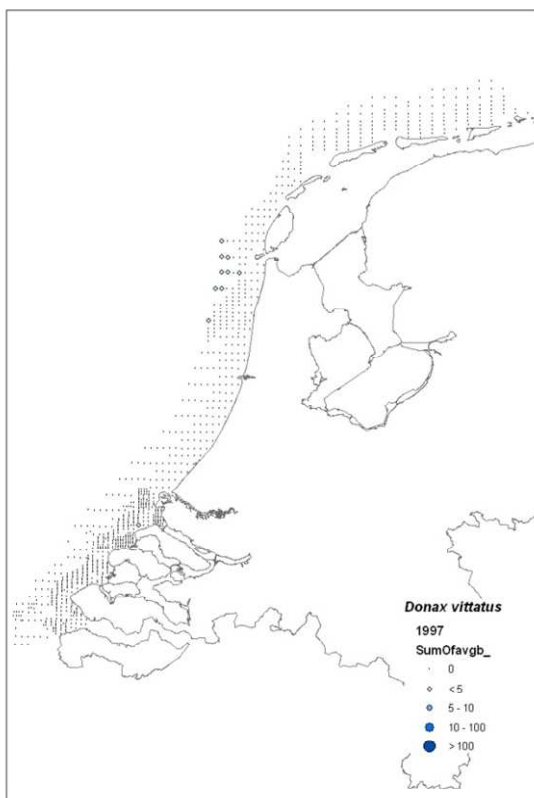
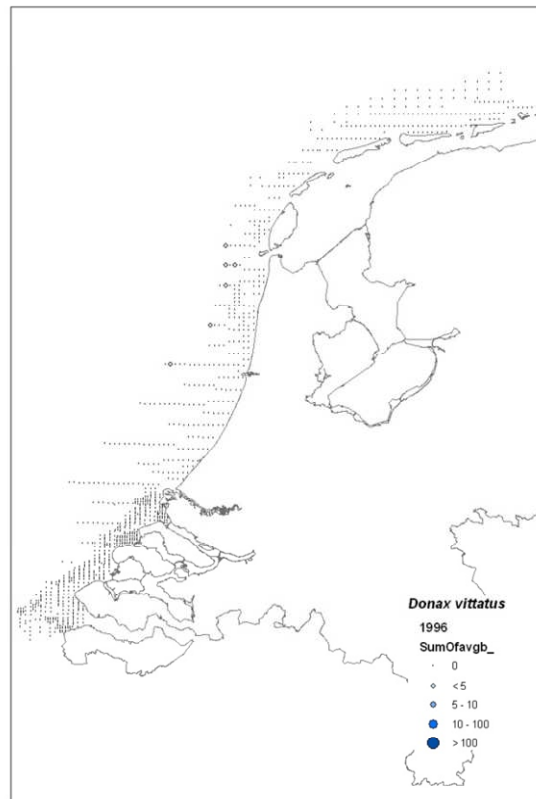
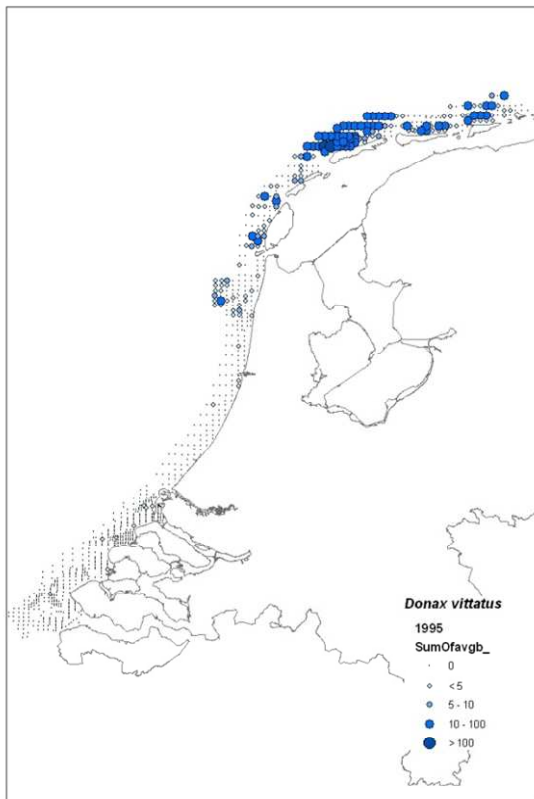


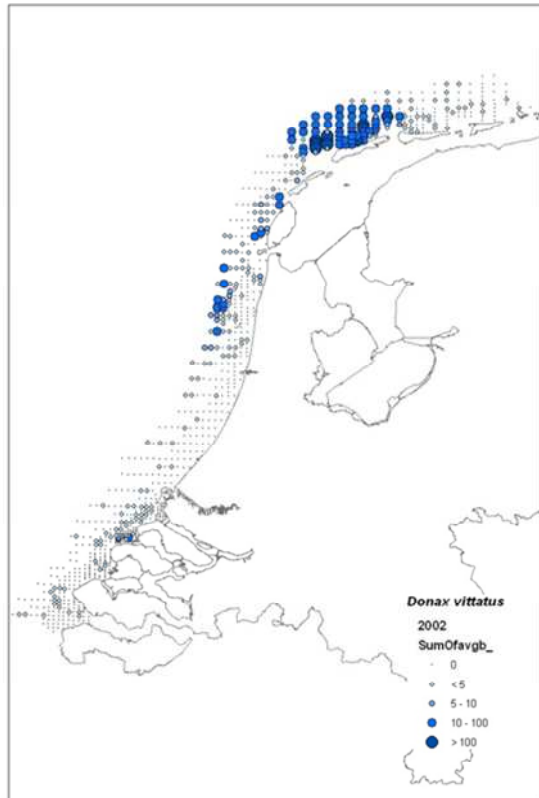
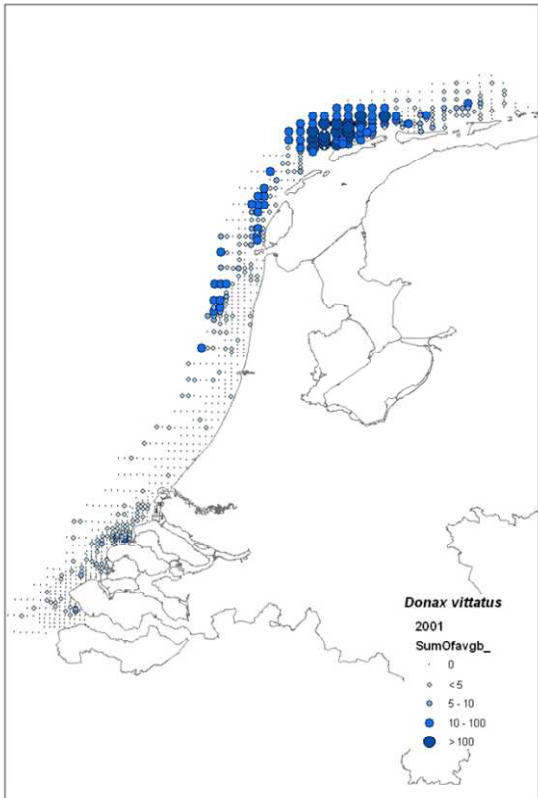
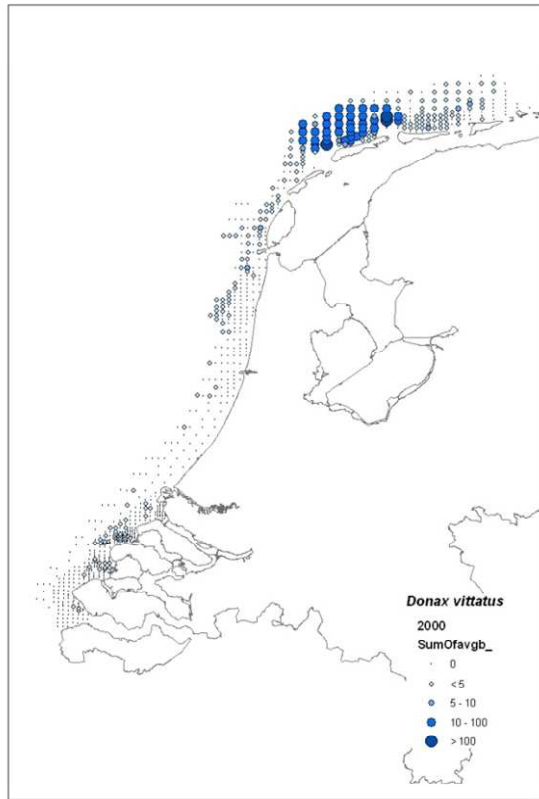
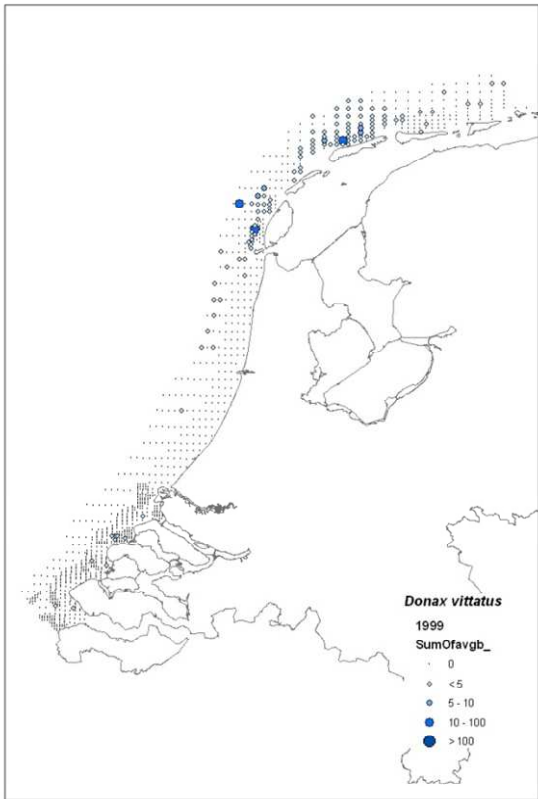


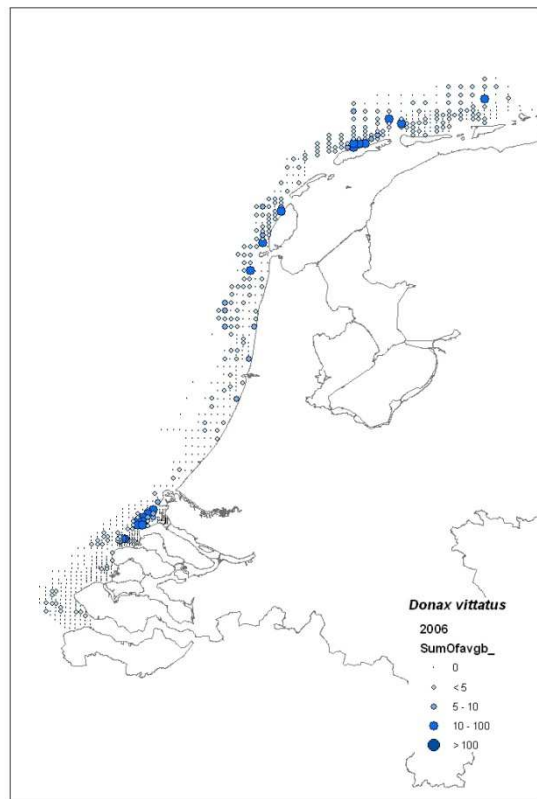
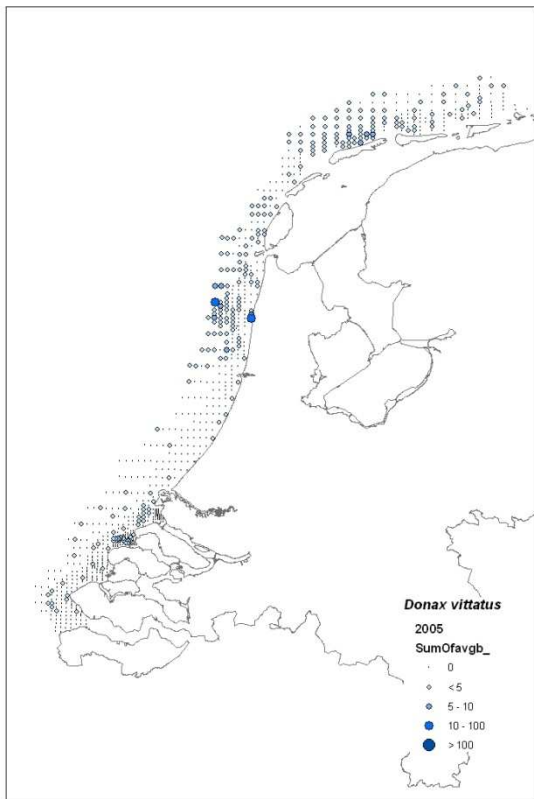
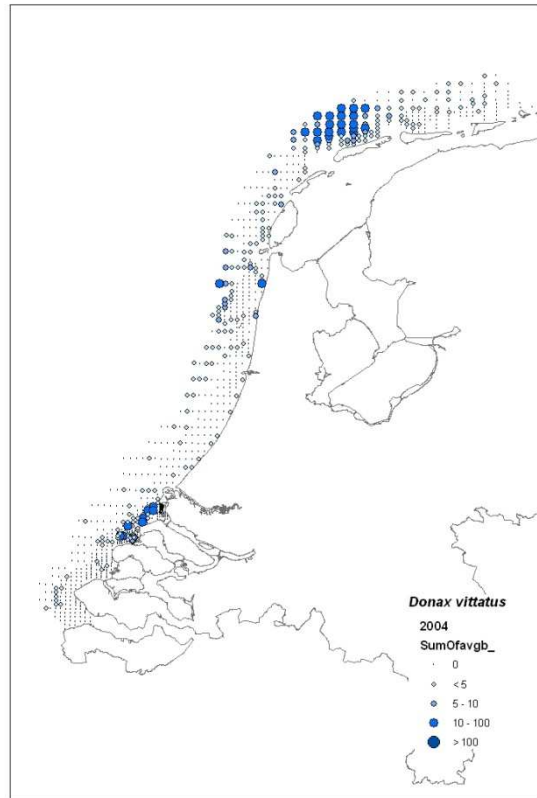
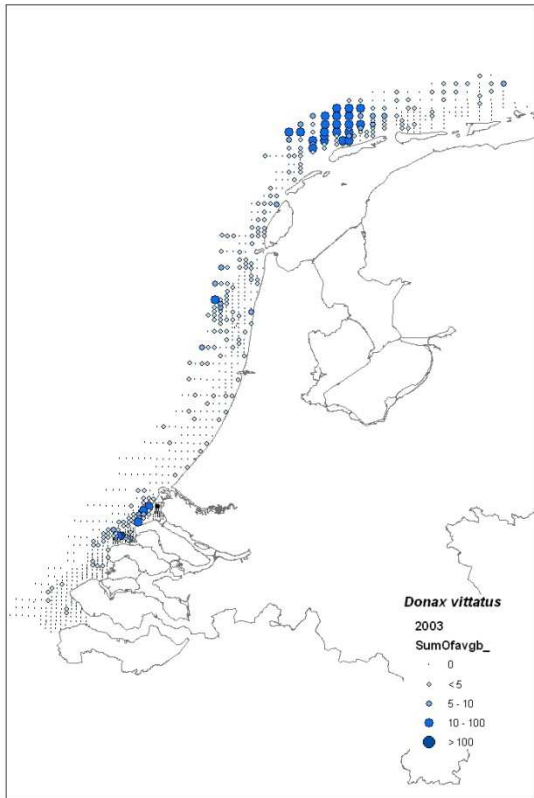


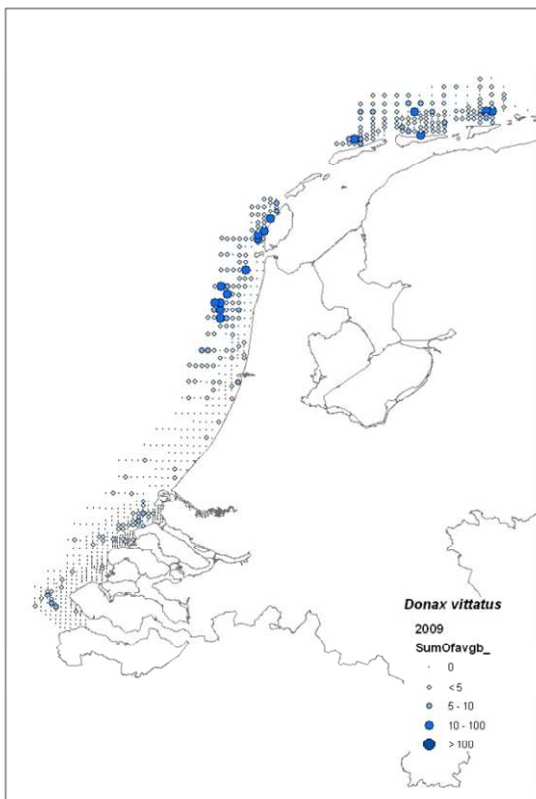
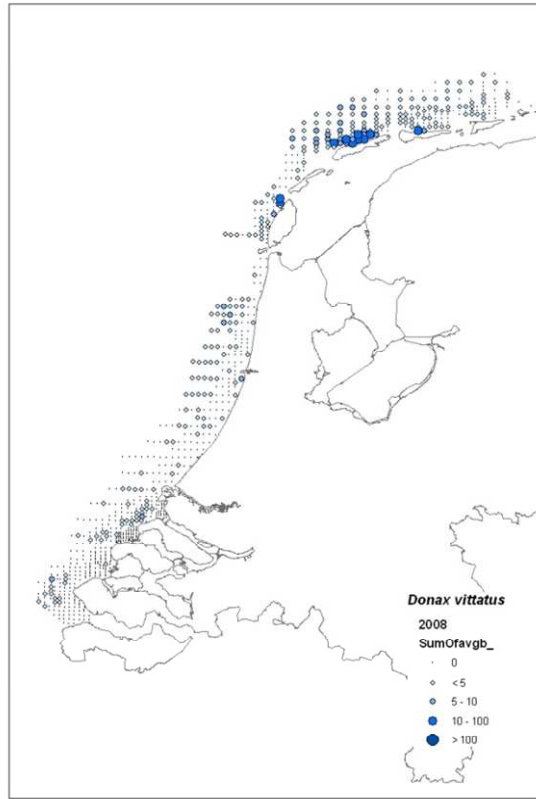
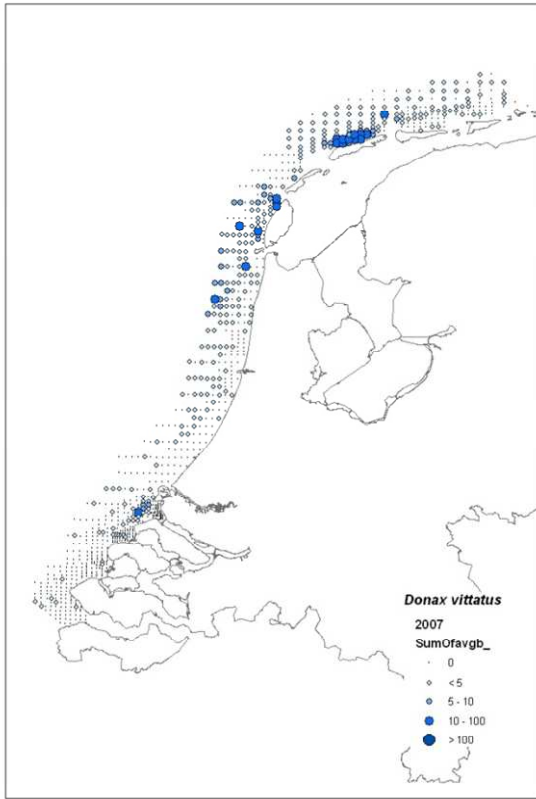


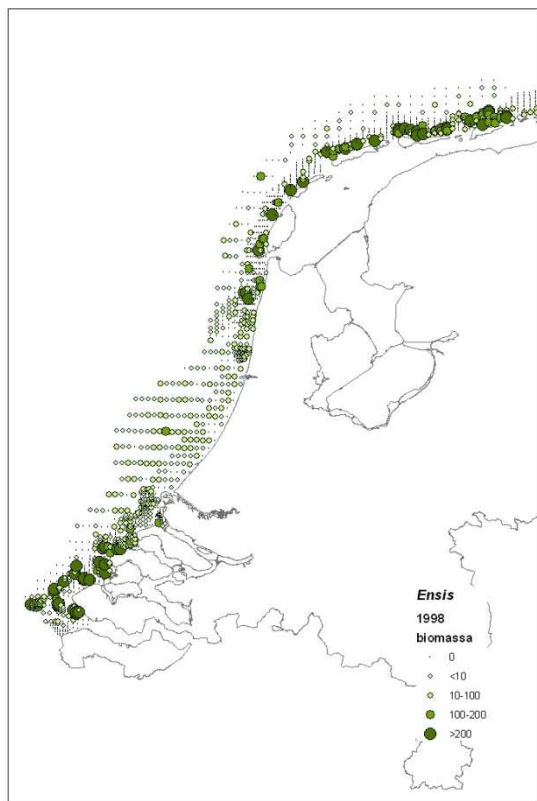
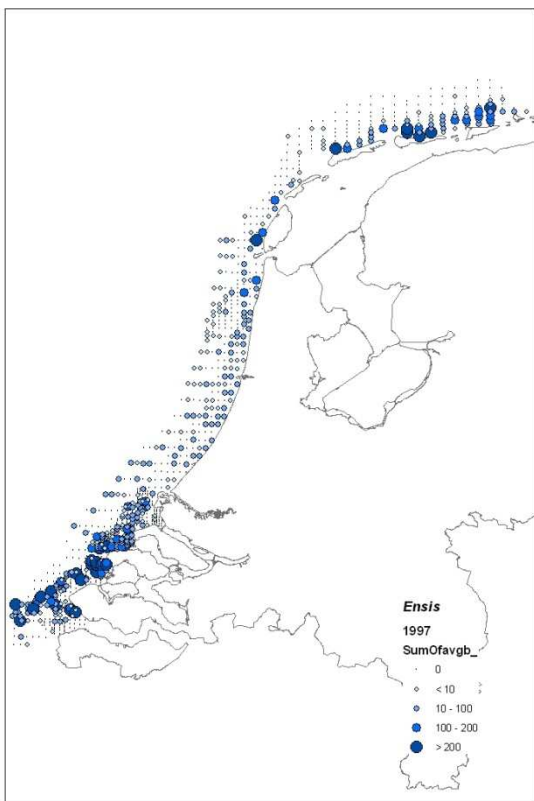
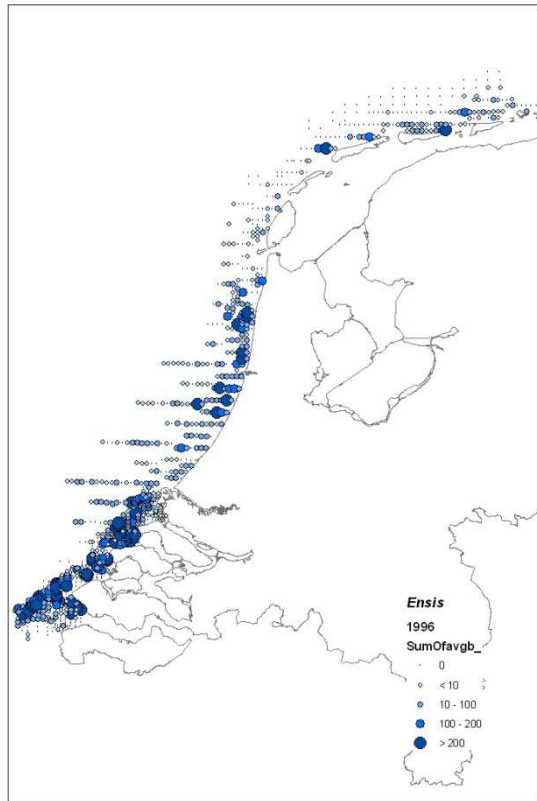
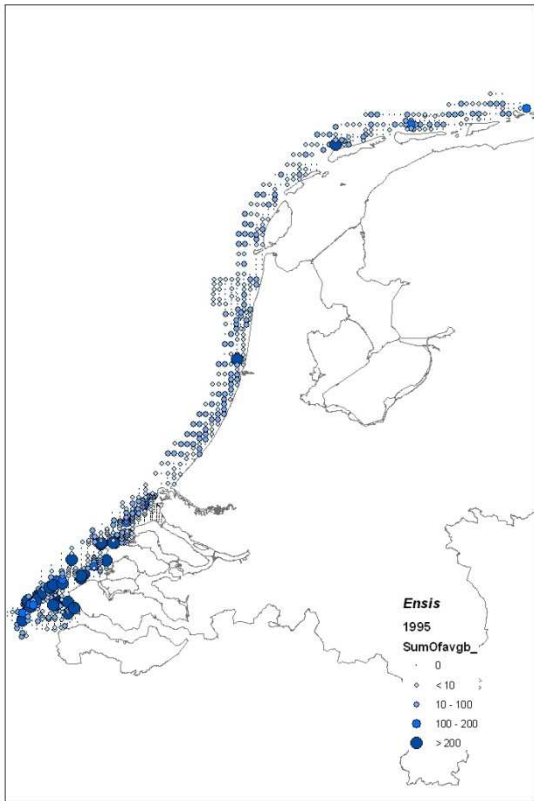
Bijlage B: Verspreidingskaarten (biomassa)

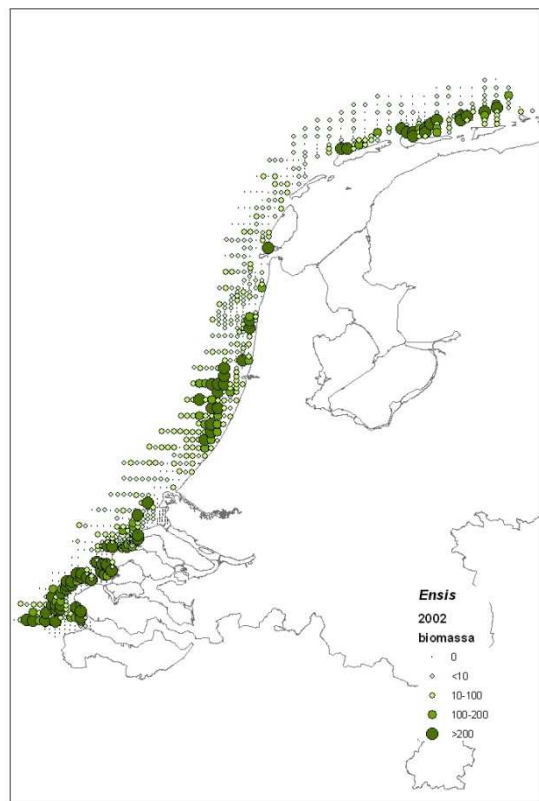
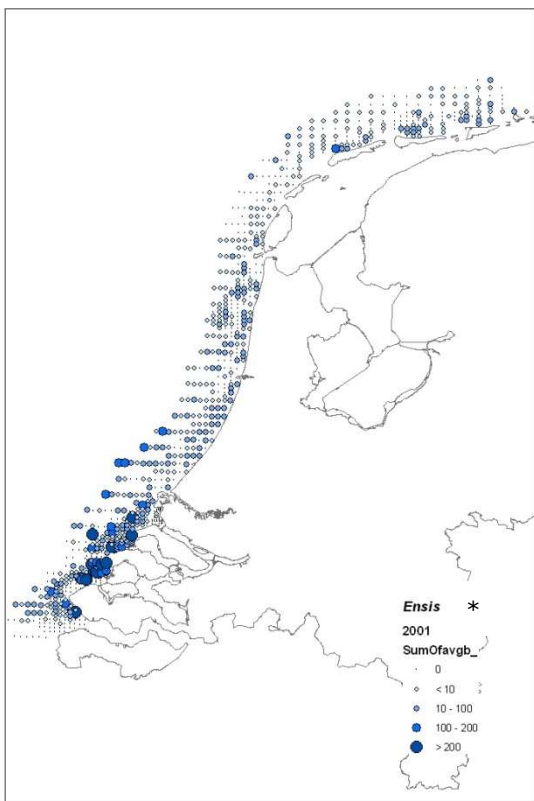
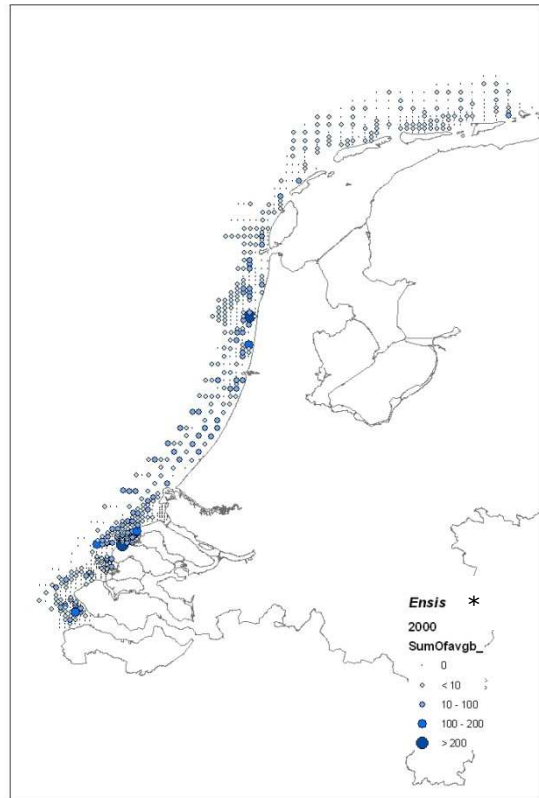
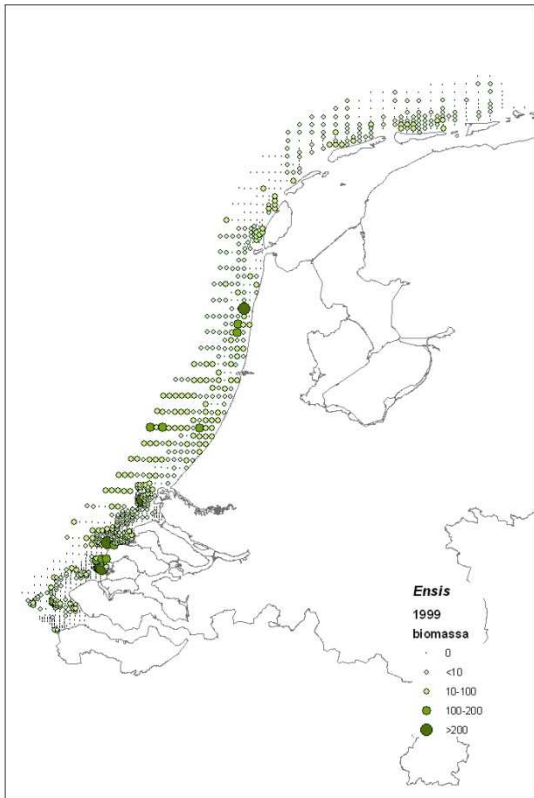


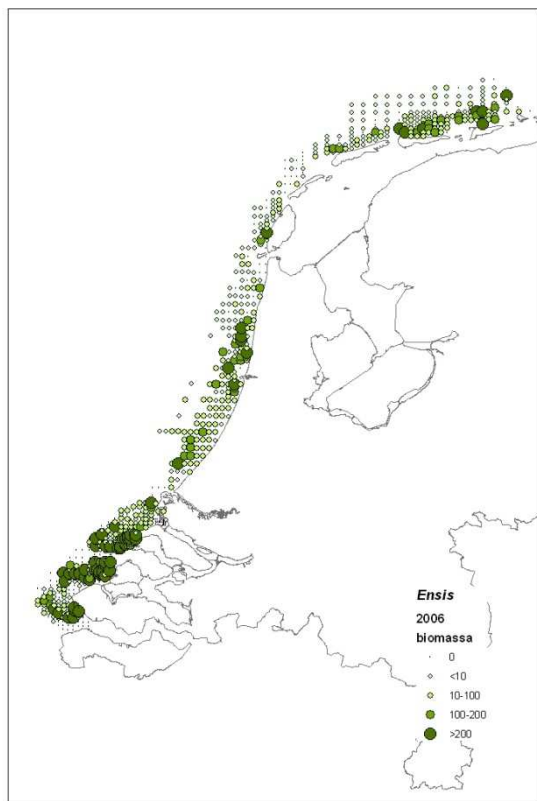
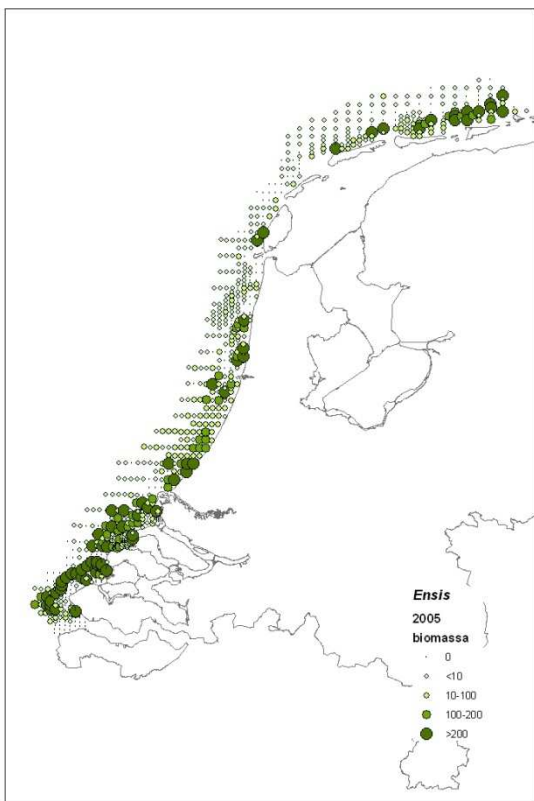
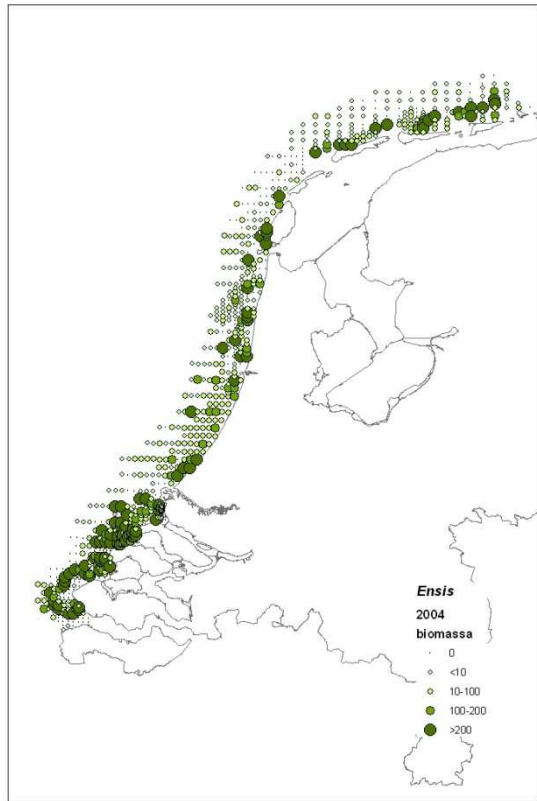
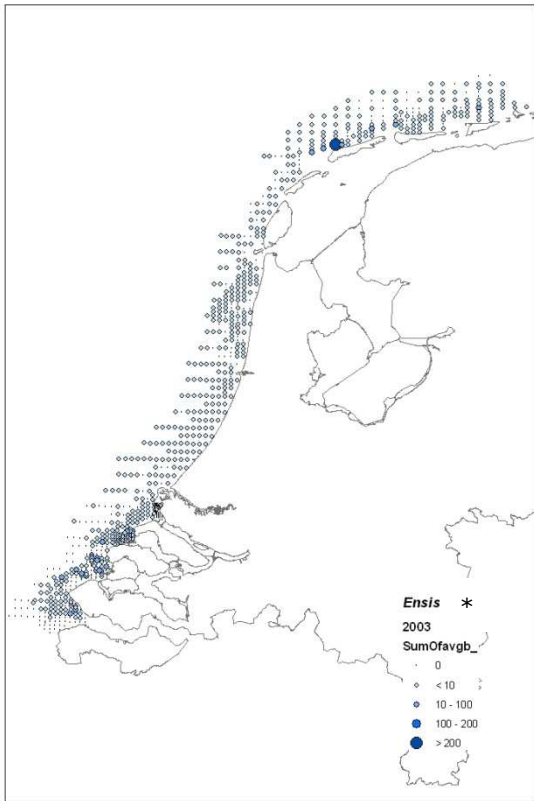


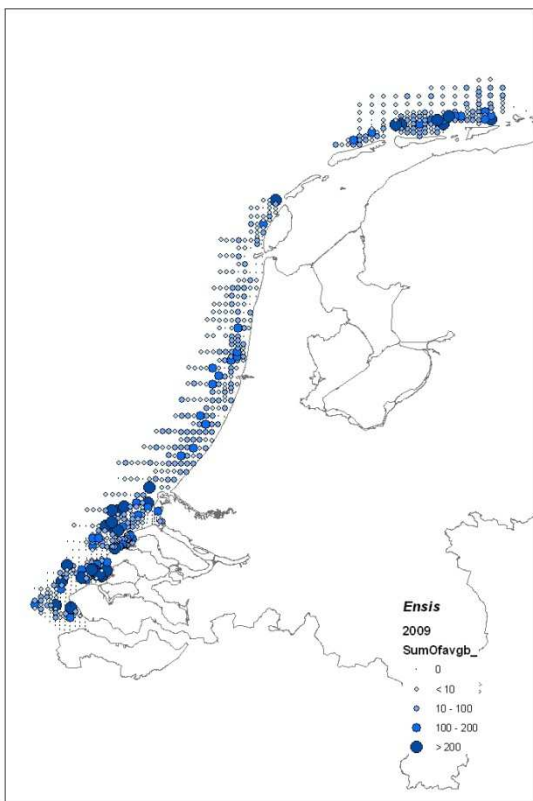
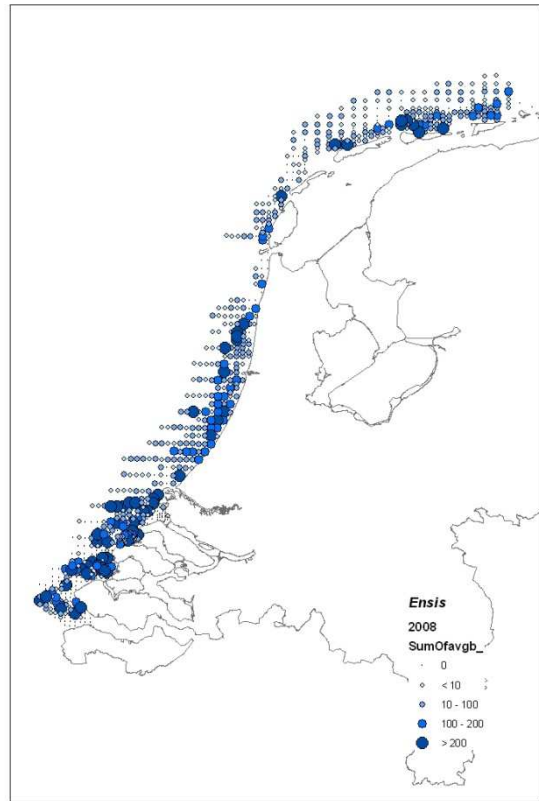
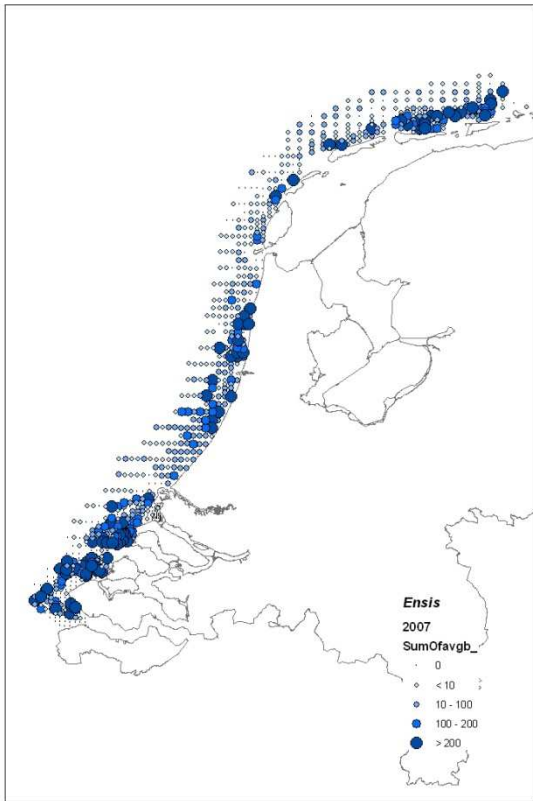




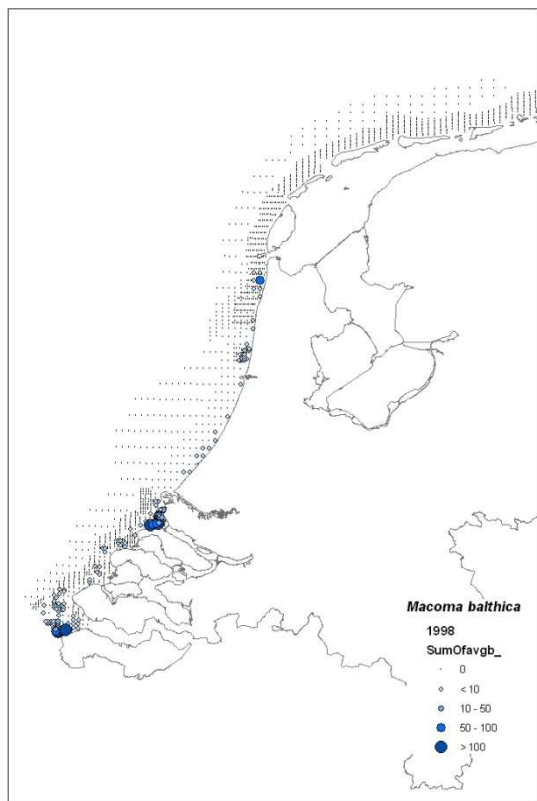
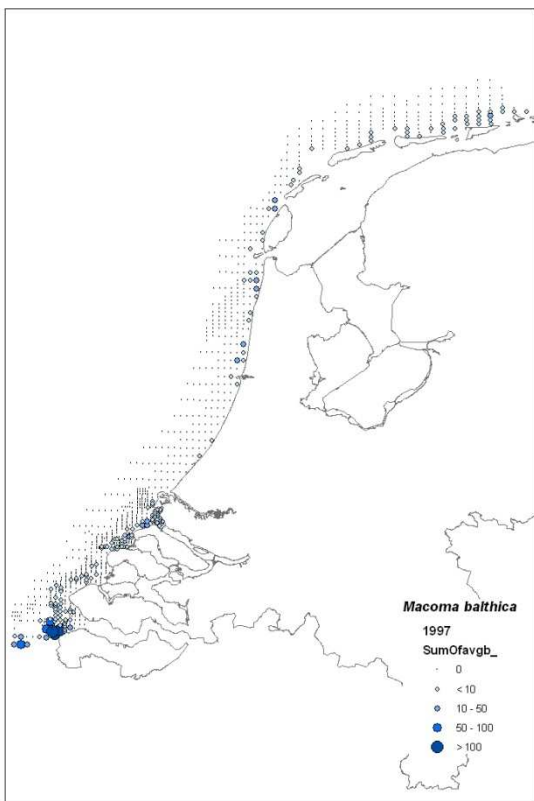
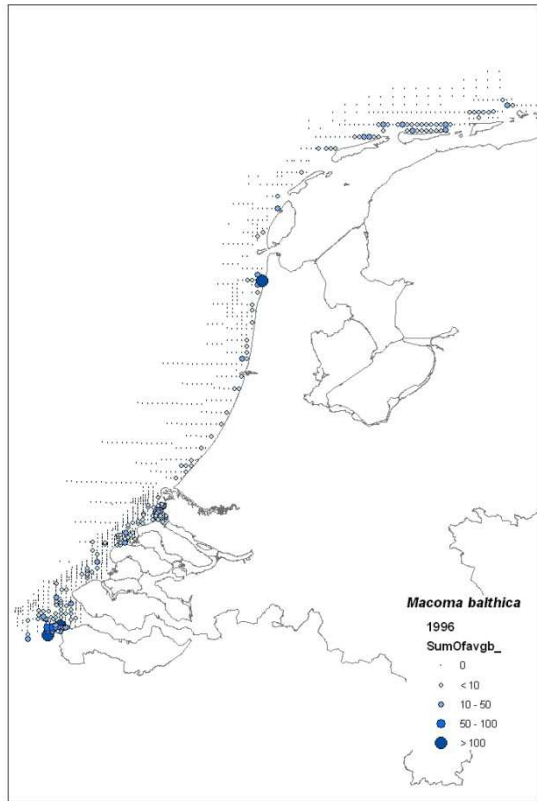
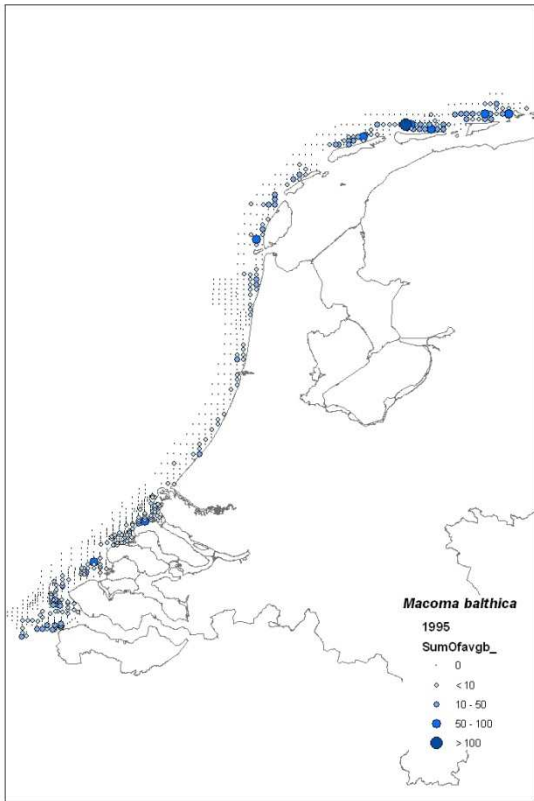


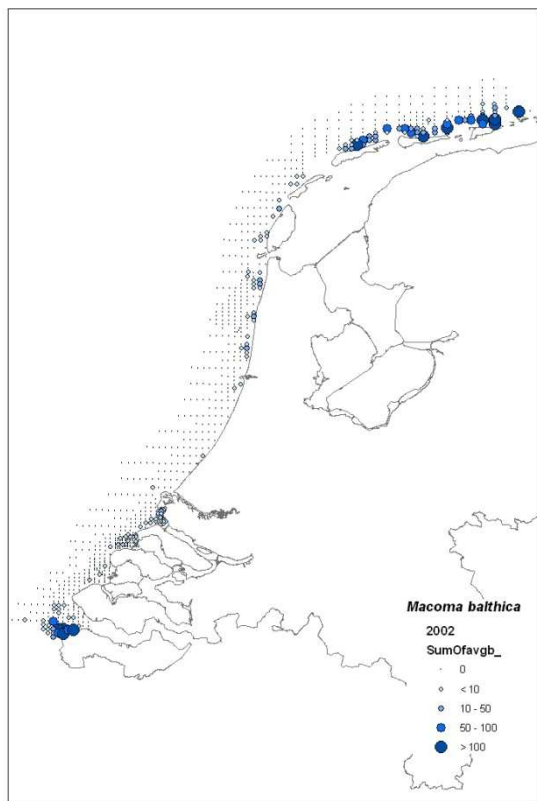
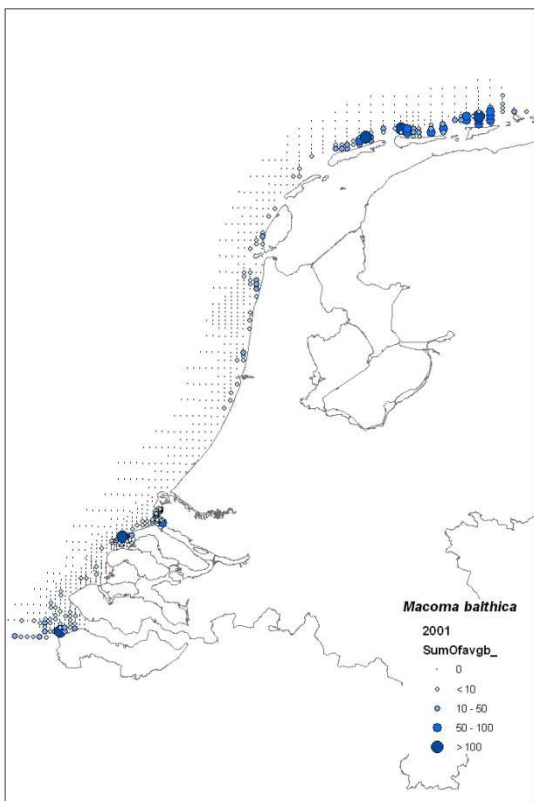
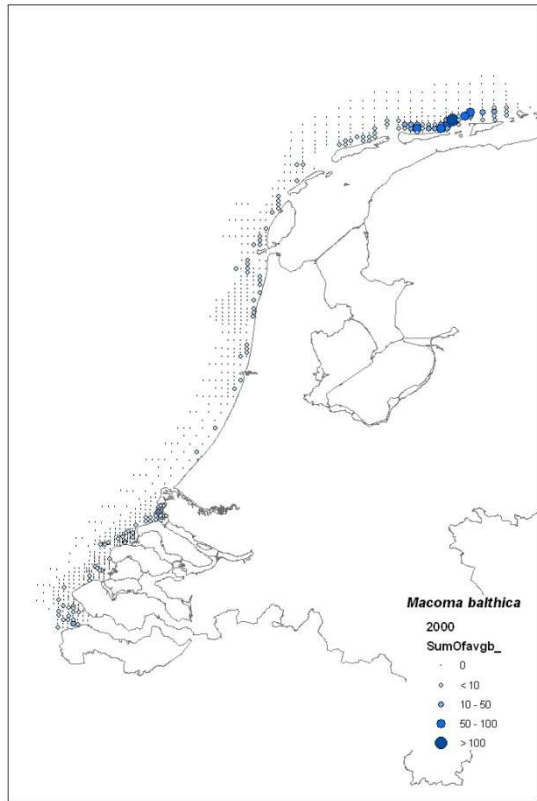
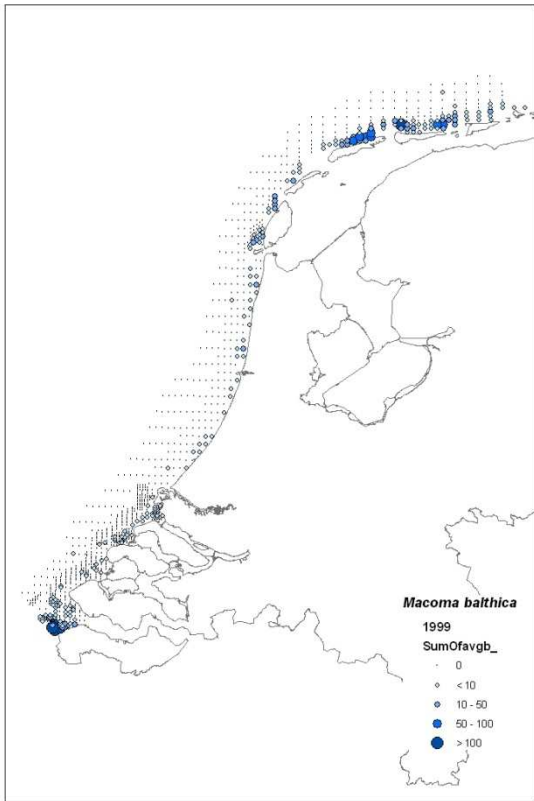


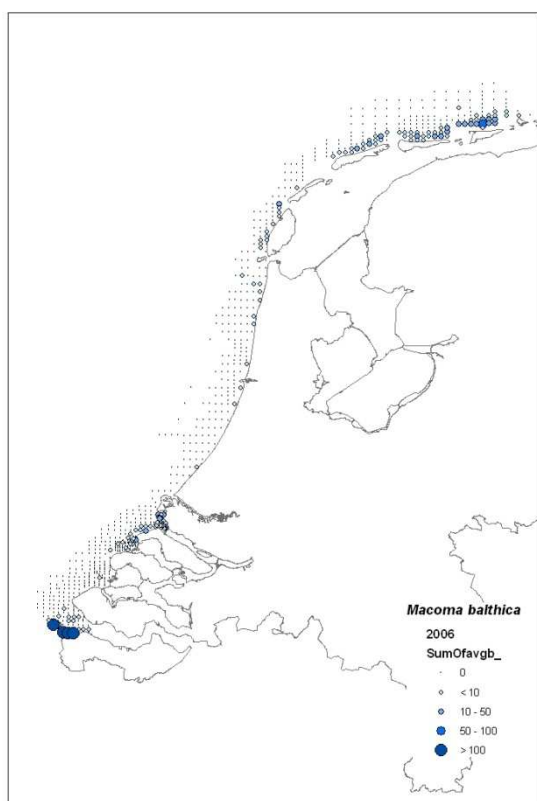
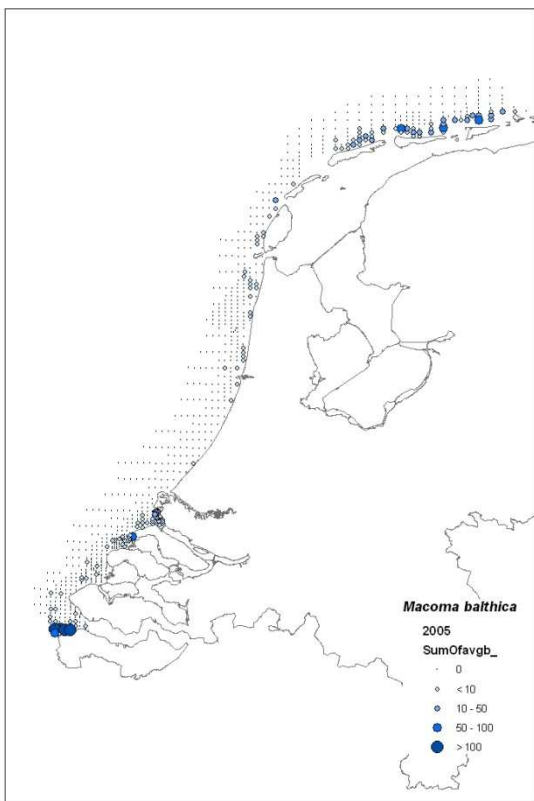
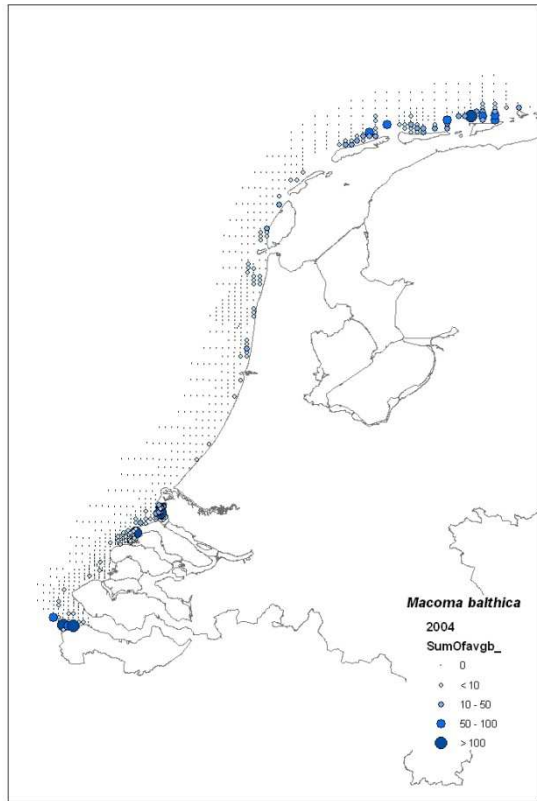
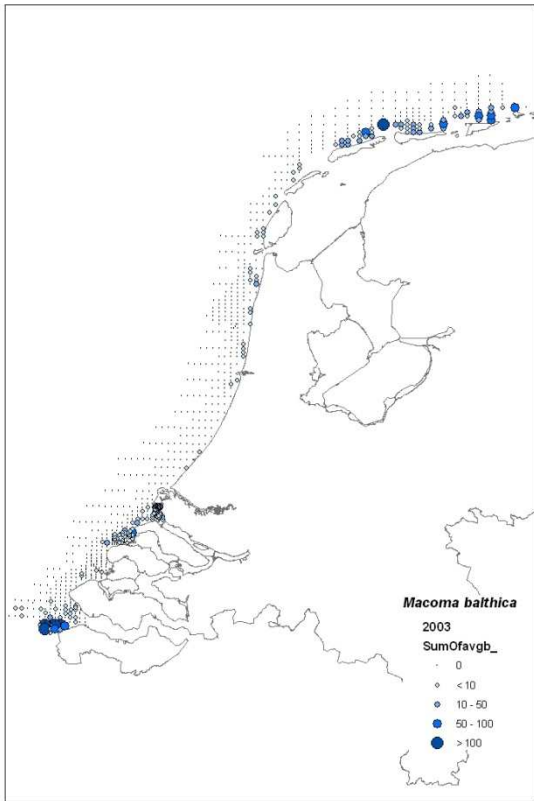


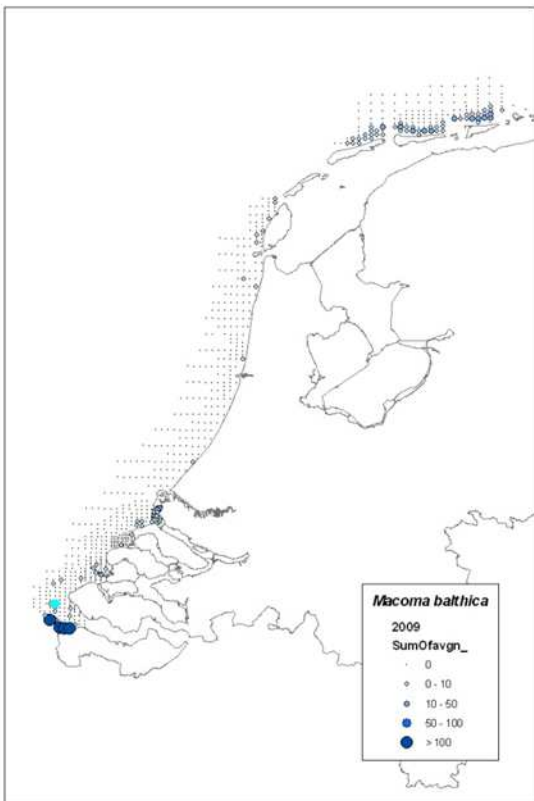
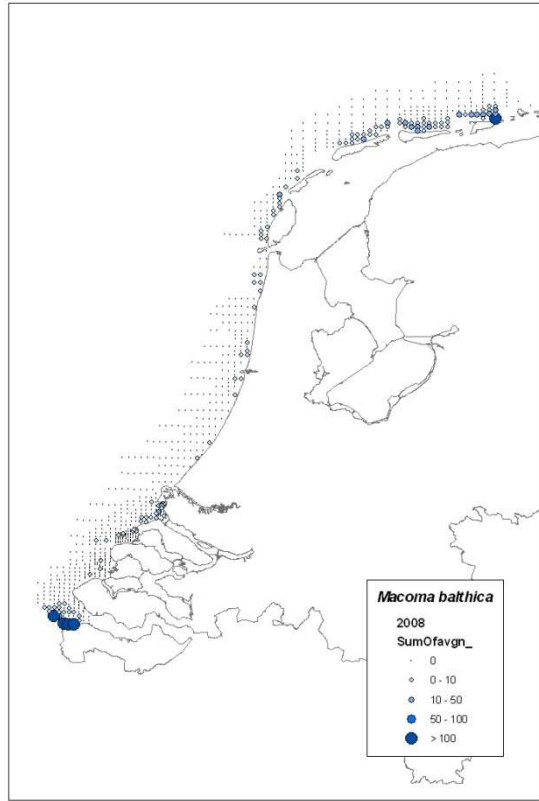
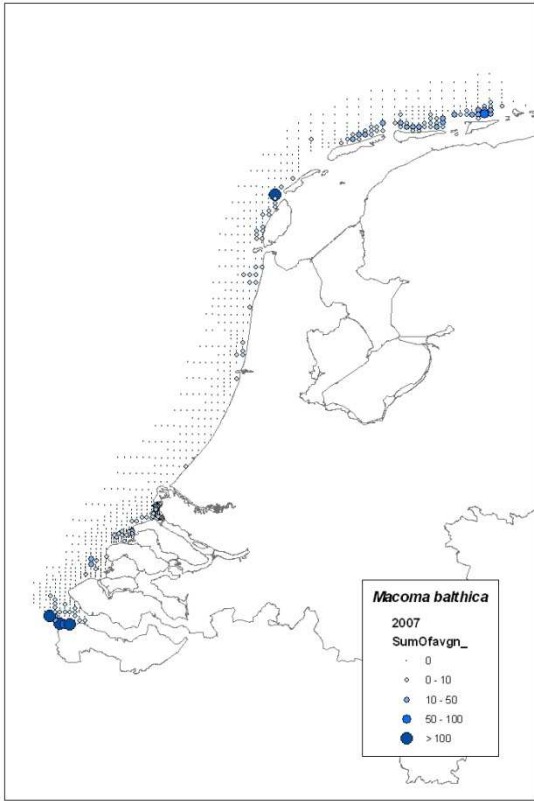


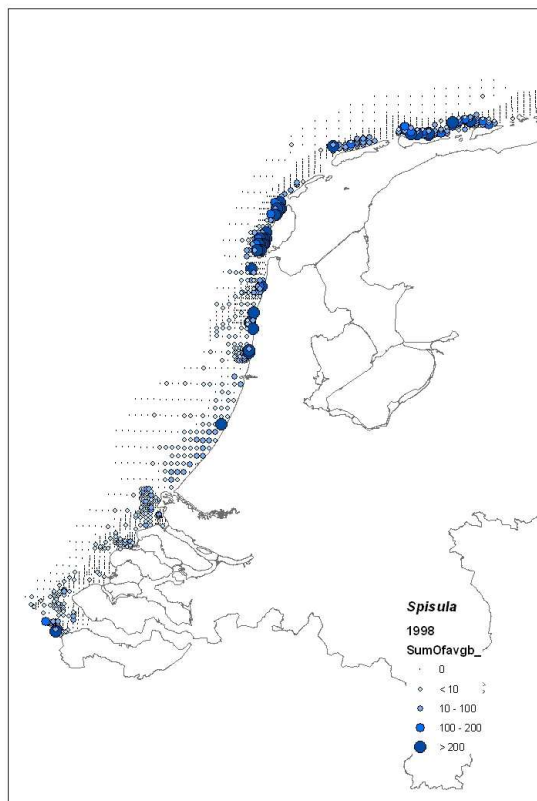
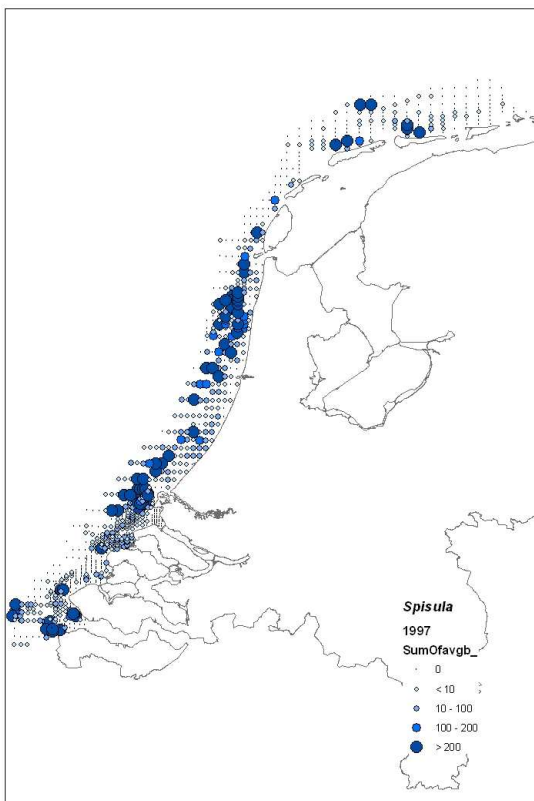
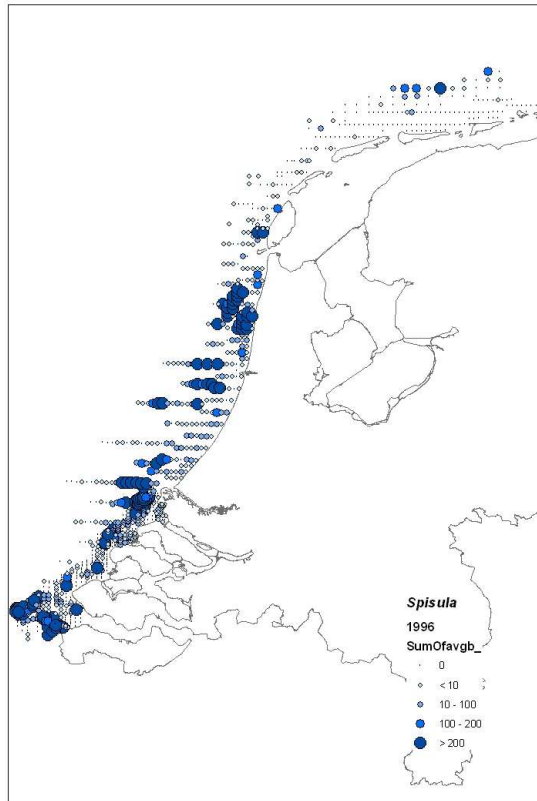
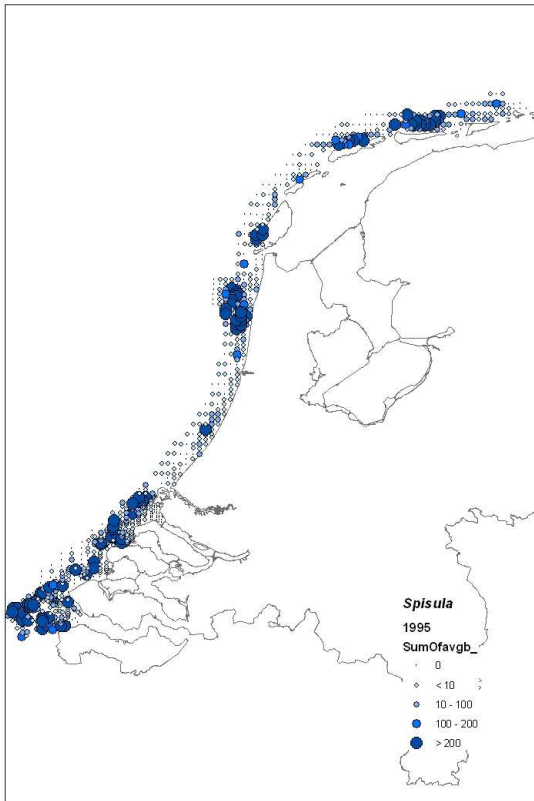
Voor *Ensis* is niet jaarlijks de biomassa bepaald. In 2000, 2001 en 2003 (aangeduid met * in legende) is de biomassa berekend op basis van een biomassa bepaling van een beperkt aantal individuen die in dat jaar zijn gewogen. Voor de jaren 1998, 1999, 2002, 2004, 2005 en 2006 (symbolen in het groen) is een berekening gemaakt waarbij de dichtheden zijn vermenigvuldigd met een vaste conversiefactor van 9.9. Deze factor is gebaseerd op een gemiddelde biomassa van een *Ensis* individu over de periode 1994-1997.

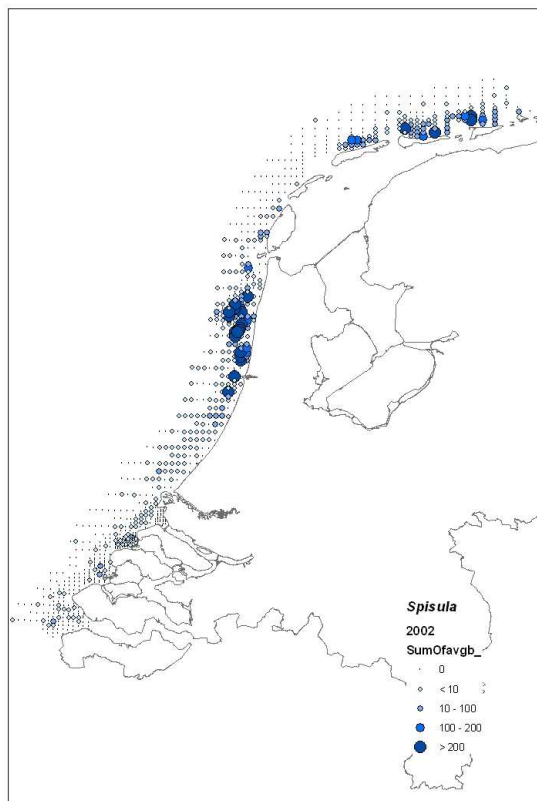
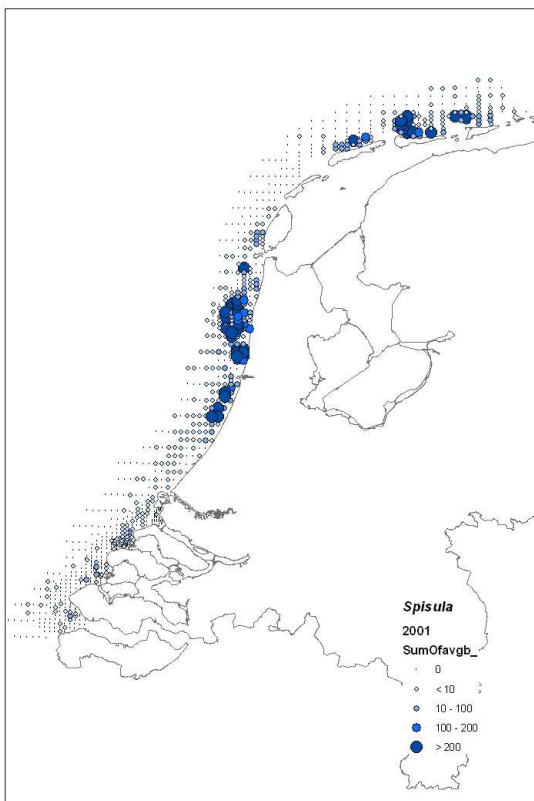
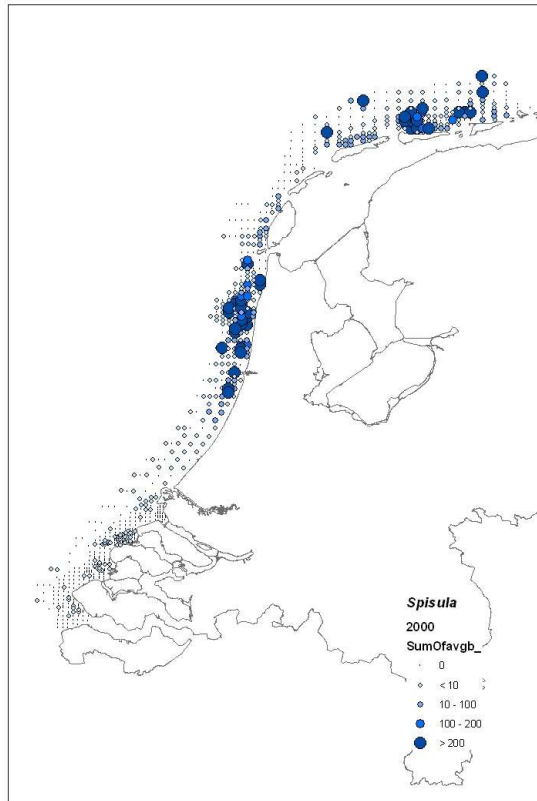
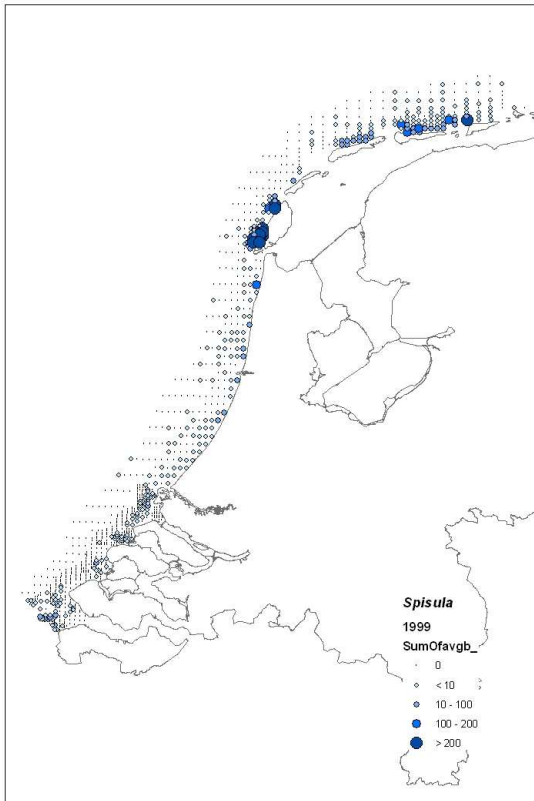


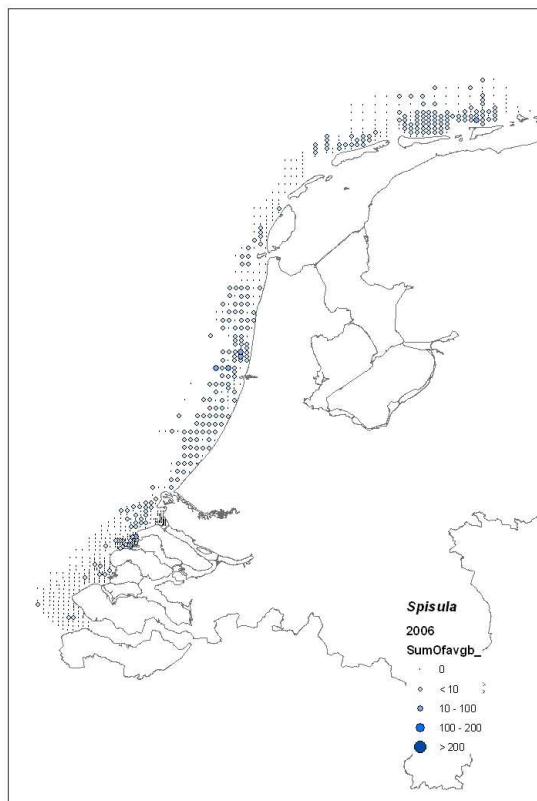
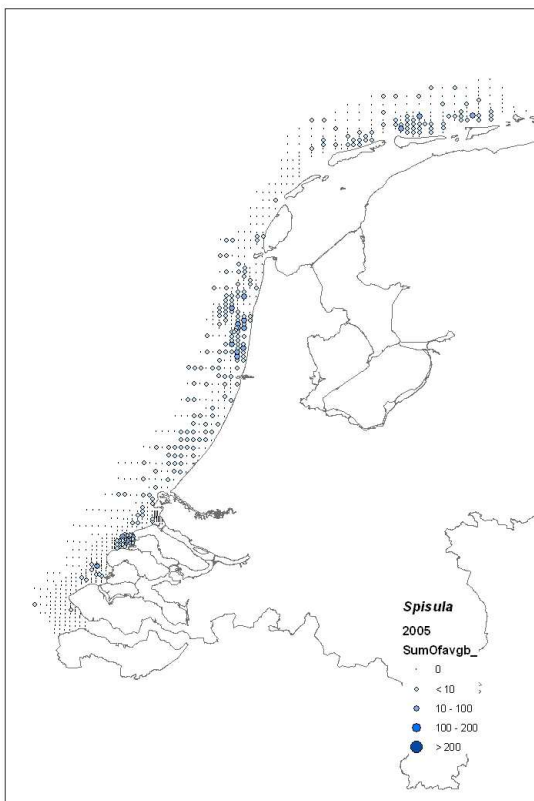
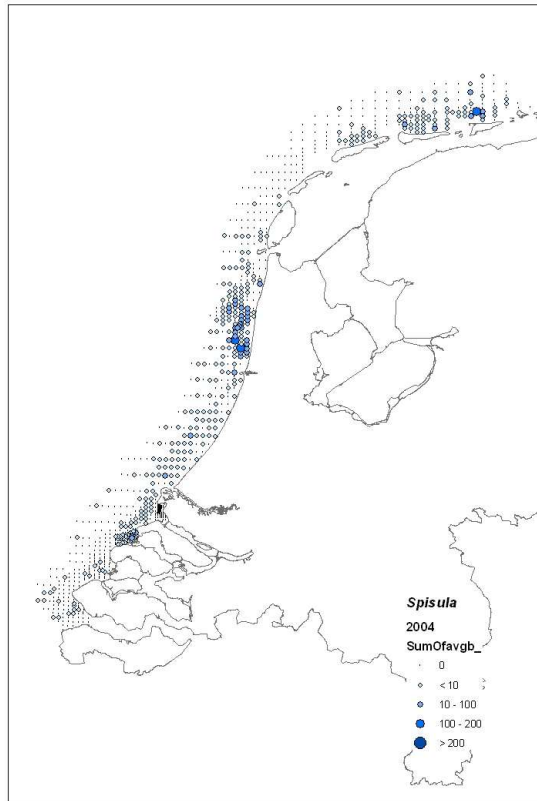
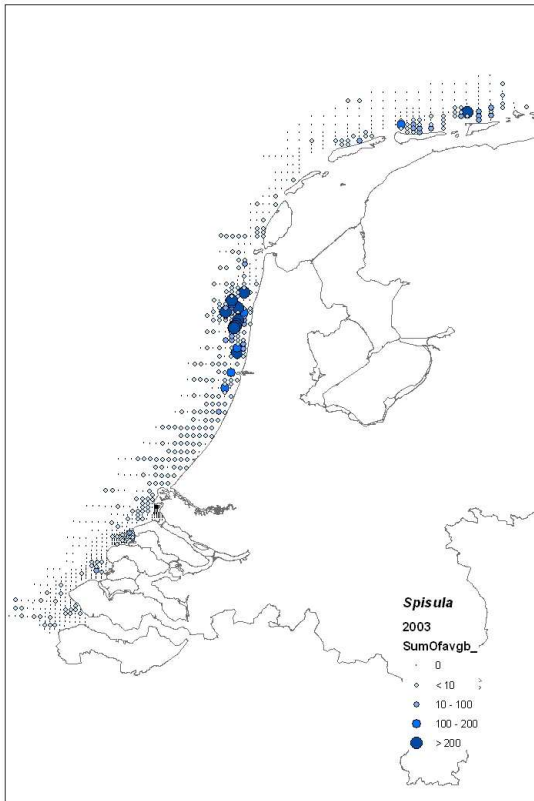


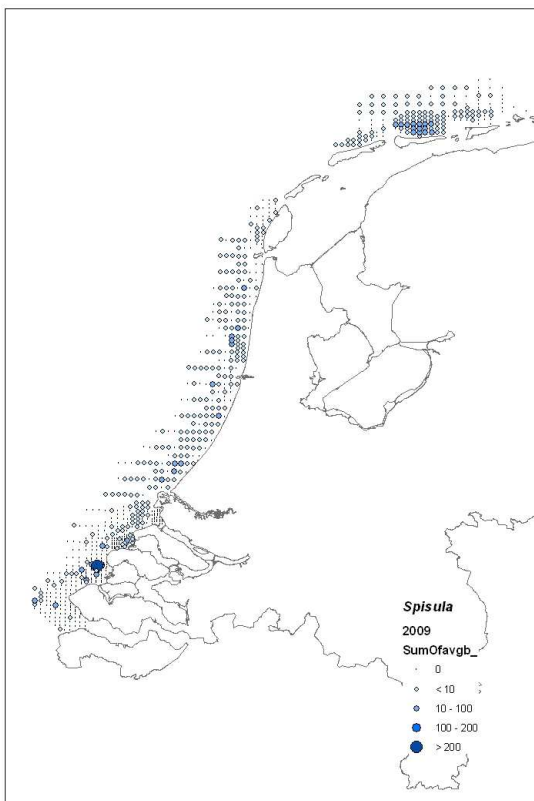
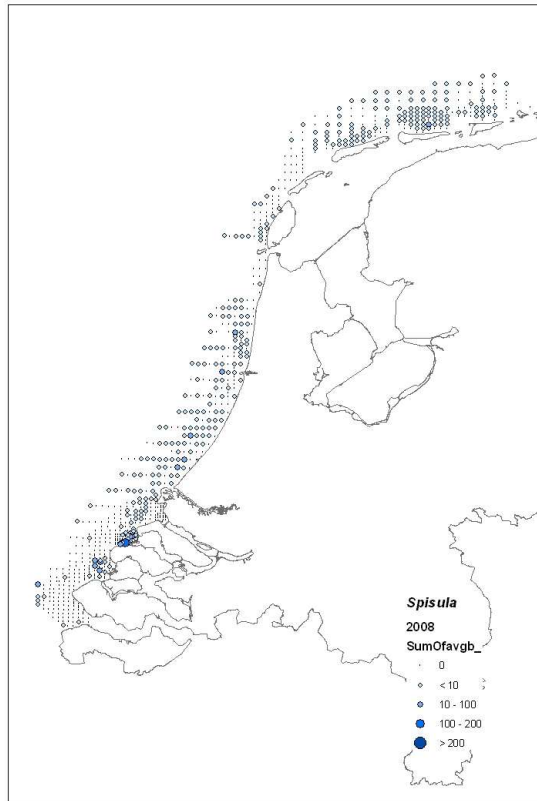
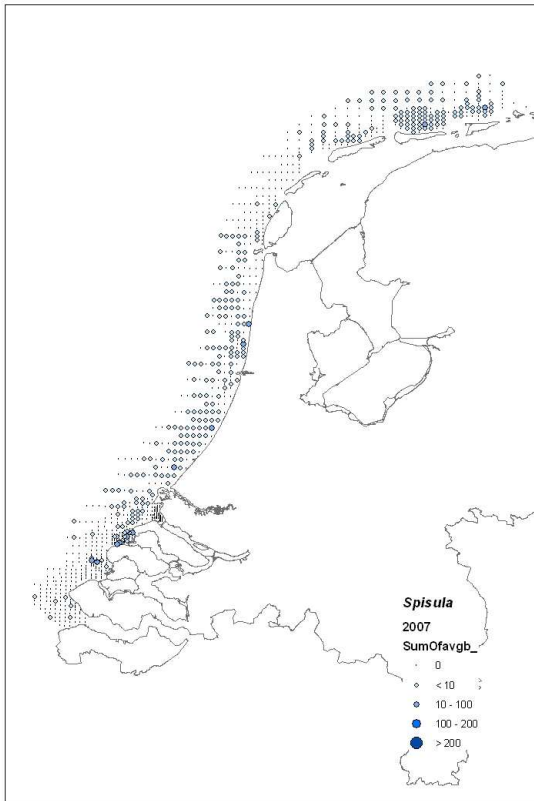


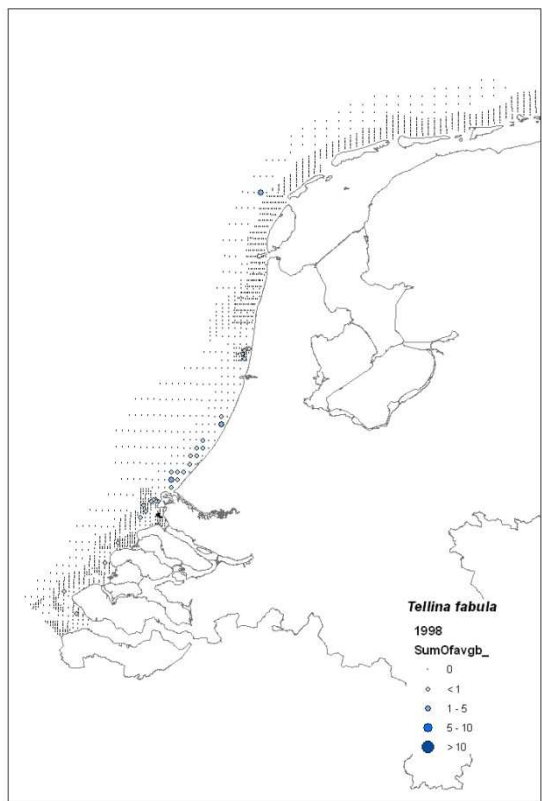
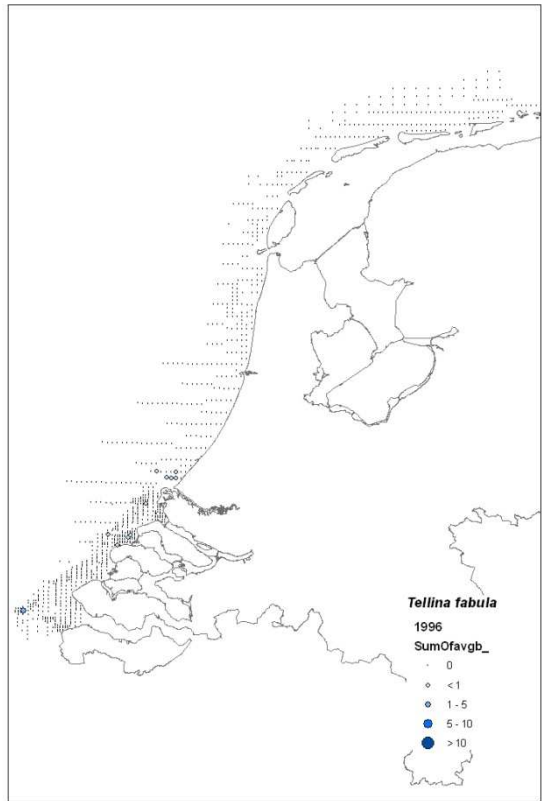
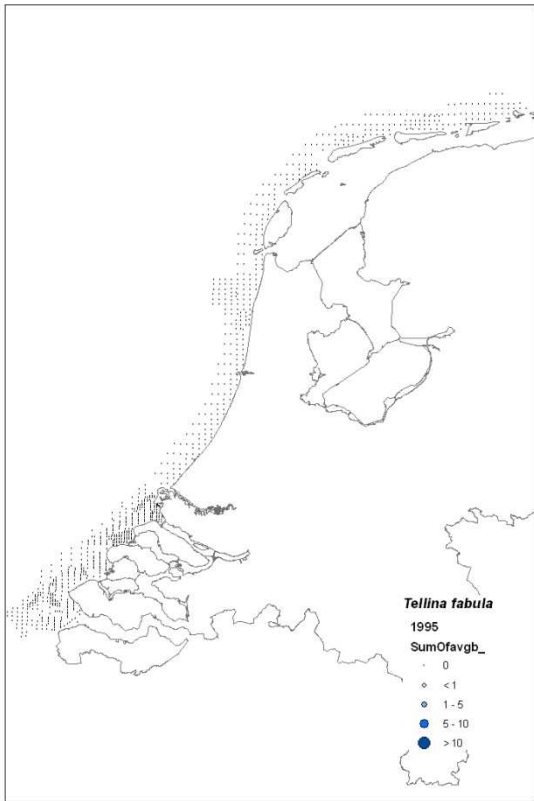


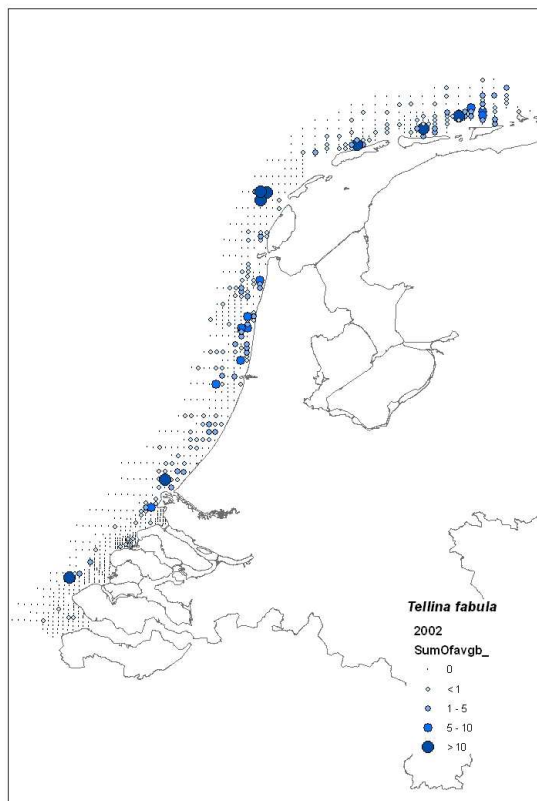
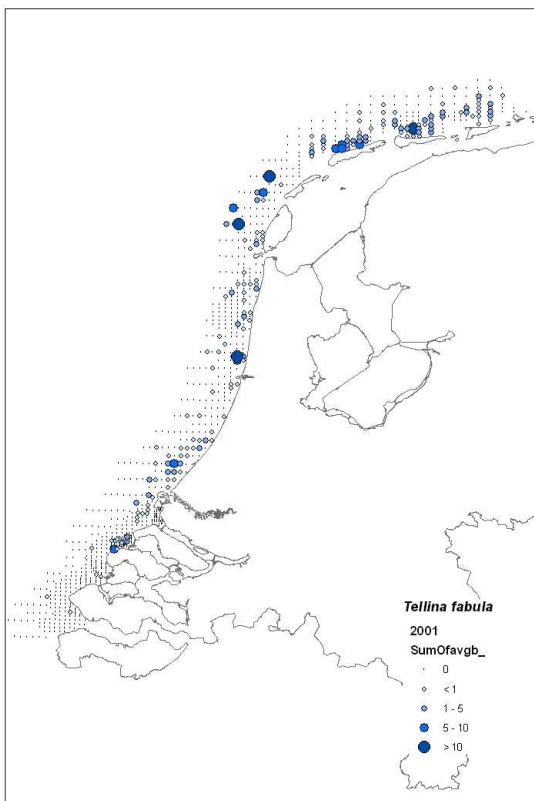
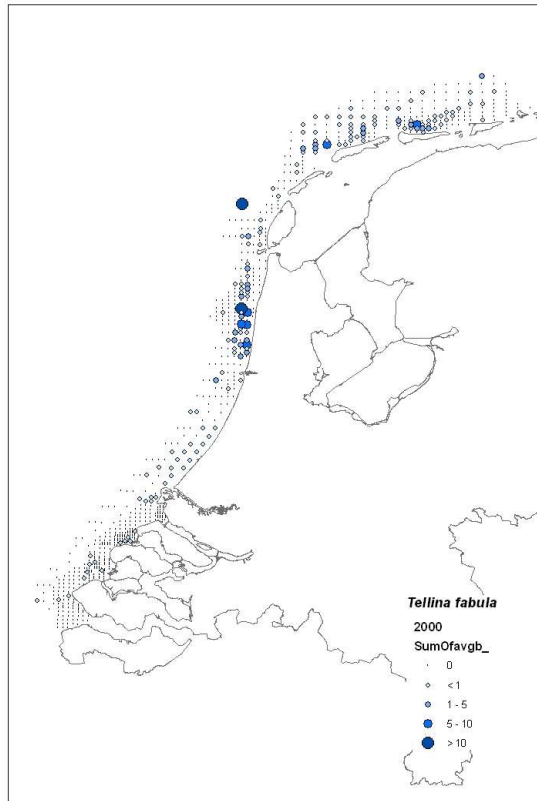
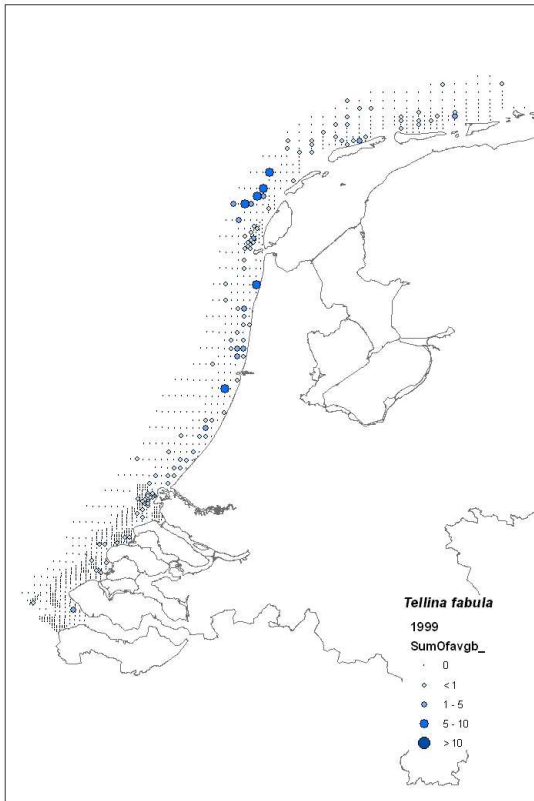


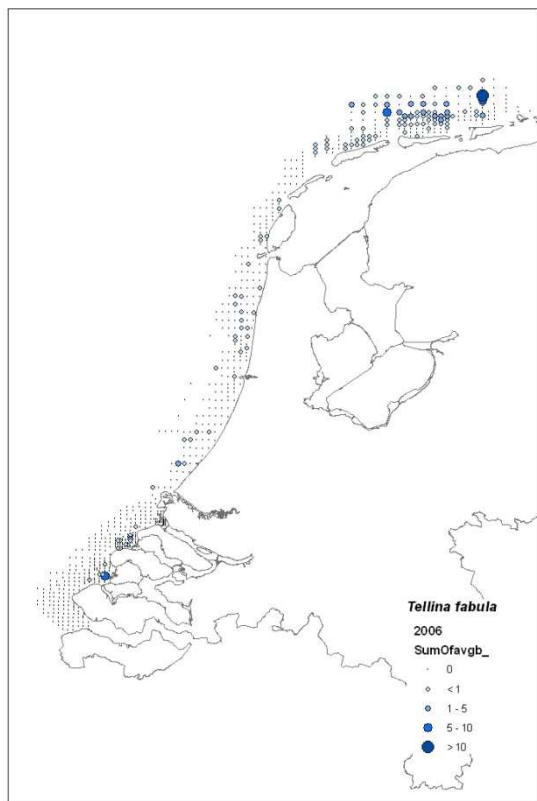
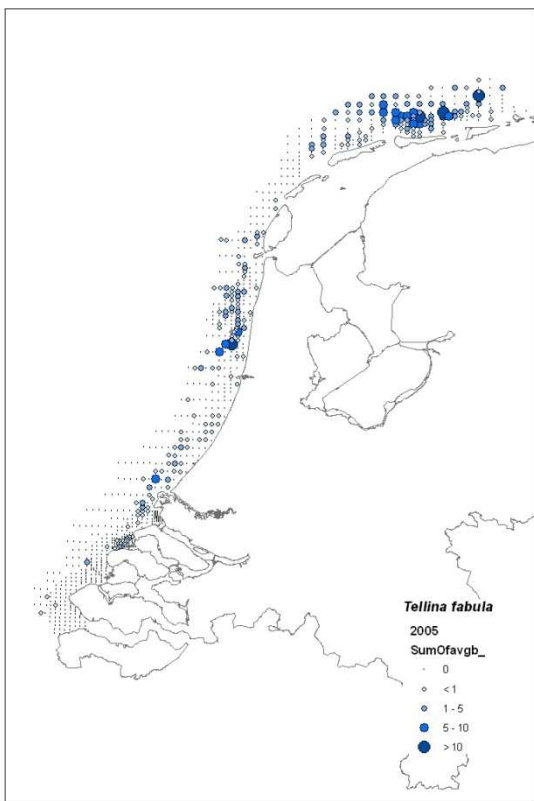
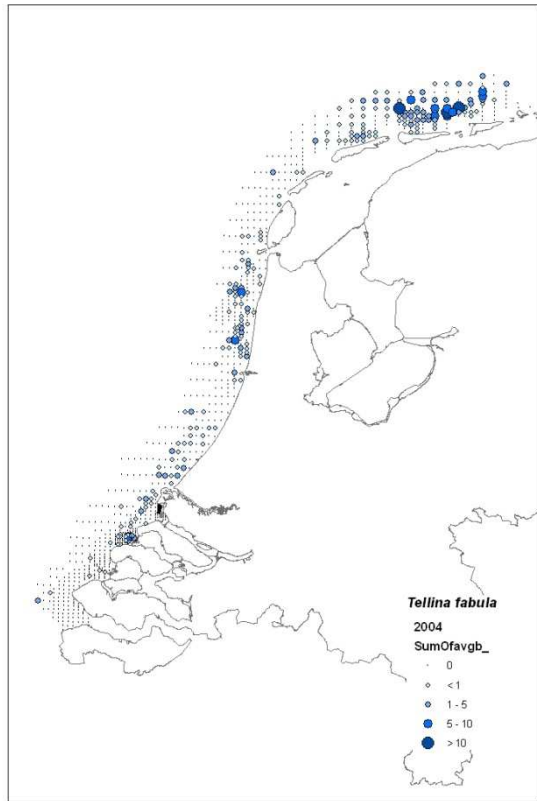
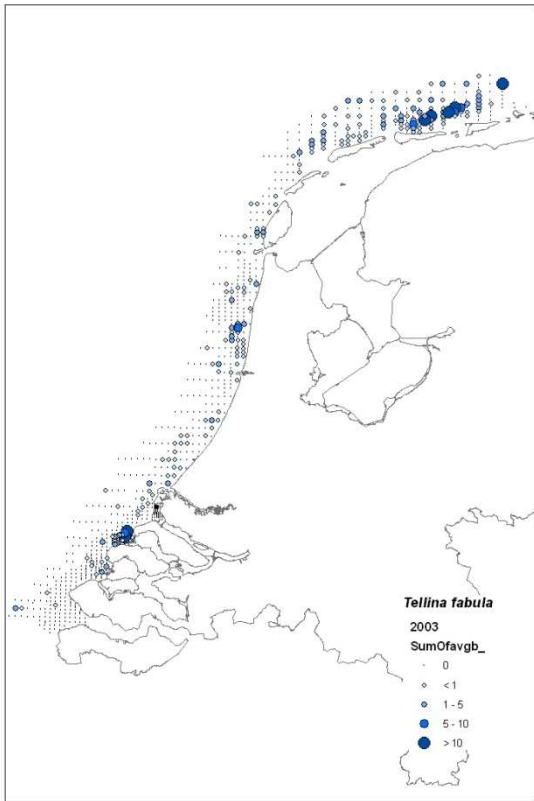


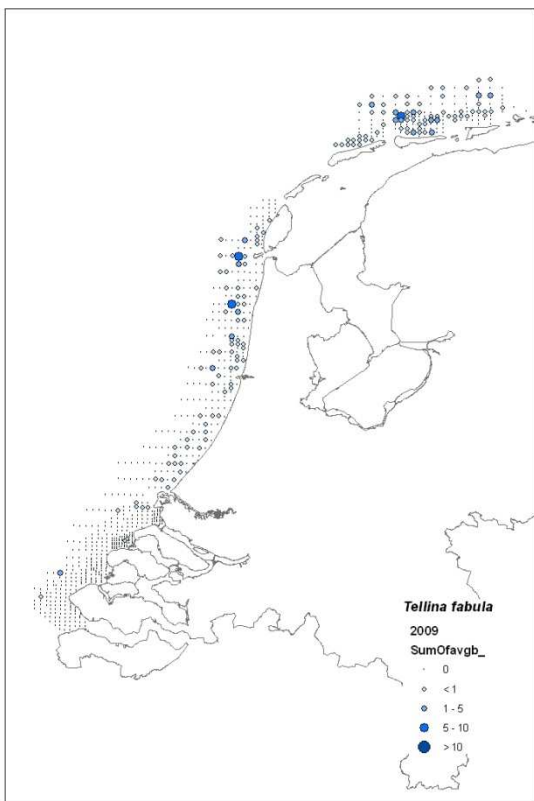
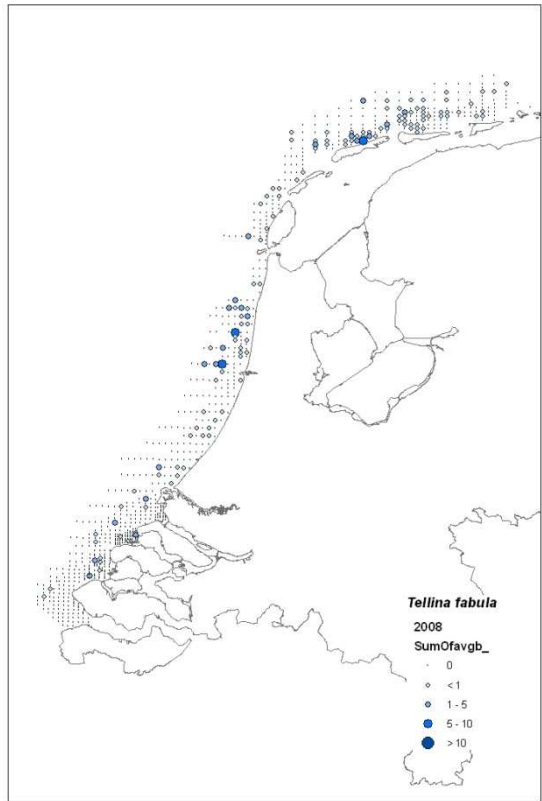
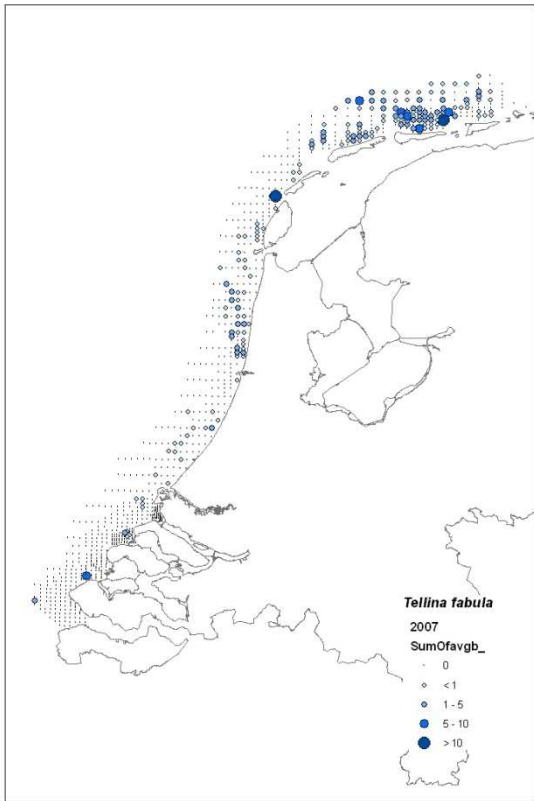






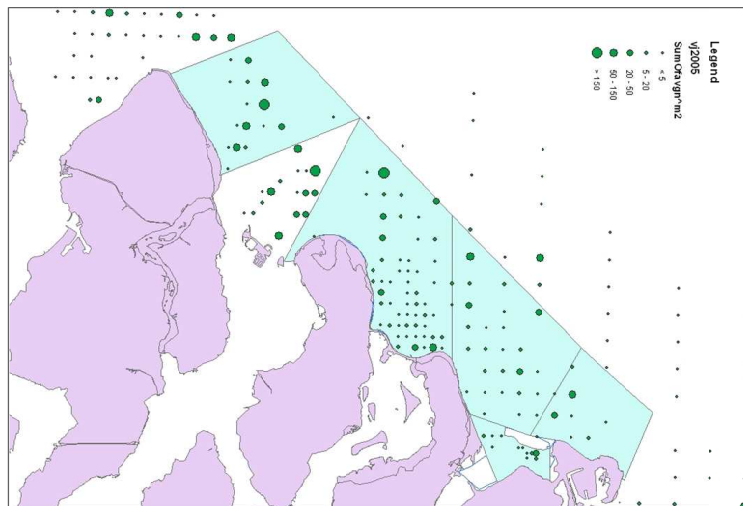
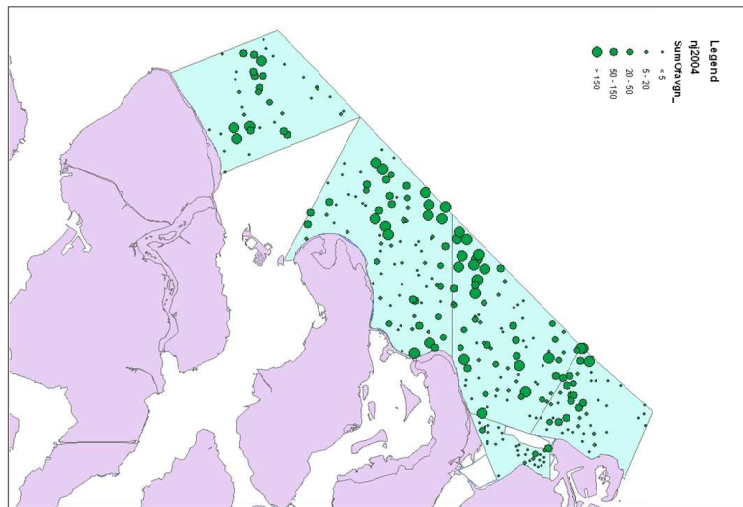
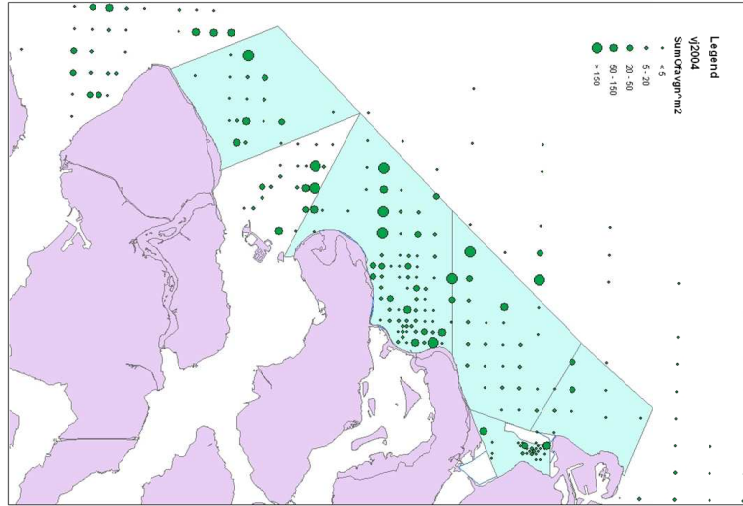


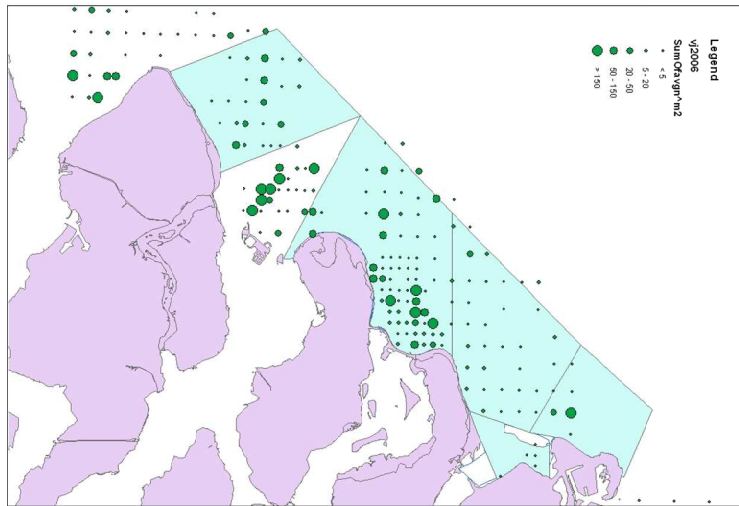
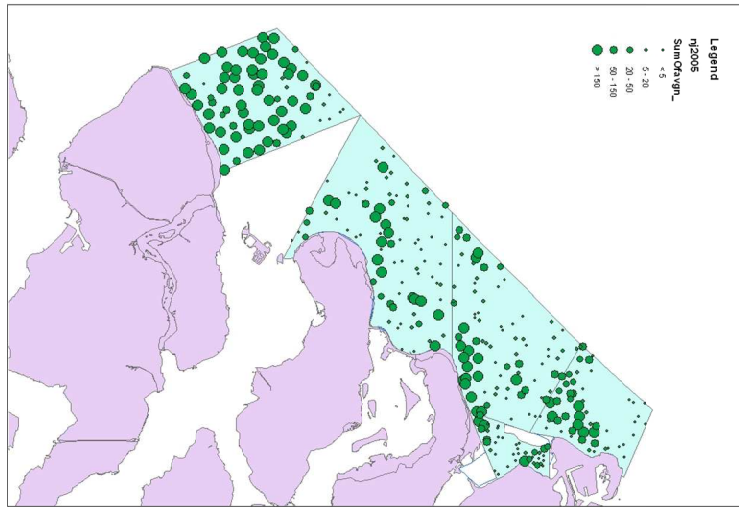




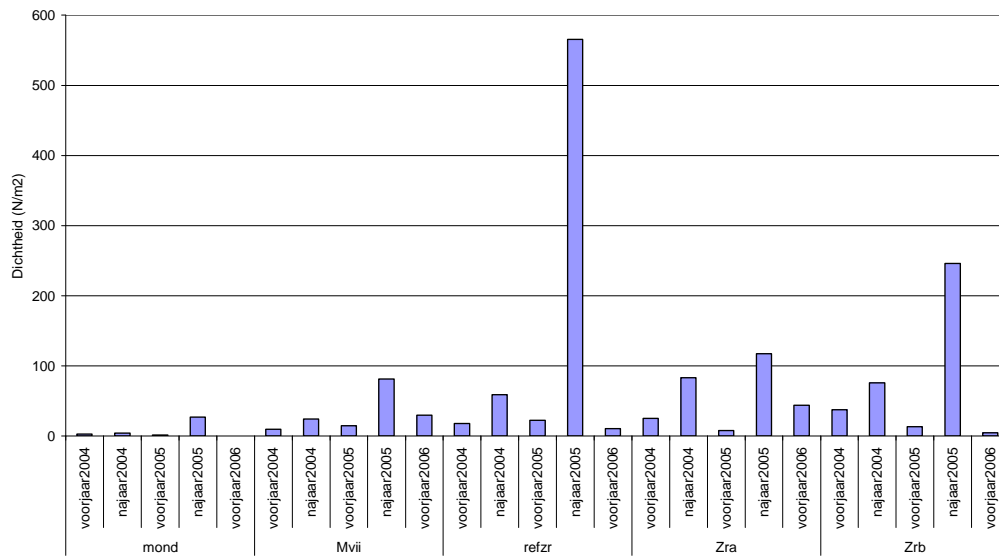
Bijlage C: Voorjaarsbestanden versus najaarsbestanden

Ensis sp.

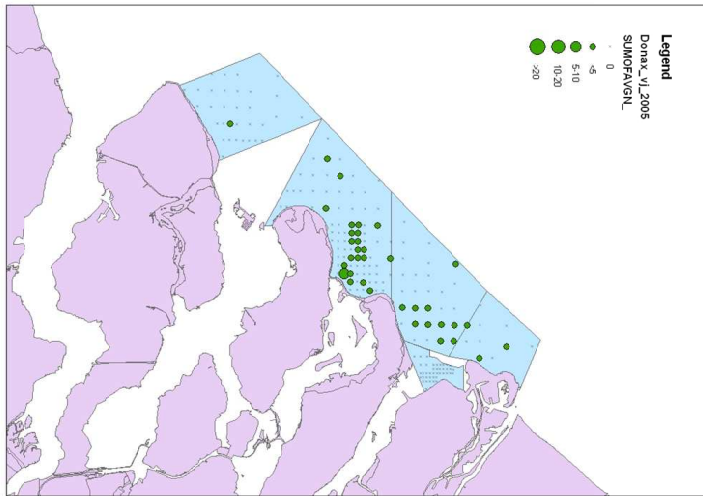
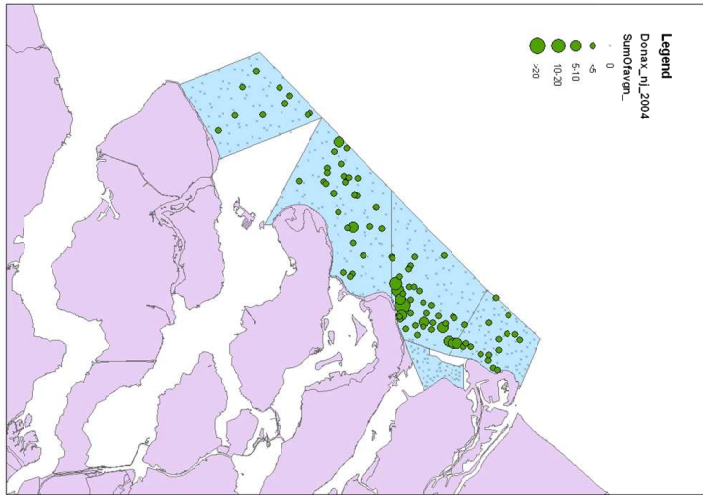
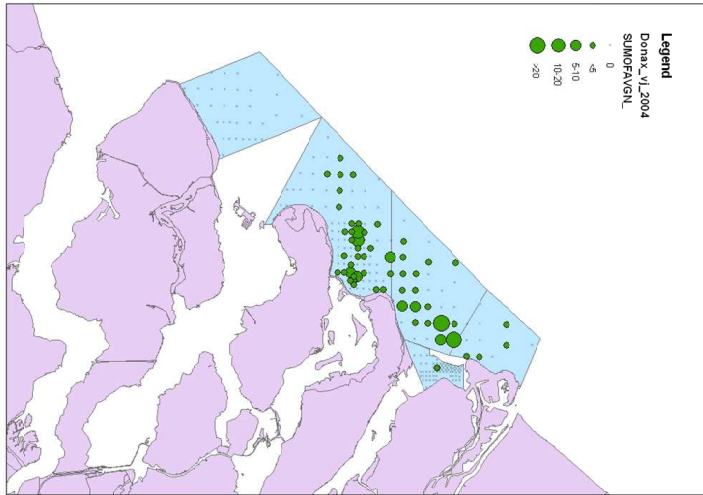


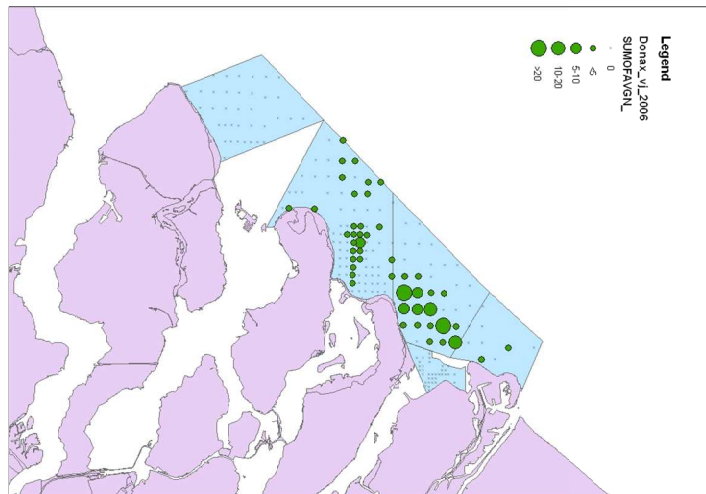
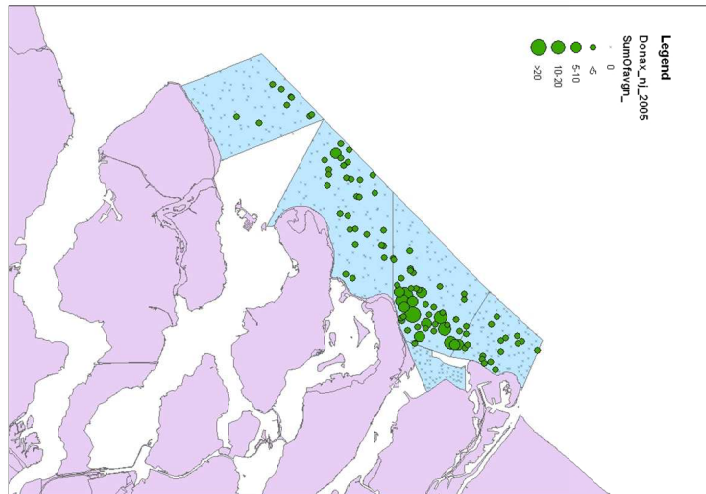


Ensis

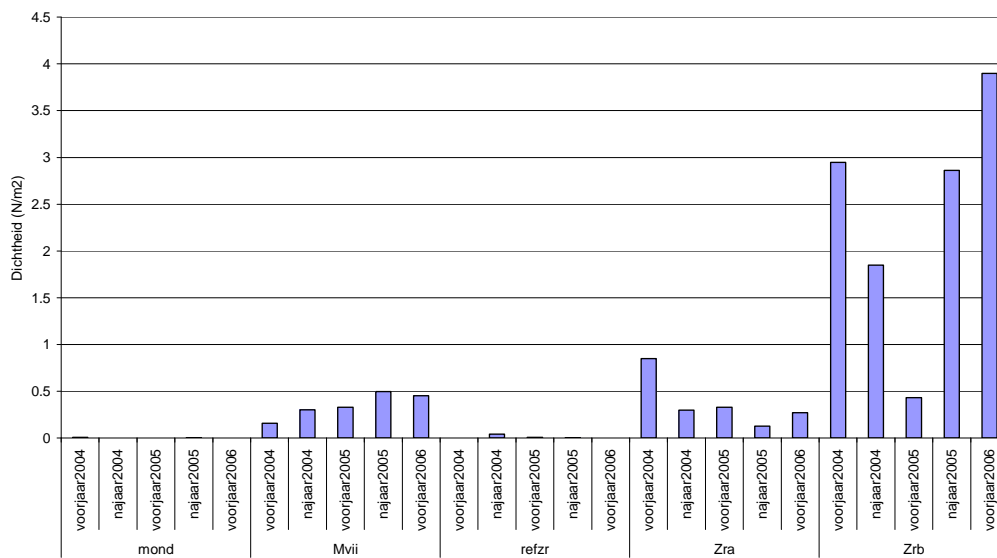


Donax vittatus

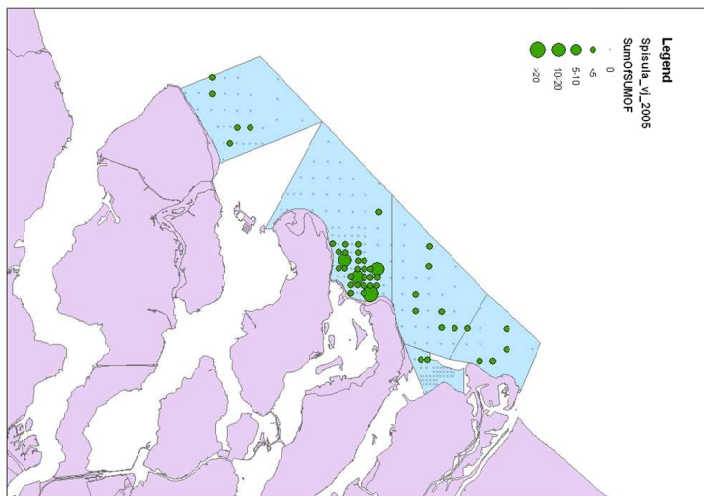
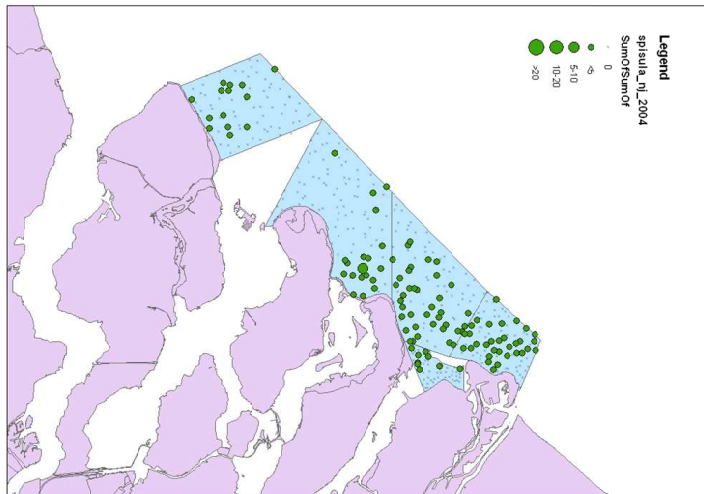
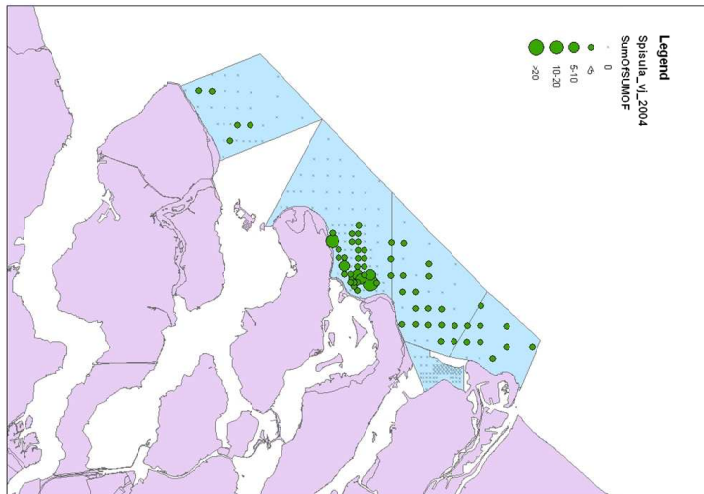


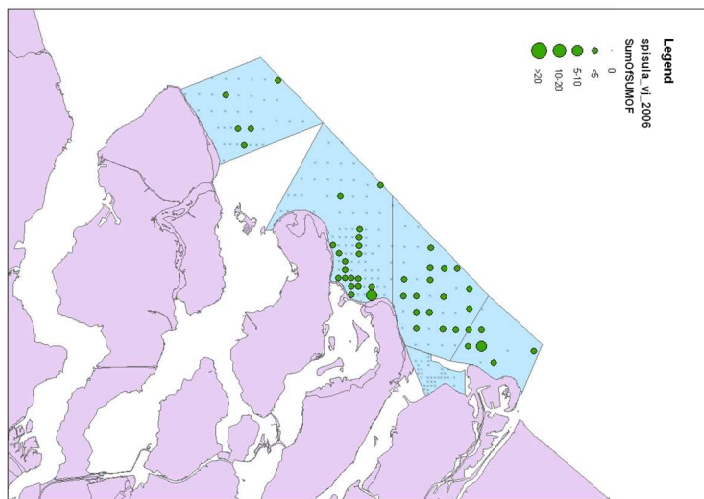
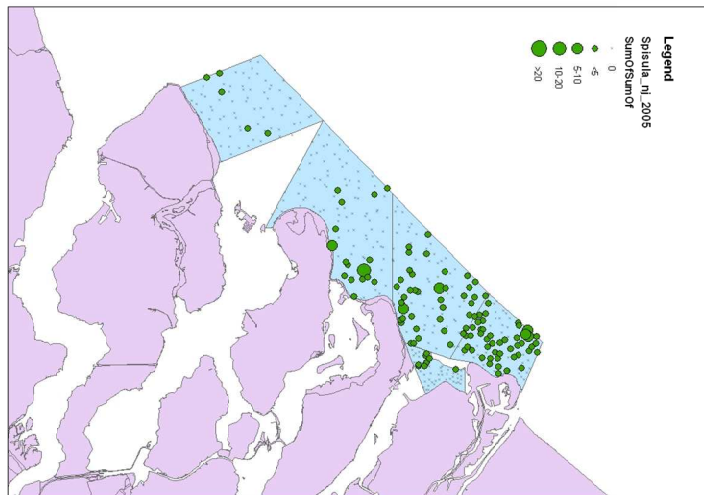


Donax vittatus

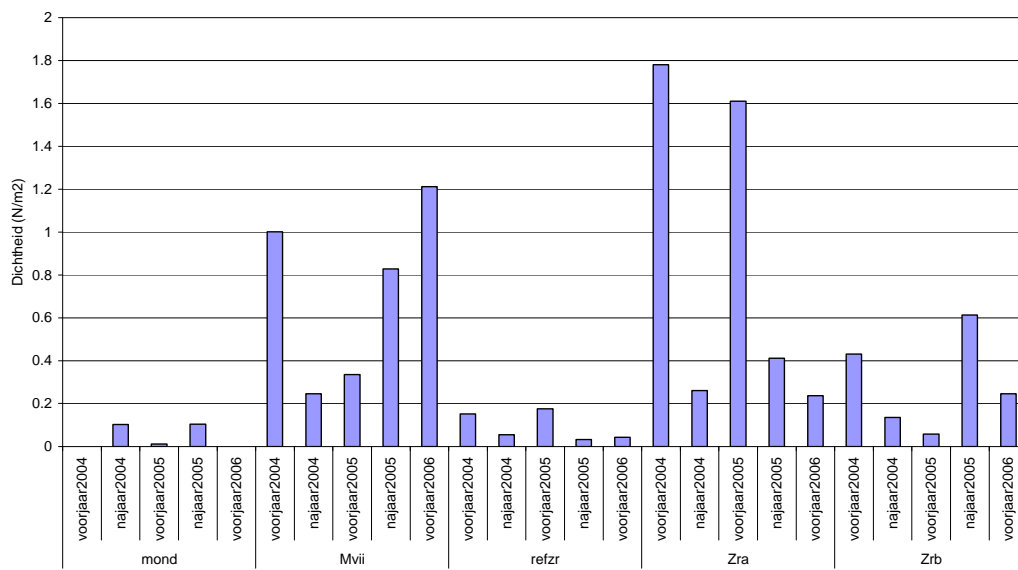


Spisula subtruncata

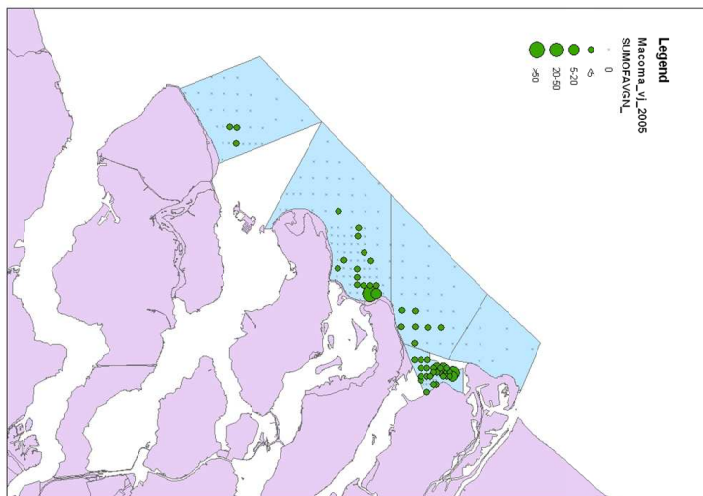
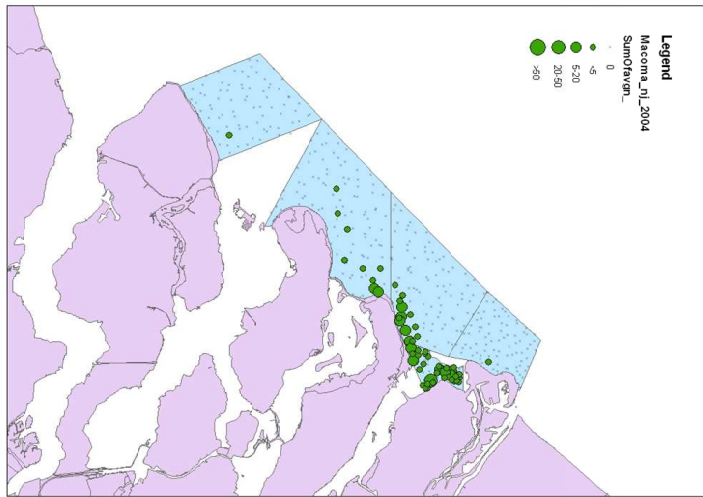
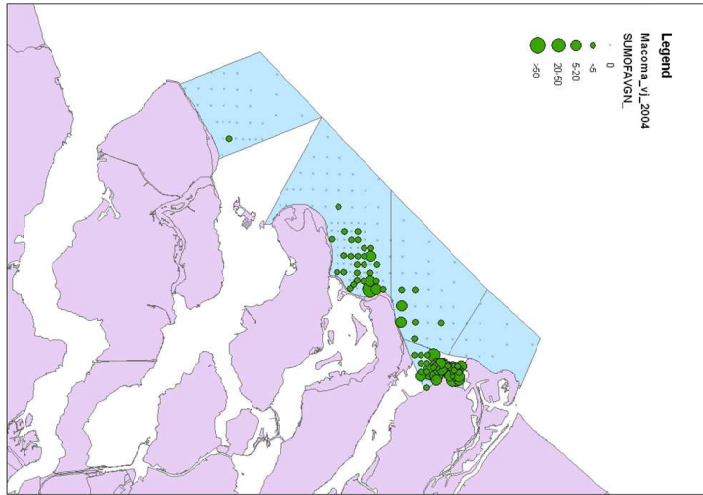


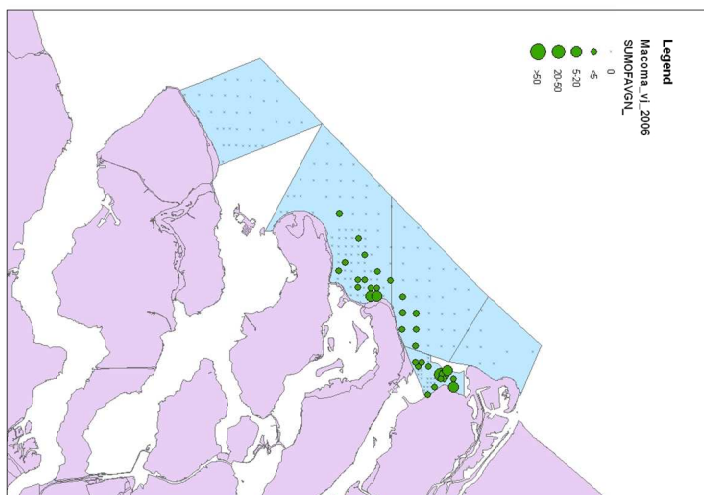
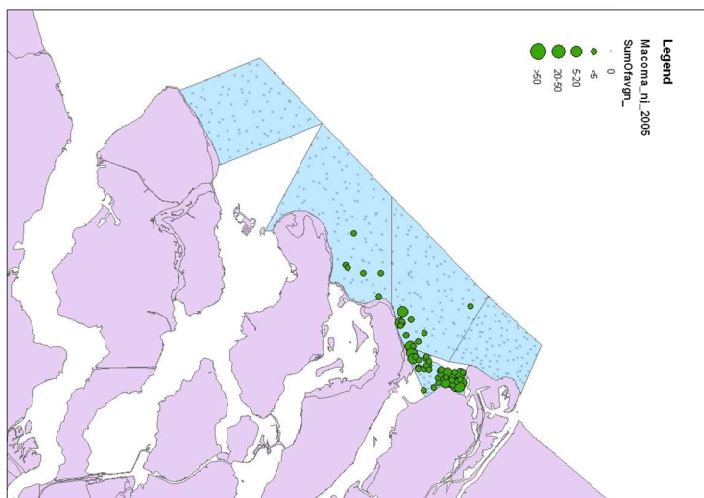


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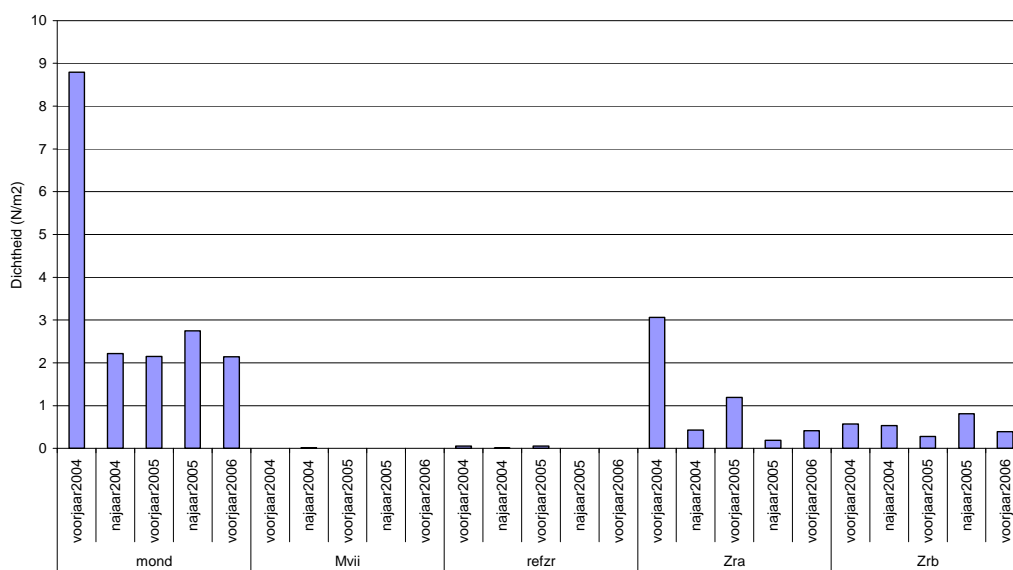


Macoma balthica

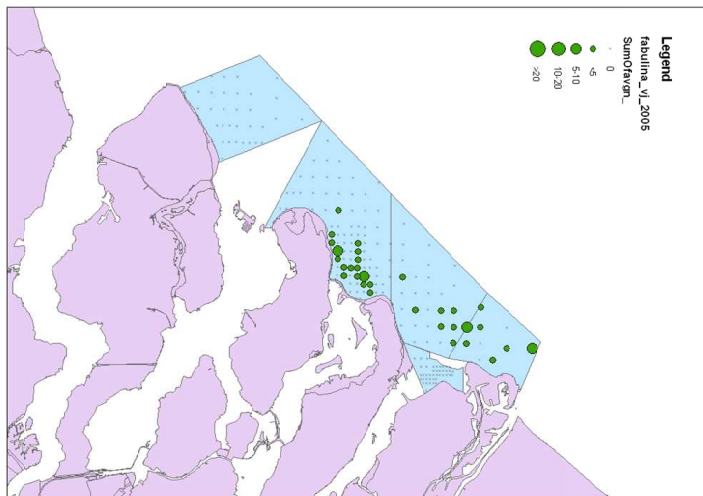
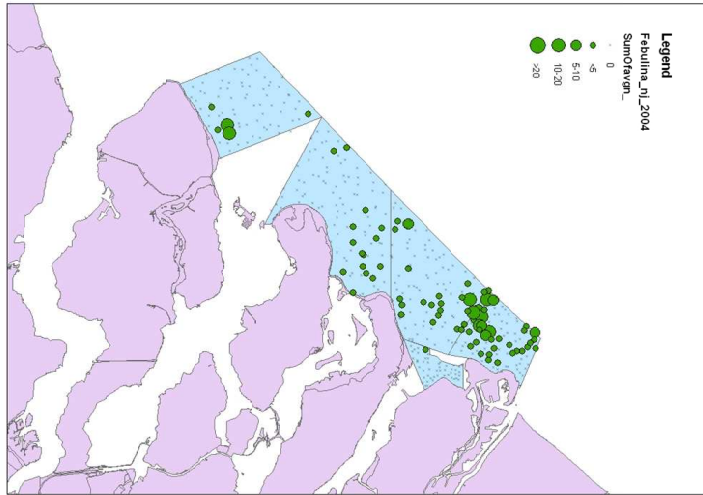
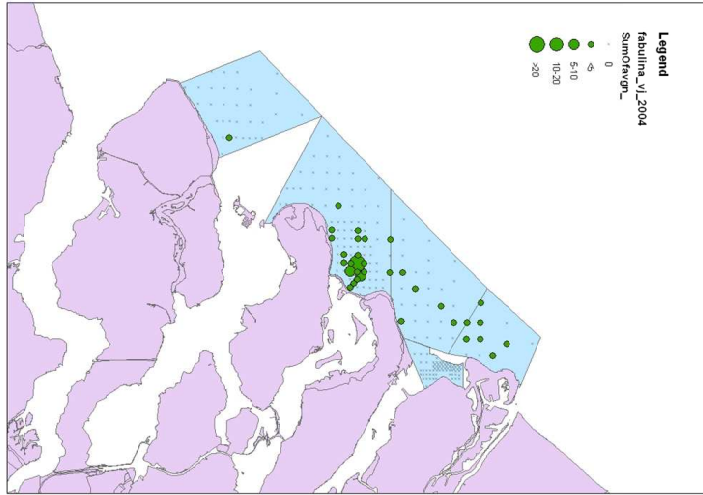


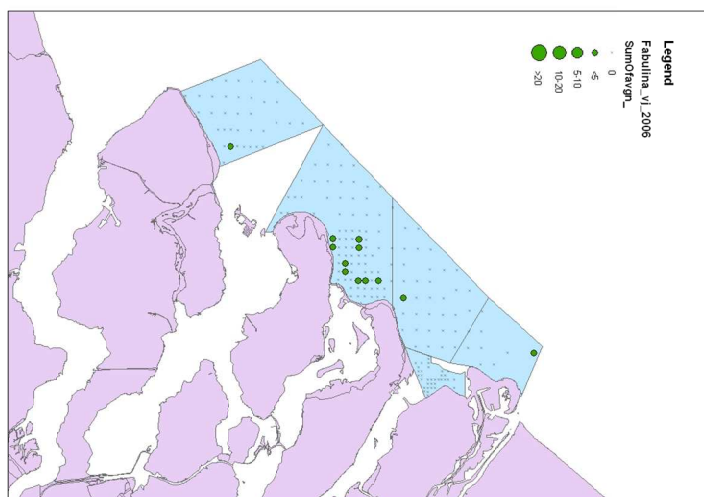
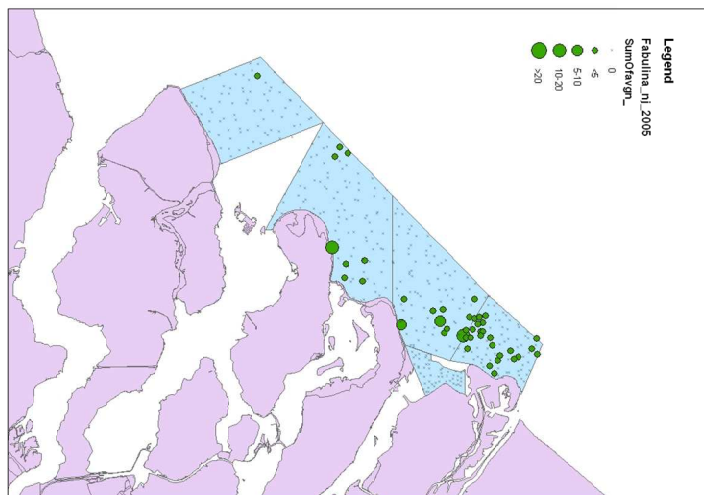


Macoma balthica

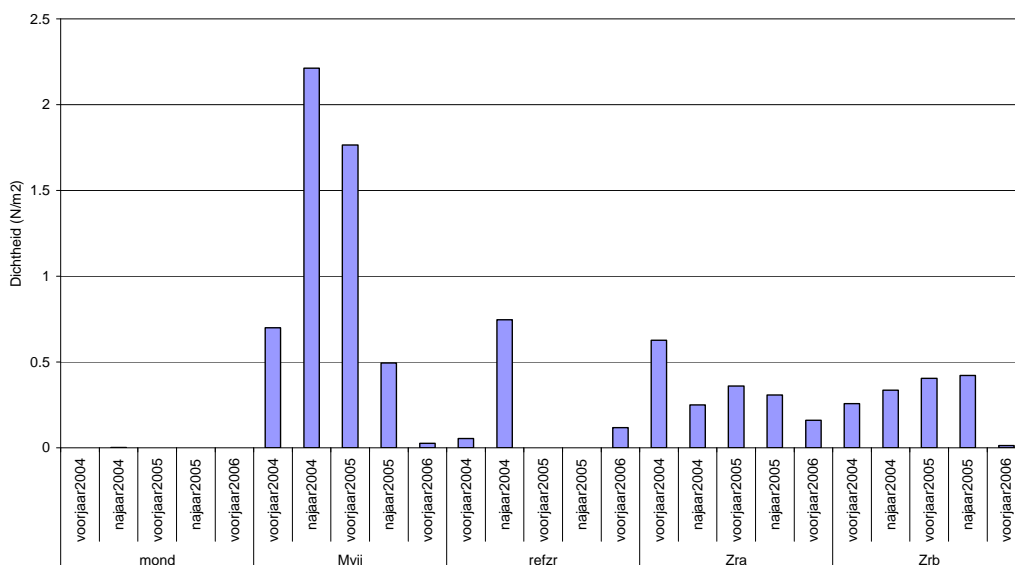


Tellina fabula





Fabulina fabula



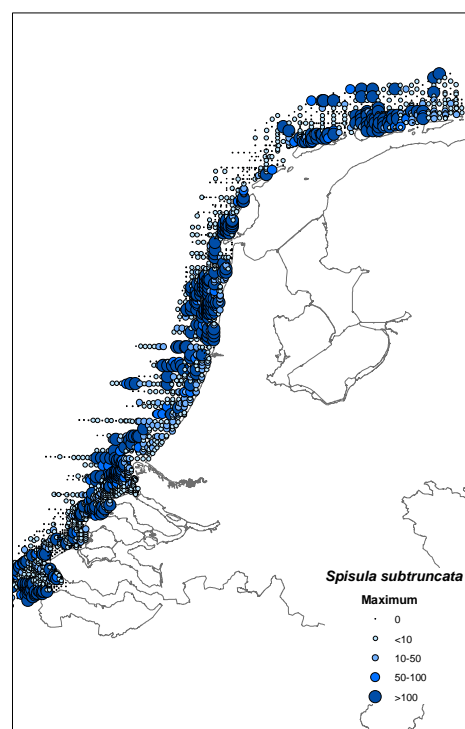
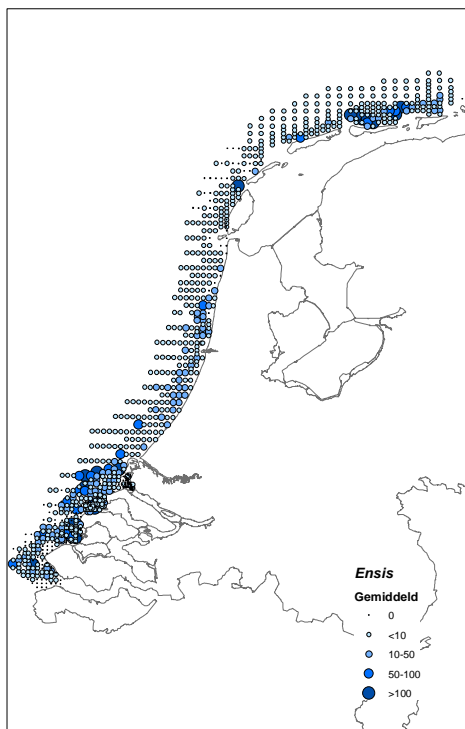
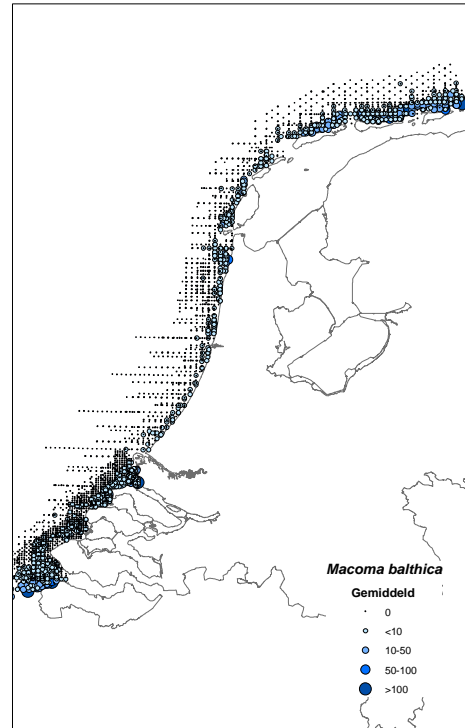
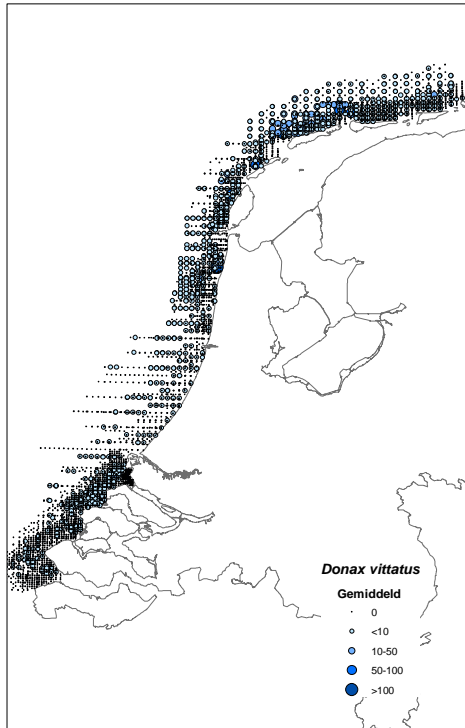
Bijlage D: Ascii-grid bestanden betreffende hydrodynamische en waterkwaliteitsdata

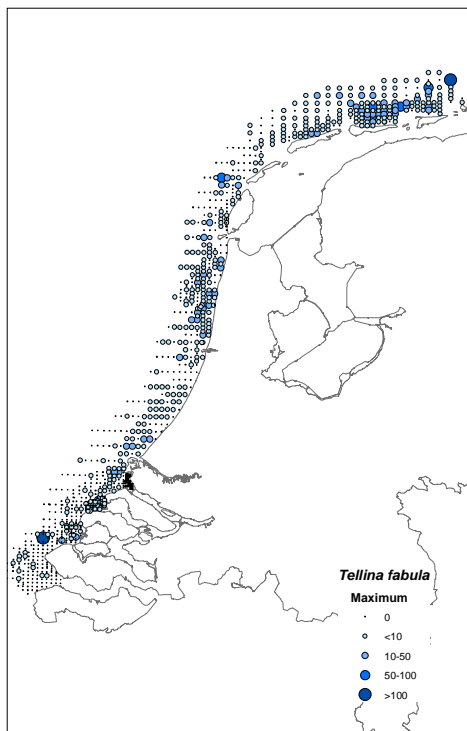
Een overzicht van de abiotische factoren die zijn gegenereerd door de ZUNO-GROF, Delft3D-WAQ en Delft3D-GEM/BLOOM modellen als input voor de habitatmodellen:

- *velocity_median.asc*: gemiddelde van de mediane waarden van de gemodelleerde stroomsnelheden over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de gemiddelde stroomsnelheid (m s^{-1})
- *velocity_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde stroomsnelheden over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de minimale stroomsnelheid (m s^{-1})
- *velocity_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde stroomsnelheden over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de maximale stroomsnelheid (m s^{-1})
- *direction_median.asc*: gemiddelde van de mediane waarden van de gemodelleerde stroomrichting over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de gemiddelde stroomrichting ($^{\circ}\text{N}$)
- *direction_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde stroomrichting over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de minimale stroomrichting ($^{\circ}\text{N}$)
- *direction_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde stroomrichting over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de maximale stroomrichting ($^{\circ}\text{N}$)
- *tau_median_new.asc*: gemiddelde van de mediane waarden van de gemodelleerde bodemschuifspanning ten gevolge van golven en waterbeweging over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de gemiddelde bodemschuifspanning (N m^{-2})
- *tau_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde bodemschuifspanning ten gevolge van golven en waterbeweging over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de minimale bodemschuifspanning (N m^{-2})
- *tau_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde bodemschuifspanning ten gevolge van golven en waterbeweging over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de maximale bodemschuifspanning (N m^{-2})
- *salinity_median.asc*: gemiddelde van de mediane waarden van de gemodelleerde zoutgehaltes over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als het gemiddelde zoutgehalte (ppt)
- *salinity_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde zoutgehaltes over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als het minimale zoutgehalte (ppt)
- *salinity_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde zoutgehaltes over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als het maximale zoutgehalte (ppt)
- *chla_median.asc*: gemiddelde van de mediane waarden van de gemodelleerde chlorophyll-a gehalten over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de gemiddelde chlorophyll-a concentratie ($\mu\text{g l}^{-1}$)
- *chla_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde chlorophyll-a gehalten over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de minimale chlorophyll-a concentratie ($\mu\text{g l}^{-1}$)
- *chla_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde chlorophyll-a gehalten over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de maximale chlorophyll-a concentratie ($\mu\text{g l}^{-1}$)

- *POCnoa_median.asc*: gemiddelde van de mediane waarden van de gemodelleerde particulier organisch koolstof gehaltes (zonder de chlorophyll) over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de gemiddelde POC concentratie (mg C l^{-1})
- *POCnoa_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde particulier organisch koolstof gehaltes (zonder de chlorophyll) over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de minimale POC concentratie (mg C l^{-1})
- *POCnoa_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde particulier organisch koolstof gehaltes (zonder de chlorophyll) over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de maximale POC concentratie (mg C l^{-1})
- *chla_spring_peak.asc*: gemiddelde van de piekwaarden van de gemodelleerde chlorophyll-a gehaltes tijdens het voorjaar (1 maart tot en met 30 juni) over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de piekwaarde chlorophyll-a concentratie gedurende het voorjaar ($\mu\text{g l}^{-1}$)
- *POCnoa_spring_peak.asc*: gemiddelde van de piekwaarden van de gemodelleerde particulier organisch koolstof gehaltes (zonder de chlorophyll) tijdens het voorjaar (1 maart tot en met 30 juni) over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de piekwaarde POC concentratie gedurende het voorjaar (mg C l^{-1})
- *TIM_median.asc*: gemiddelde van de mediane waarden van de gemodelleerde Totaal Inorganisch materiaal (TIM) concentraties over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de gemiddelde zwevend slib concentraties (mg l^{-1})
- *TIM_10_percentile.asc*: gemiddelde van de 10-percentiel waarden van de gemodelleerde Totaal Inorganisch materiaal (TIM) concentraties over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de minimale zwevend slib concentraties (mg l^{-1})
- *TIM_90_percentile.asc*: gemiddelde van de 90-percentiel waarden van de gemodelleerde Totaal Inorganisch materiaal (TIM) concentraties over de jaren 1996 - 2003. Dit kan worden geïnterpreteerd als de maximale zwevend slib concentraties (mg l^{-1})

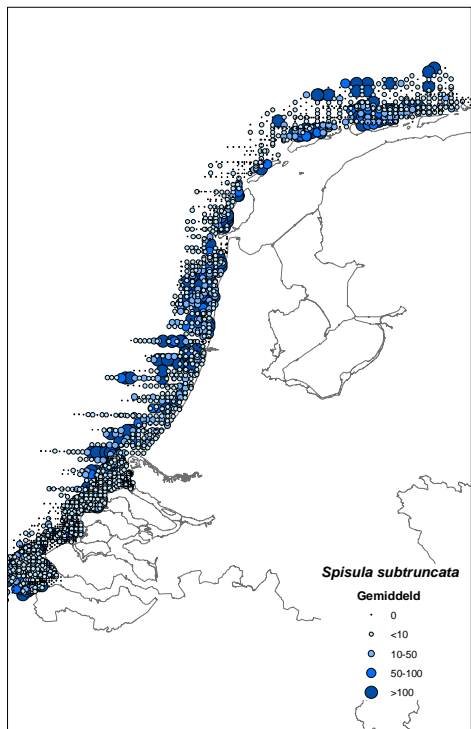
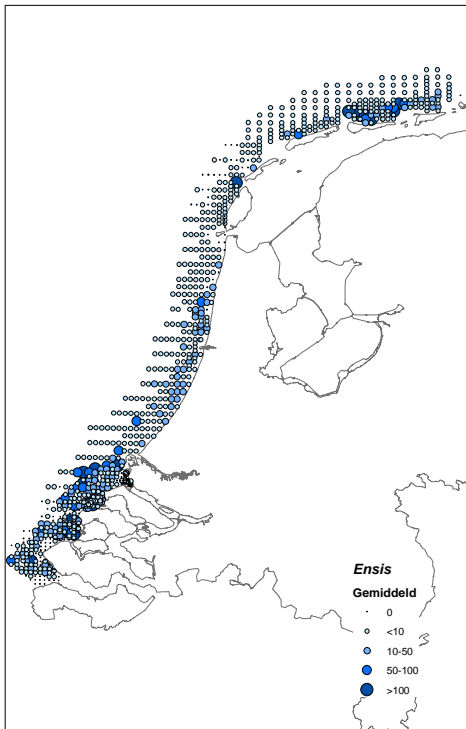
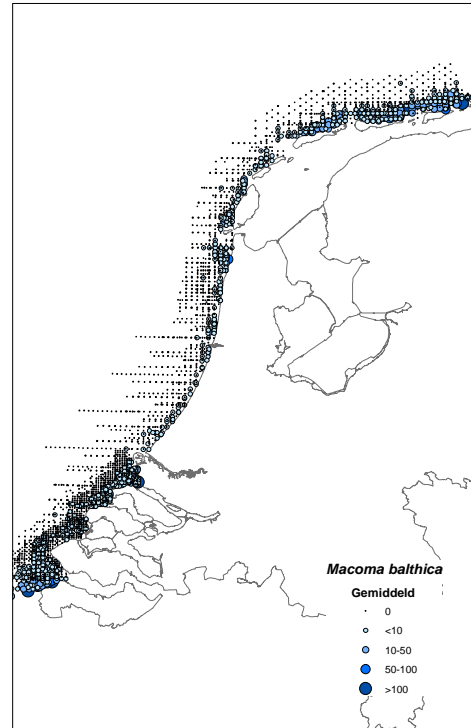
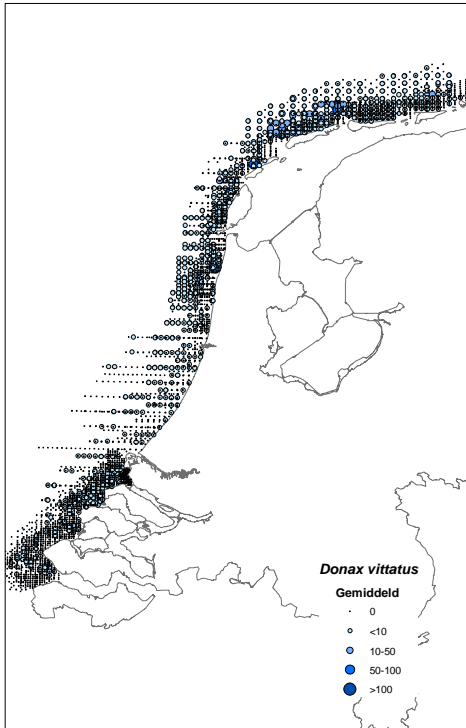
Bijlage E: Maximale en gemiddelde dichtheden

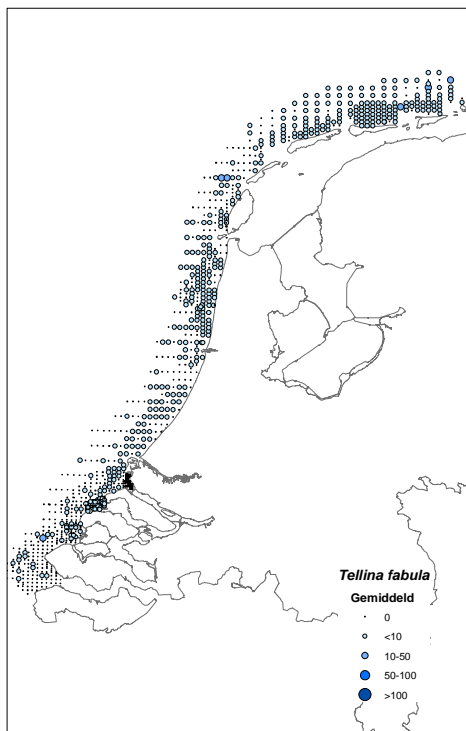




Gebaseerd op de data die zijn gebruikt als input voor de habitatkansenkaarten (zie hoofdstuk 2):

- *Donax vittatus*: 1995 – 2009
- *Ensis* sp.: 2007-2009
- *Macoma balthica*: 1995-2009 exclusief 1998
- *Spisula subtruncata*: 1995-2001 exclusief 1998
- *Tellina fabula*: 2002-2009

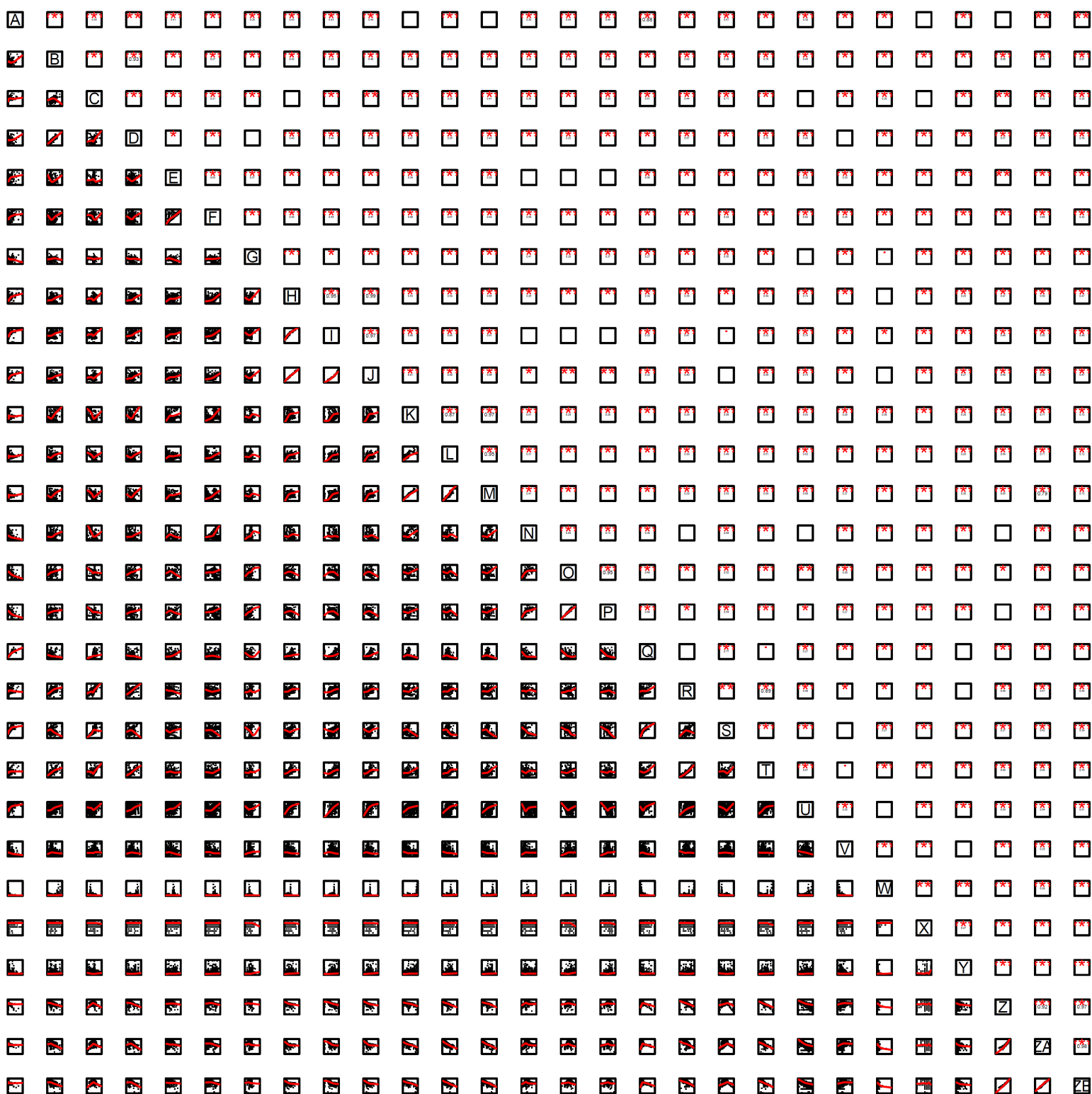




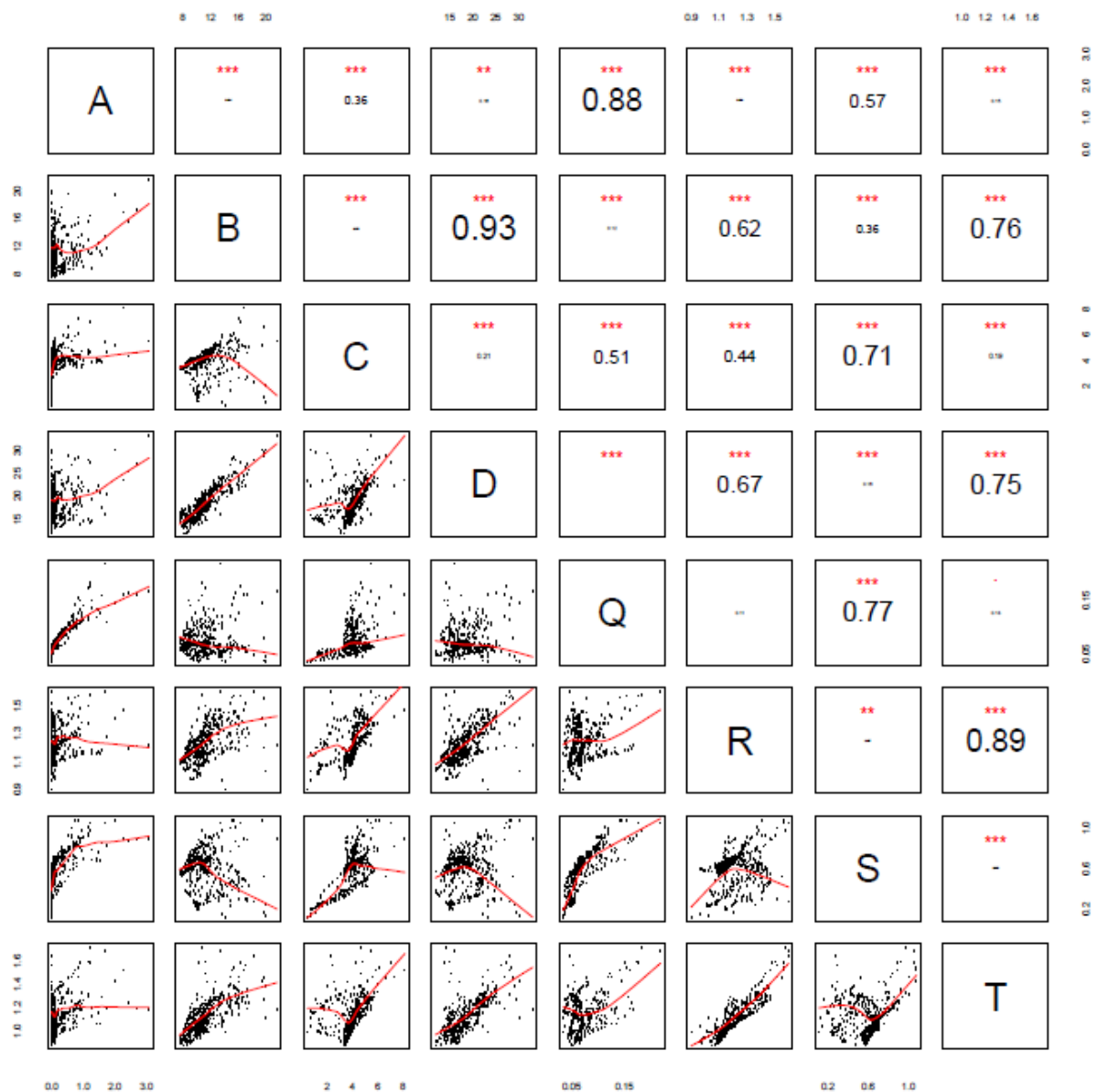
Gebaseerd op de data die zijn gebruikt als input voor de habitatkansenkaarten (zie hoofdstuk 2):

- *Donax vittatus*: 1995 – 2009
- *Ensis* sp.: 2007-2009
- *Macoma balthica*: 1995-2009
exclusief 1998
- *Spisula subtruncata*: 1995-
2001 exclusief 1998
- *Tellina fabula*: 2002-2009

Bijlage F: Correlatie matrix abiotische factoren.



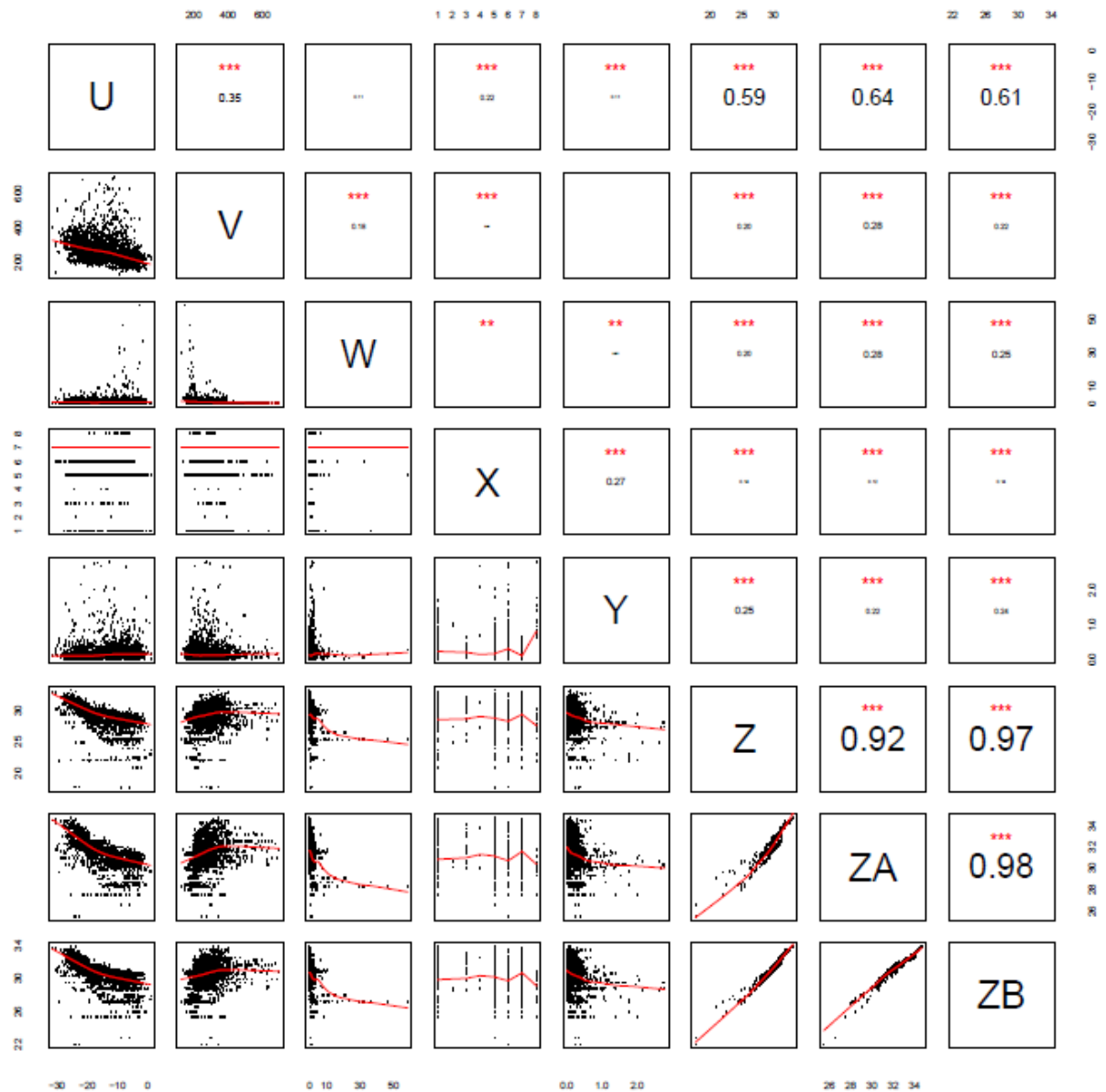
Figuur 1: Bivariate correlatie-matrix van alle verklarende variabelen. Diagonaal: namen van de variabelen: A=CHLA_10, B=CHLA_90, C=CHLA_MED, D=CHLA_SP, E=DIR_10, F=DIR_90, G=DIR_MED, H=TAU_10, I=TAU_90, J=TAU_MED, K=TIM_10, L=TIM_90, M=TIM_MED, N=VEL_10, O=VEL_90, P=VEL_MED,



Figuur 2: Extractie van figuur 1. Bivariate correlatie-matrix van alle verklarende variabelen. Diagonaal: namen van de variabelen: A=CHLA_10, B=CHLA_90, C=CHLA_MED, D=CHLA_SP, Q=POCNOA_10, R=POCNOA_90, S=POCNOA_MED, T=POCNOA_SPR. Onder de diagonaal: scatterplots met een gefitte rode lijn. Boven de diagonaal: absolute correlatie index (0 tot 1). Hoe hoger de correlatie hoe groter de waarde weergeven (inzoomen maakt waarden leesbaar). In rood: significantie (Spearman's test), "***" $p < 0.001$, "**" $p < 0.01$, "*" $p < 0.05$, "." $p < 0.1$.

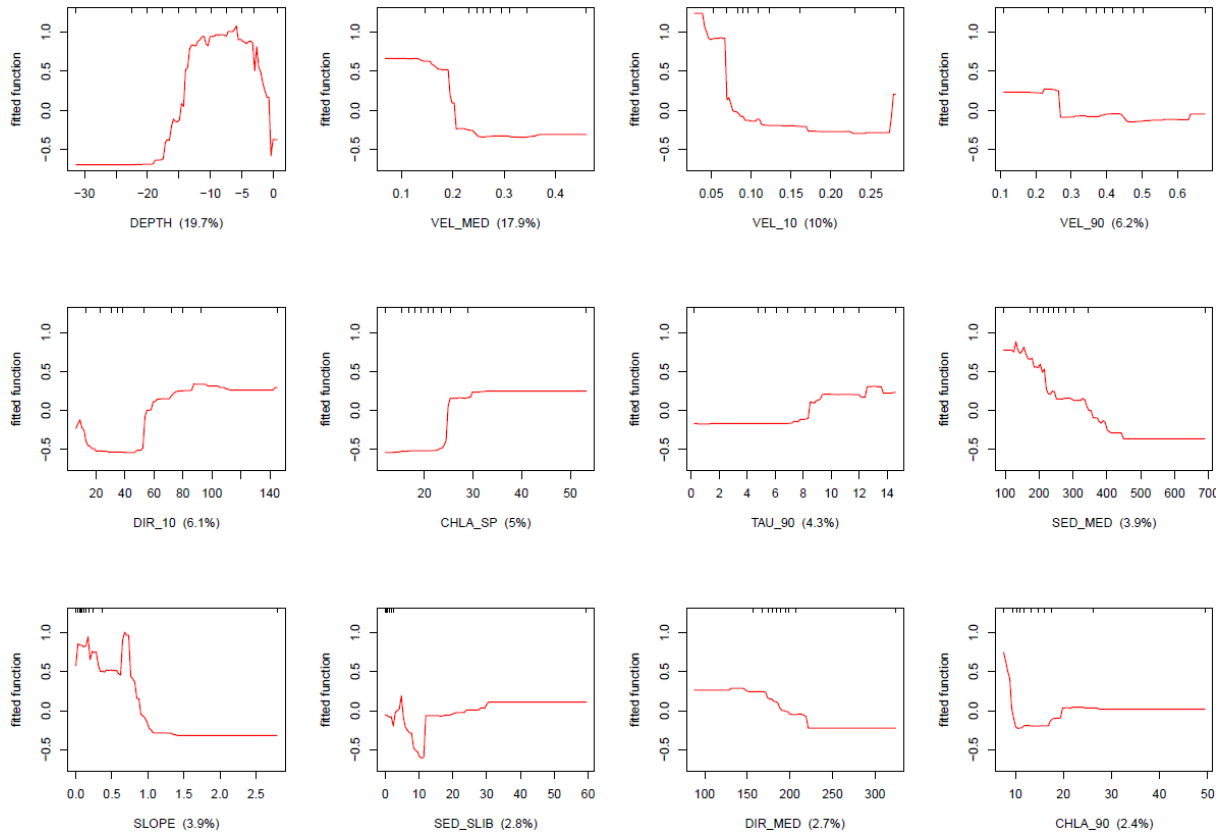


Figuur 3: Extractie van figuur 1. Bivariate correlatie-matrix van alle verklarende variabelen. Diagonaal: namen van de variabelen: E=DIR_10, F=DIR_90, G=DIR_MED, H=TAU_10, I=TAU_90, J=TAU_MED, K=TIM_10, L=TIM_90, M=TIM_MED, N=VEL_10, O=VEL_90, P=VEL_MED. Onder de diagonaal: scatterplots met een gefitte rode lijn. Boven de diagonaal: absolute correlatie index (0 tot 1). Hoe hoger de correlatie hoe groter de waarde weergeven (inzoomen maakt waarden leesbaar). In rood: significantie (Spearman's test), "***" $p < 0.001$, "**" $p < 0.01$, "*" $p < 0.05$, "." $p < 0.1$.

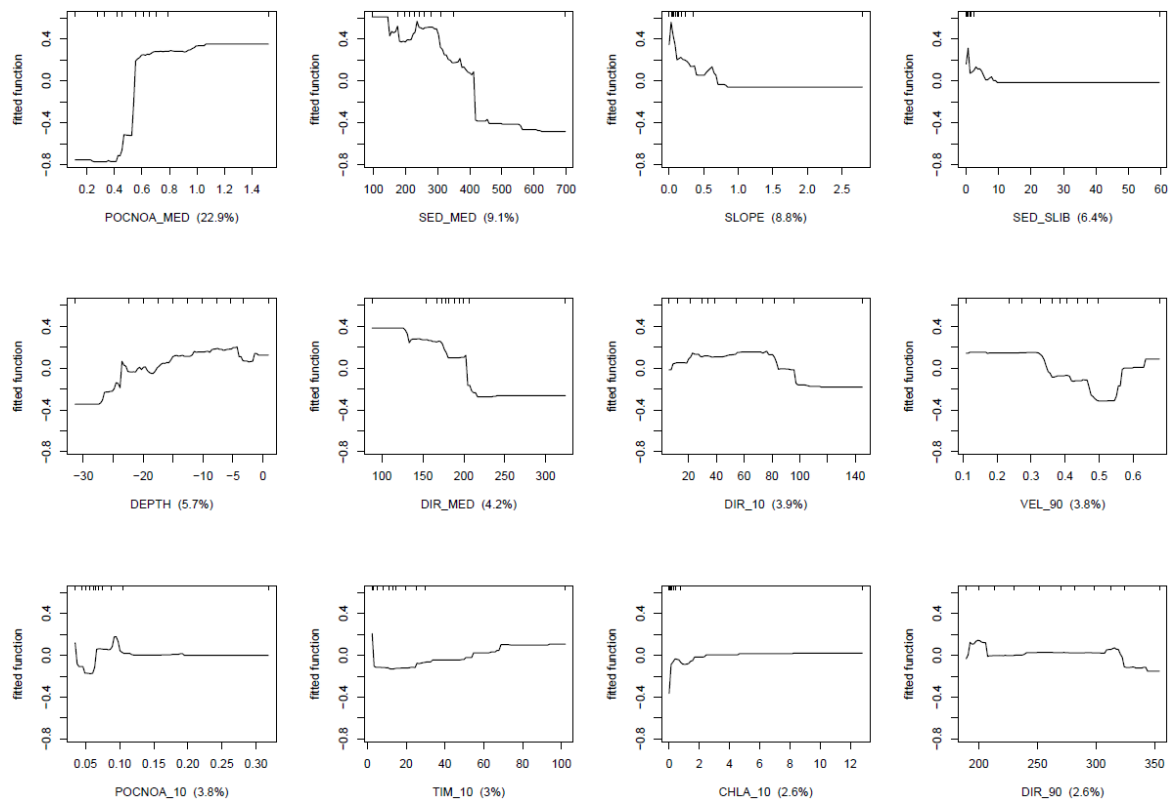


Figuur 4: Extractie van figuur 1. Bivariate correlatie-matrix van alle verklarende variabelen. Diagonaal: namen van de variabelen: U=DEPTH, V=SED_MED, W=SED_SLIB, X=BPI_ZONE, Y=SLOPE, Z=SAL_10, ZA=SAL_90, ZB=SAL_MED. Onder de diagonaal: scatterplots met een gefitte rode lijn. Boven de diagonaal: absolute correlatie index (0 tot 1). Hoe hoger de correlatie hoe groter de waarde weergeven (inzoomen maakt waarden leesbaar). In rood: significantie (Spearman's test), "***" $p < 0.001$, "**" $p < 0.01$, "*" $p < 0.05$, "." $p < 0.1$.

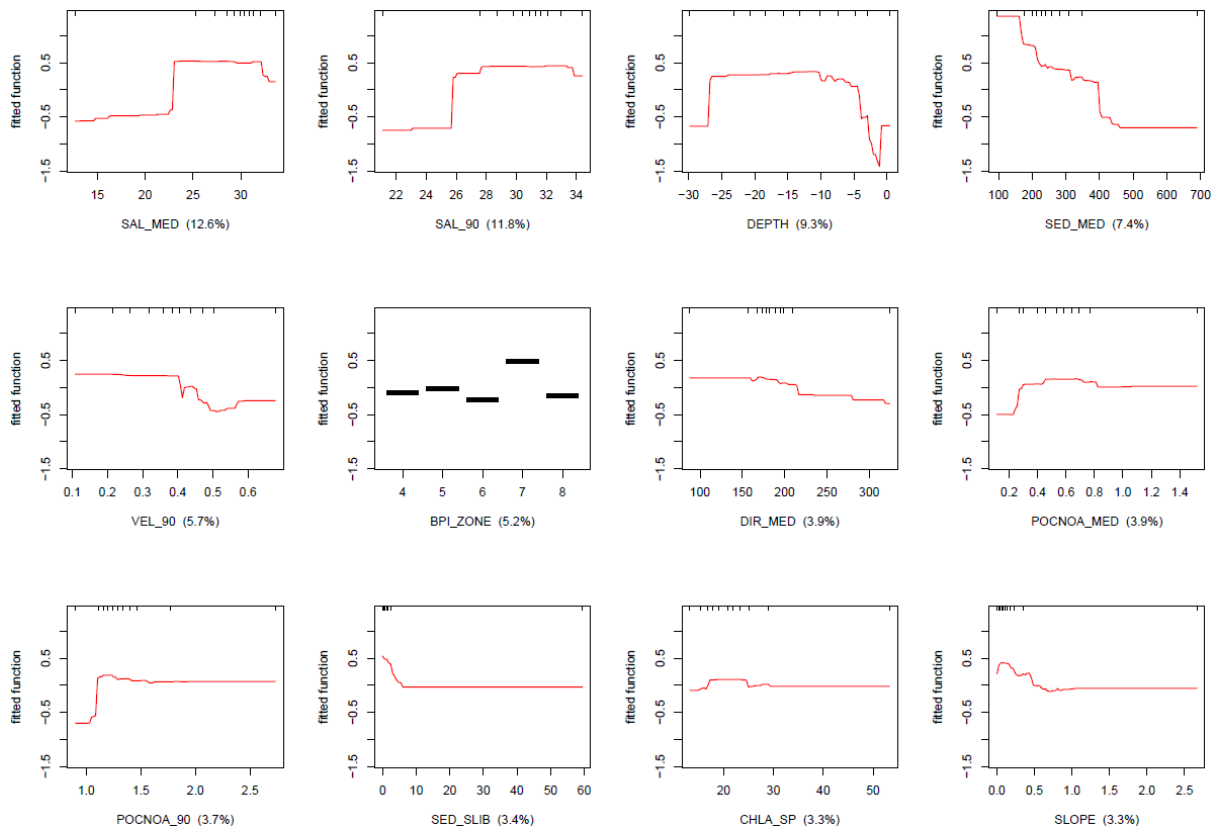
Bijlage G: Response curves per soort van het beste model.



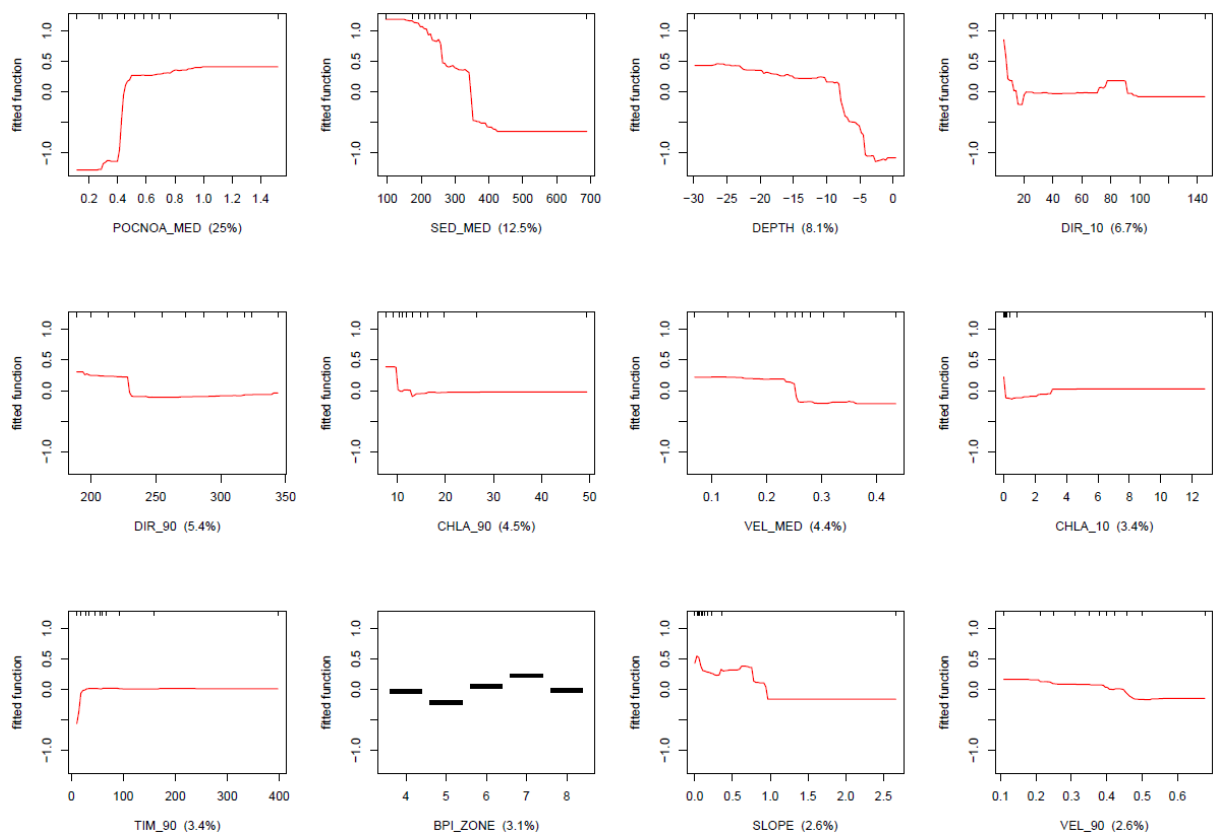
Figuur 1 : Response curves van *Macoma balthica* (GAM). Functie per variabele.



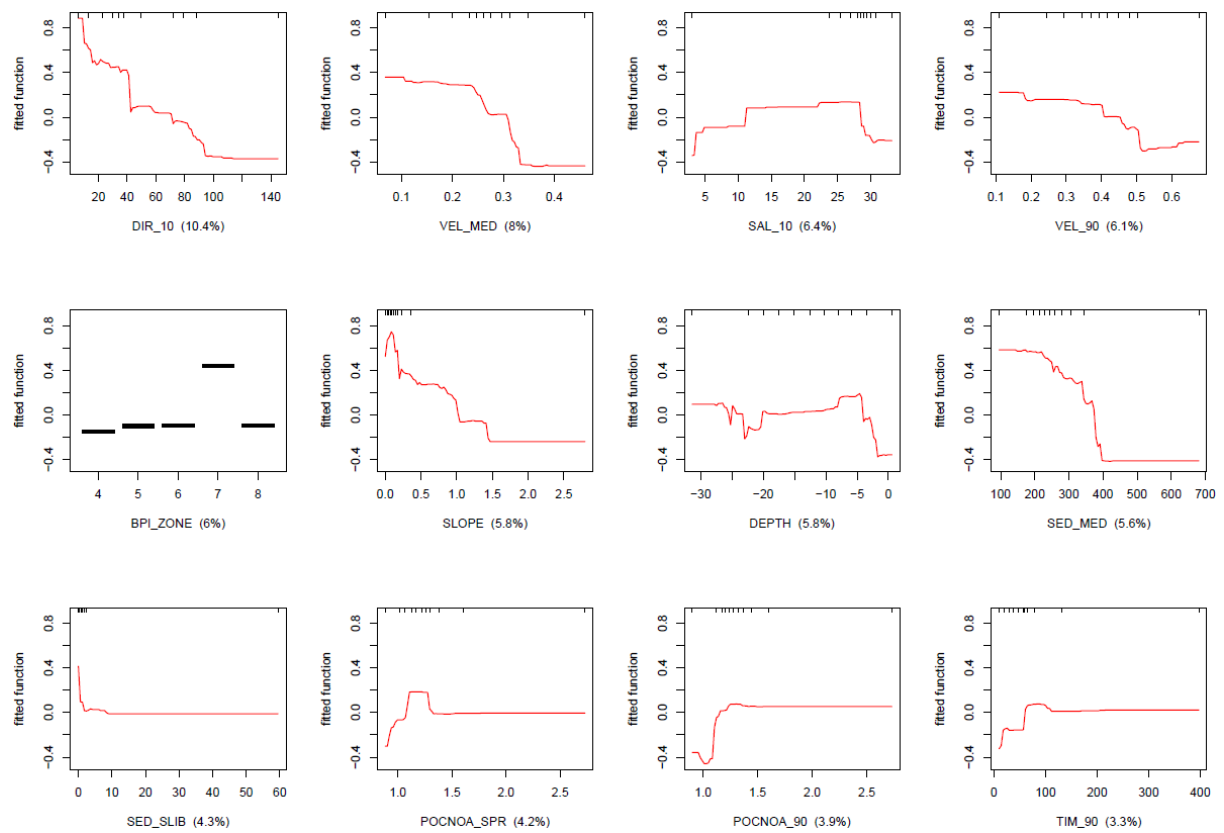
Figur 2: Response curves van *Donax vittatus* (BRT). Functie per variabele.



Figuur 3 : Response curves van *Ensis* sp. (BRT). Functie per variabele.



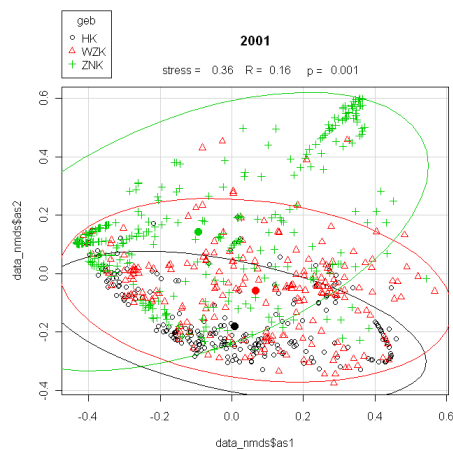
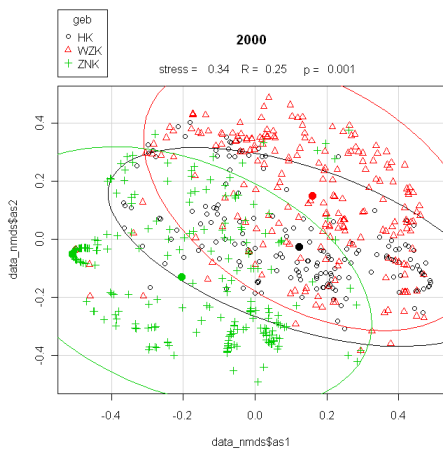
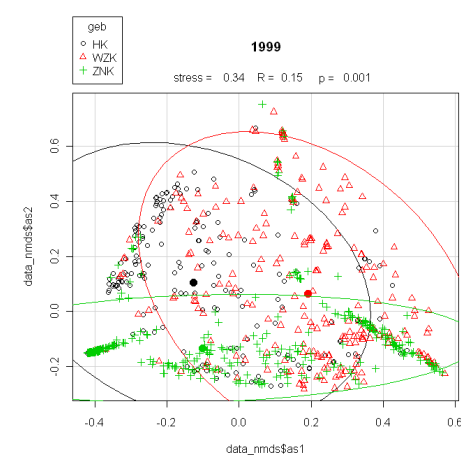
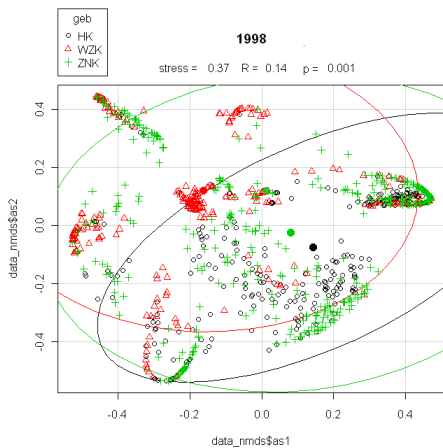
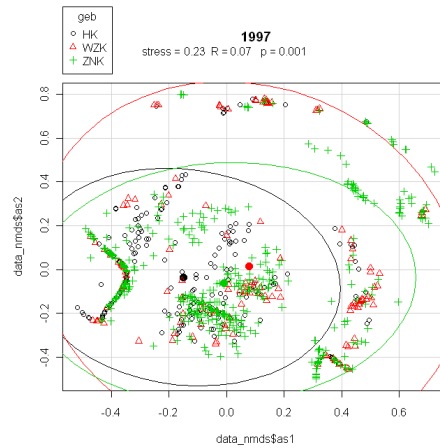
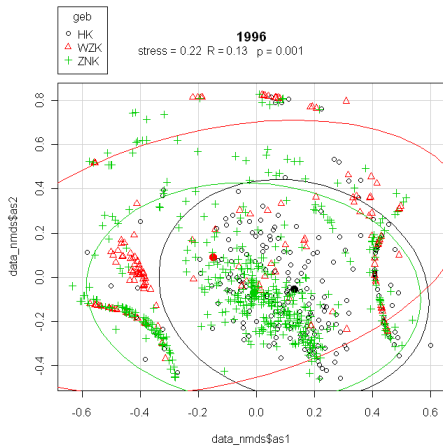
Figuur 4 : Response curves van *Tellina fabula*. (BRT). Functie per variabele.

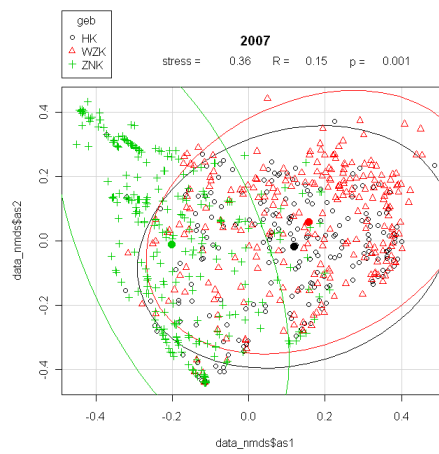
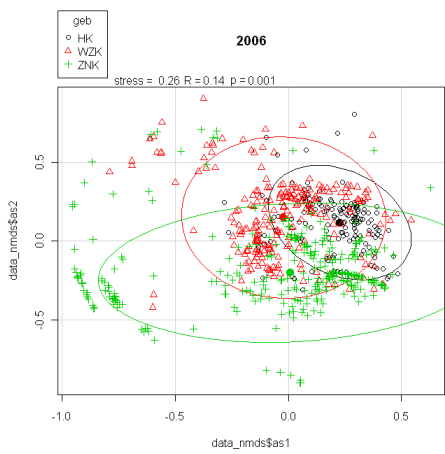
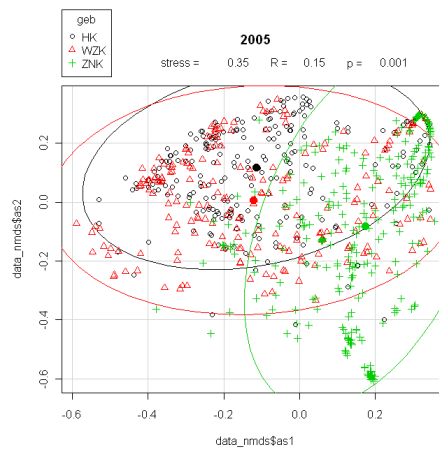
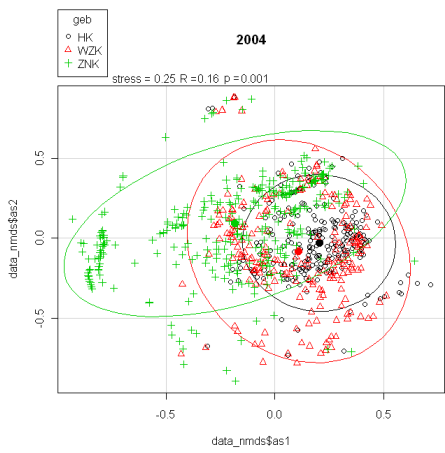
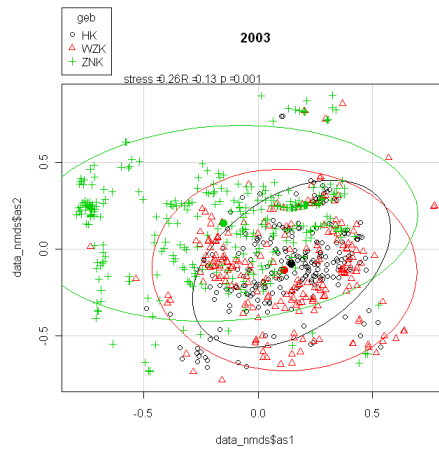
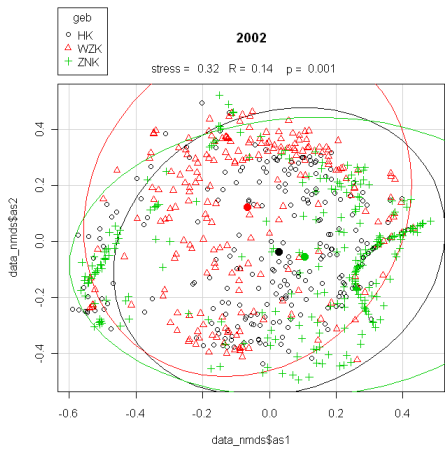


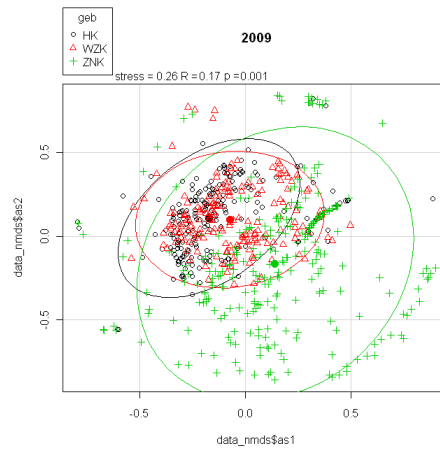
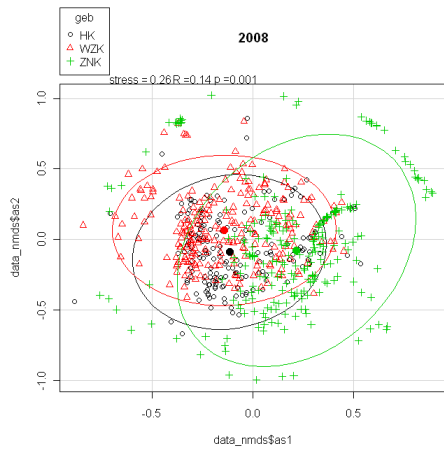
Figuur 5 : Response curves van *Spisula subtruncata*. (BRT). Functie per variabele.

Bijlage H: NMDS diagrammen voor de jaren 1996-2009 en ANOSIM analyse

NMDS-diagrammen voor de jaren 1996-2009 (HK: Hollandse Kust, WZK: Waddenzee kust, ZNK: Zuidnederlandse kust) (afzonderlijke analyse per jaar).







Resultaten van de ANOSIM-analyse:

Global Test

Sample statistic (Global R): 0.085

Significance level of sample statistic: 0.1%

Pairwise Tests

Groups	R	Significance Statistic	Level %
1996, 1999		0.104	0.1
1996, 2002		0.124	0.1
1996, 2005		0.205	0.1
1996, 2008		0.175	0.1
1999, 2002		0.03	0.1
1999, 2005		0.05	0.1
1999, 2008		0.06	0.1
2002, 2005		0.021	0.1
2002, 2008		0.031	0.1
2005, 2008		0.02	0.1

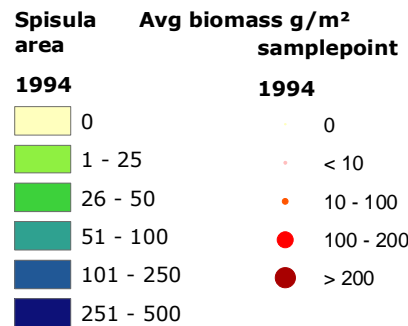
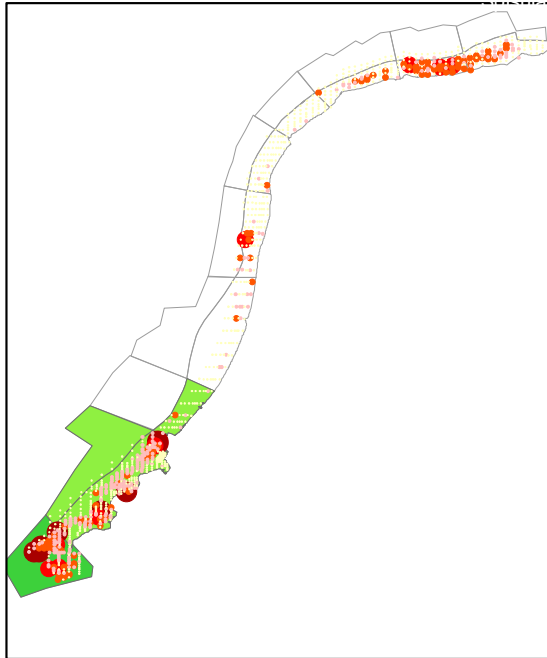
Bijlage I: Voorkomen van eenden en schelpdieren

Kaarten met vergelijkende dichtheden eenden (wintermaxima, steeds rechtsboven) en de dichtheden van de belangrijkste potentiële prooidieren: *Spisula subtruncata*, *Ensis directus*, *Donax vittatus*, *Macoma balthica*, en de plaatschelpen *Tellina fabula* en *T. tenuis* gecombineerd, voor de jaren 1994-2009. De egale kleuren in de gebruikte vakken geven de gemiddelde dichtheden per soort per vak weer (steeds oplopend van geel, via groen naar blauw). De gekleurde punten (van lichtgeel tot donkerrood) binnen de vlakken geven de gevonden dichtheden op alle bemonsterde locaties.

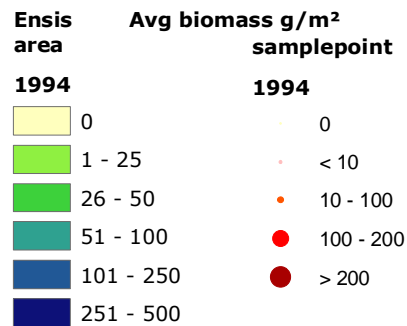
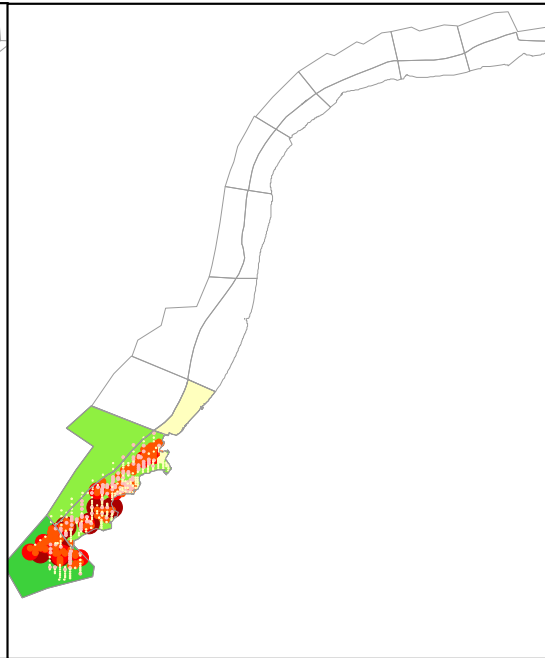
De informatie voor 1994 komt deels uit reguliere IMARES bemonsteringen (Voordelta) en deels uit een aanvullende bemonstering (Hoek van Holland tot aan de Duitse grens) die werd gedaan ten behoeve van het zee-eendenonderzoek (Leopold 1996). Voor dit laatste gebied zijn alleen de dichtheden (puntlocaties) weergegeven voor *Spisula subtruncata*.

Aanvullende informatie is beschikbaar voor de kustzone van Terschelling (branding tot de -20 m dieptelijn) voor 1993, het jaar waarin de hoogste aantallen Zwarte Zee-eenden ooit in Nederland werden aangetroffen: 135.000, waarvan 125.000 voor de kust van Terschelling (Leopold 1993). Ter plaatse bevond zich aan het begin van de winter een uitgestrekte Spisulabank (omvang geschat op circa 8 miljard exemaren), maar er waren ook rijke voorkomens van andere soorten (0.4 miljard Zaagjes *Donax vittatus*, 0.34 miljard Nonnetjes *Macoma balthica*, 0.18 miljard Rechtsgestreepte Platschelpen *Tellina fabula* en 0.017 miljard Tere Platschelpen *T. tenuis* (den Hollander 1993).

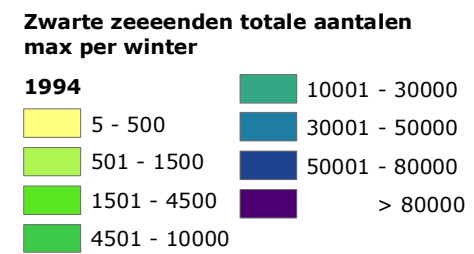
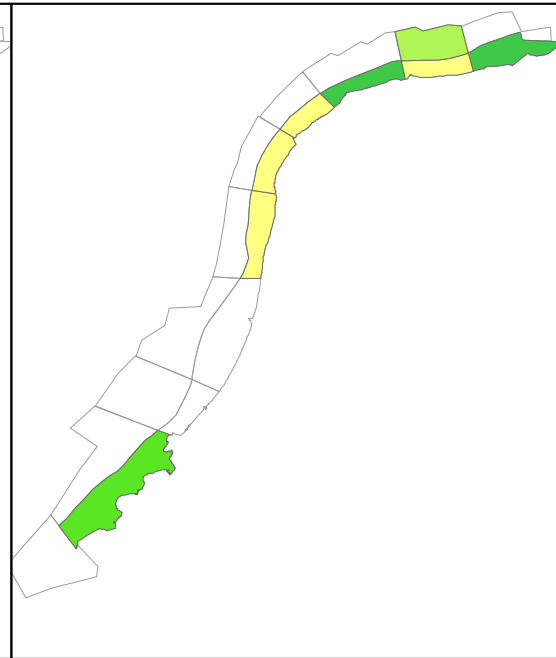
Spisula



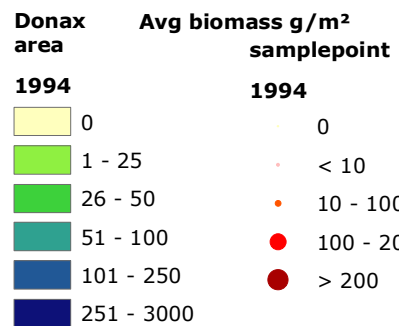
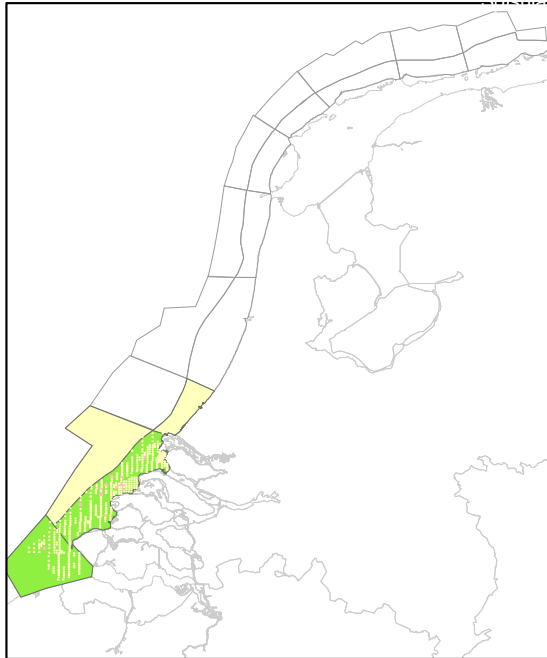
Ensis



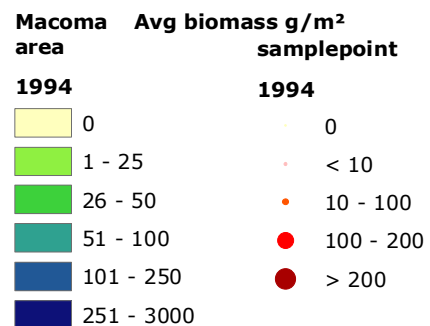
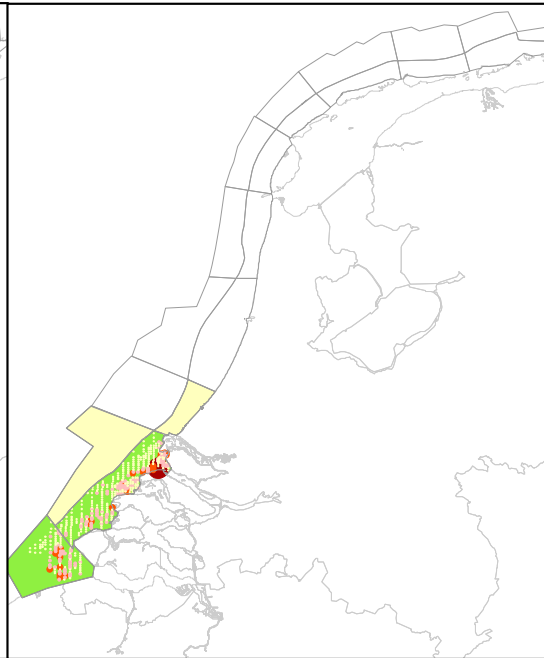
Zwarte zee-eenden



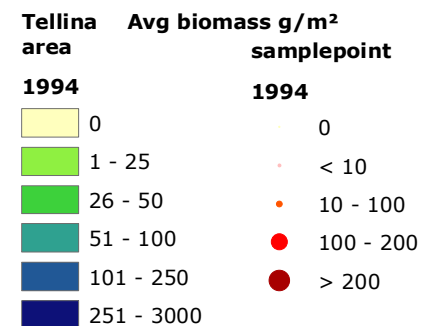
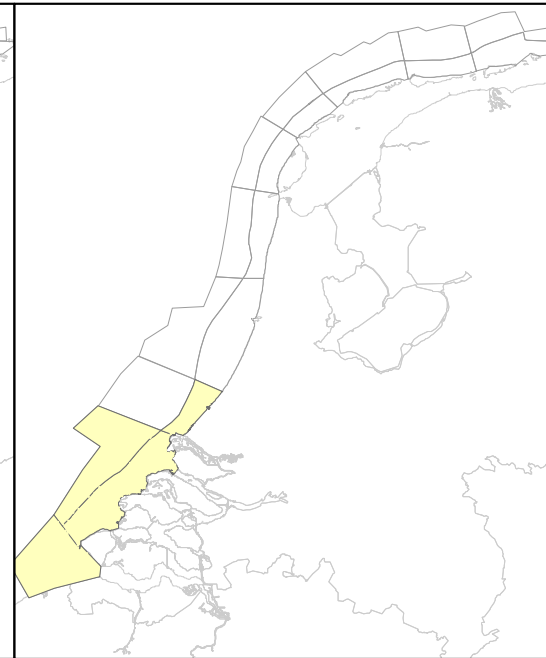
Donax



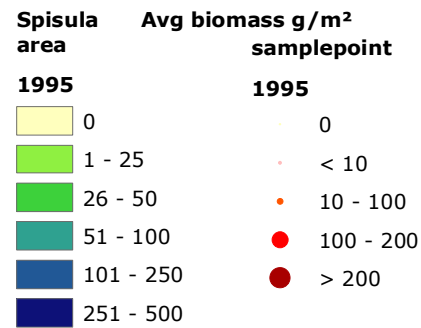
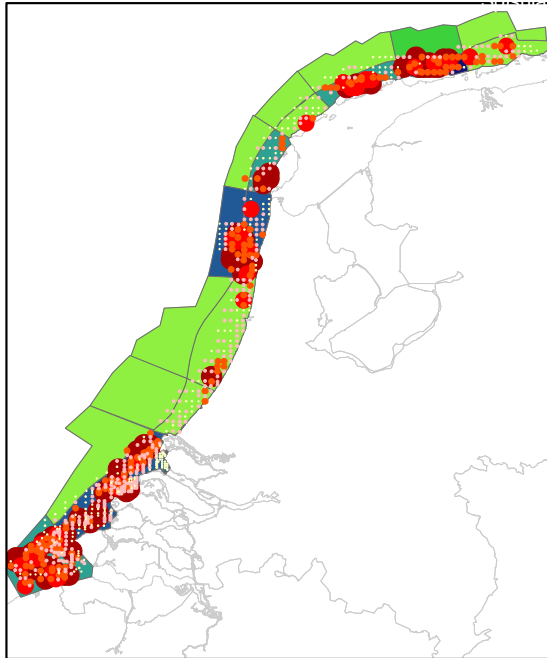
Macoma



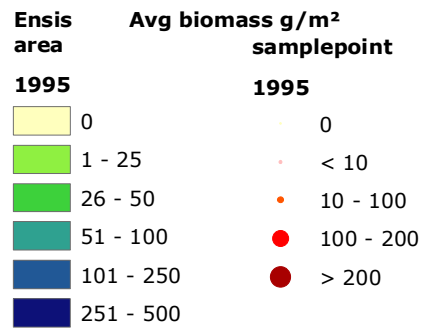
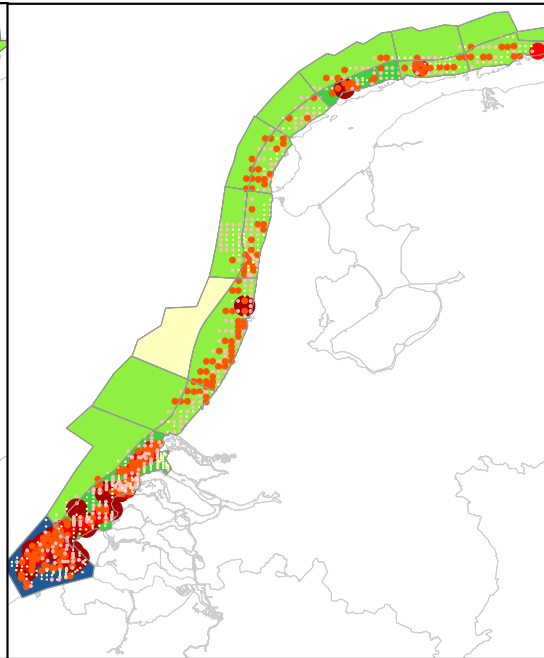
Tellina



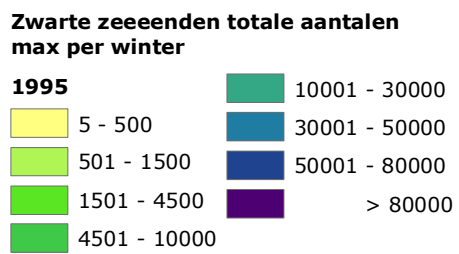
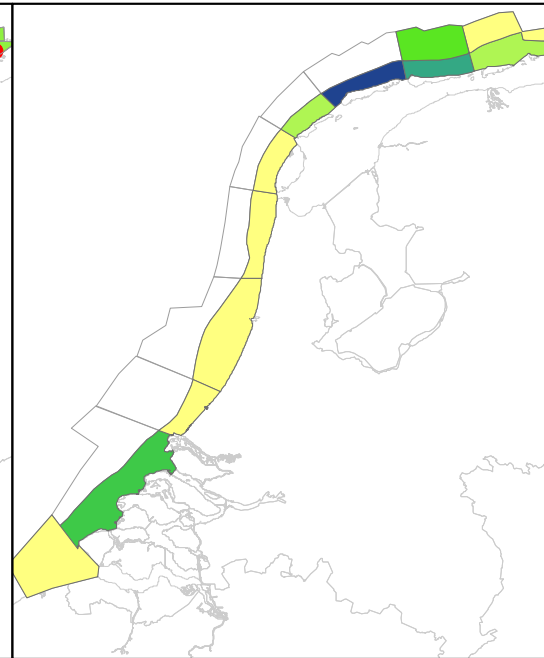
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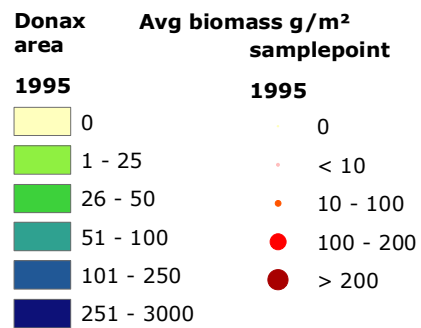
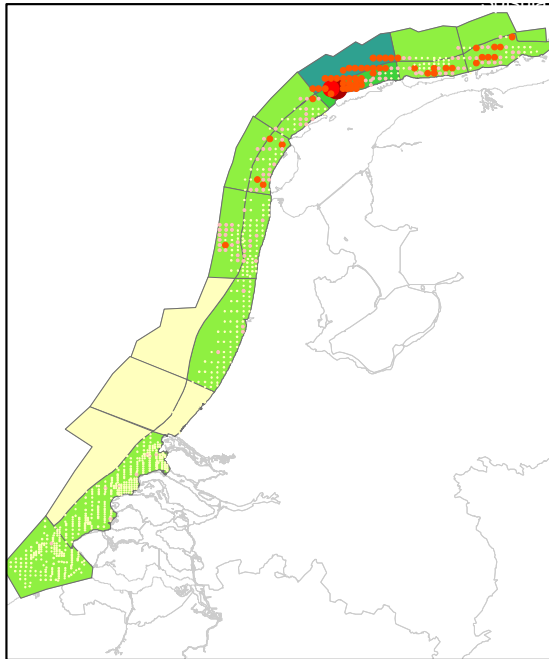
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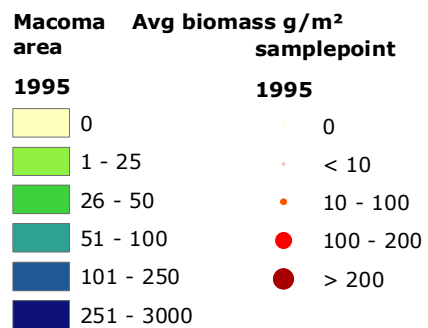
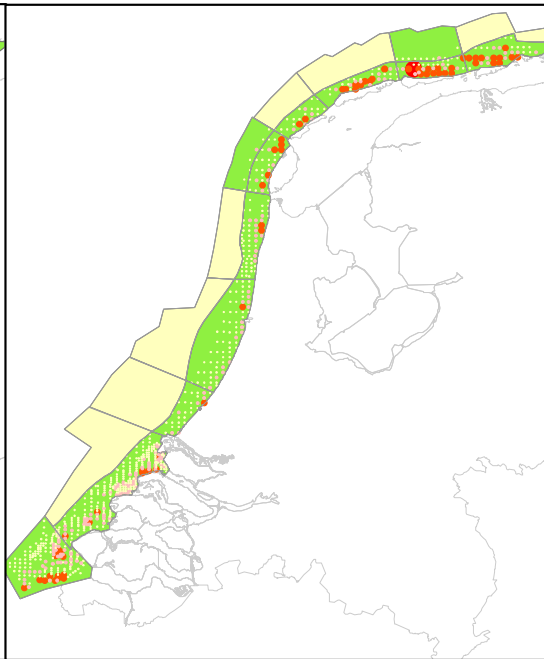
Zwarte zee-eenden



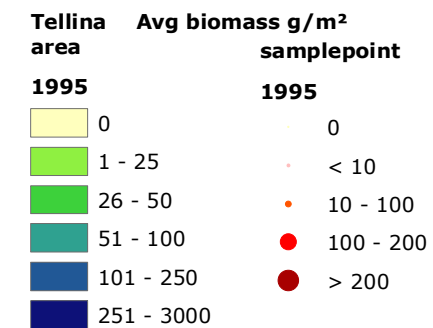
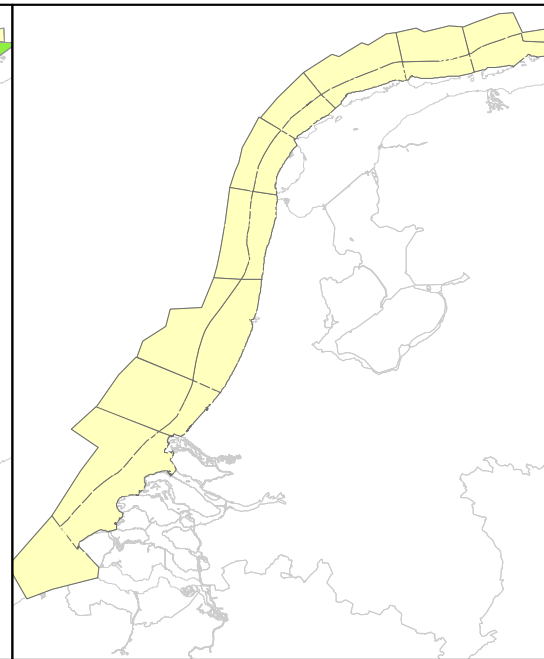
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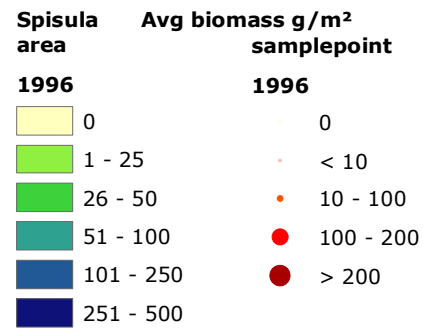
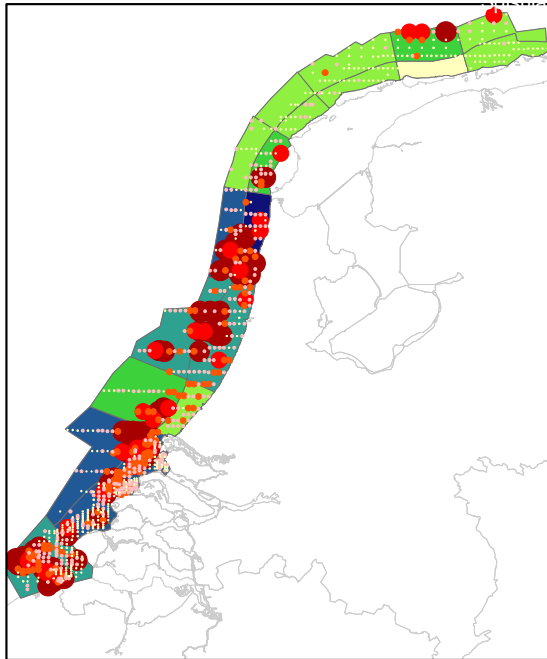
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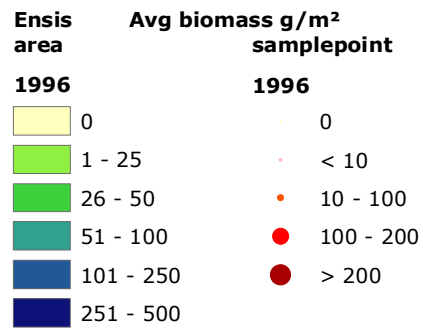
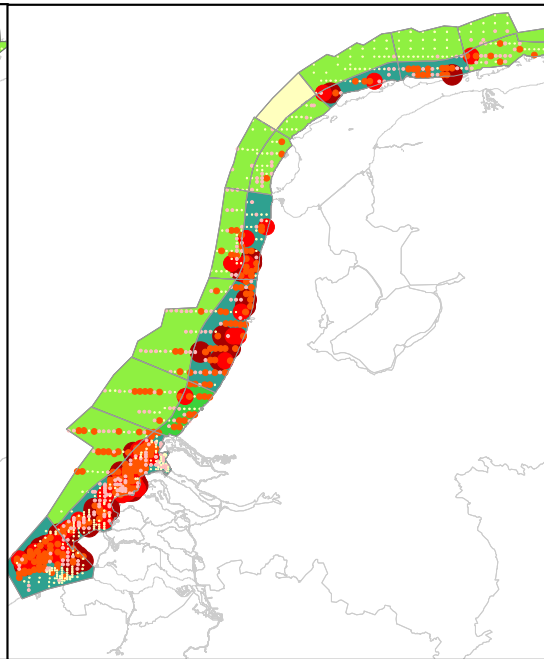
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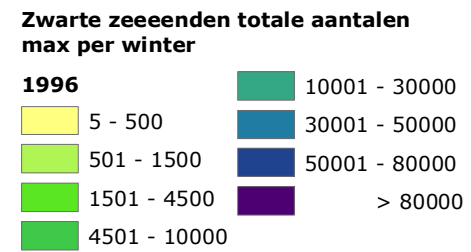
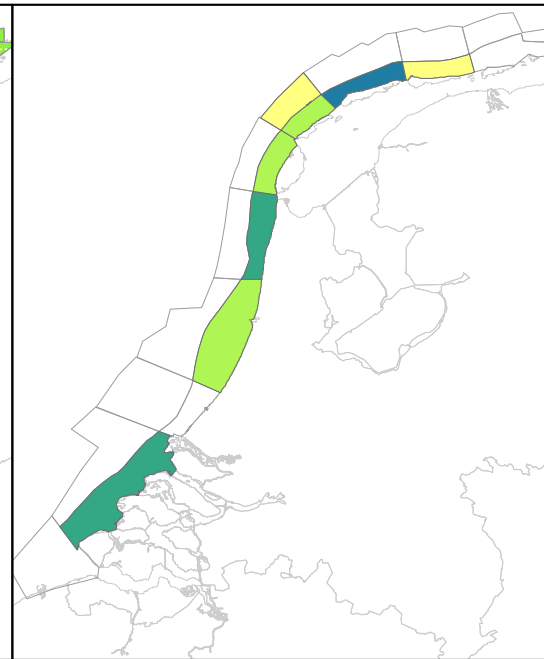
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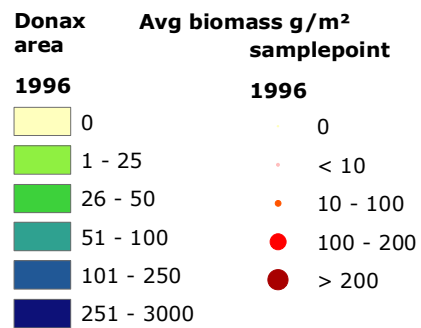
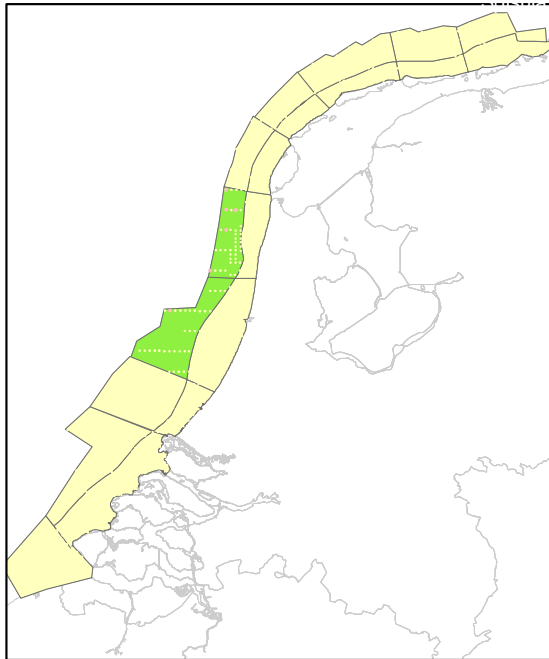
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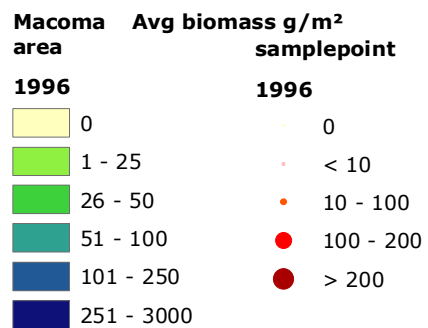
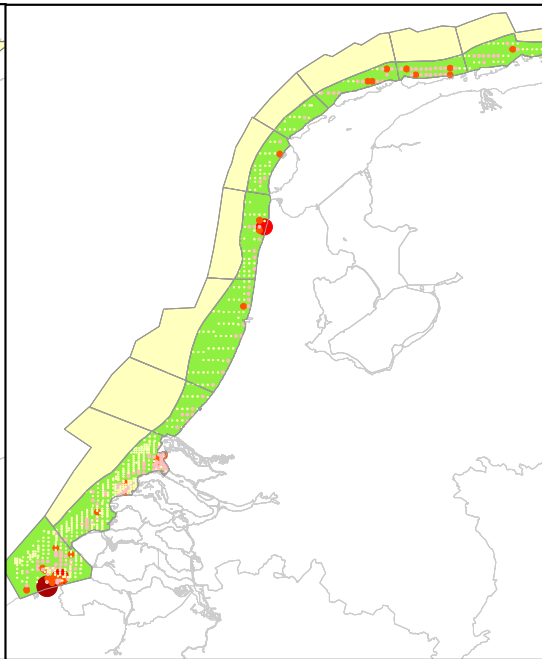
Zwarte zee-eenden



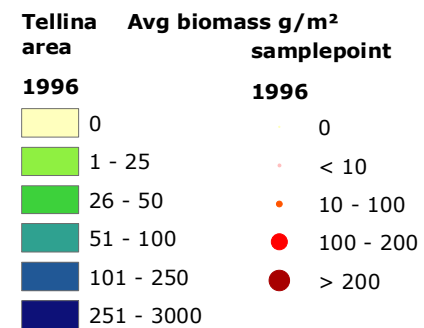
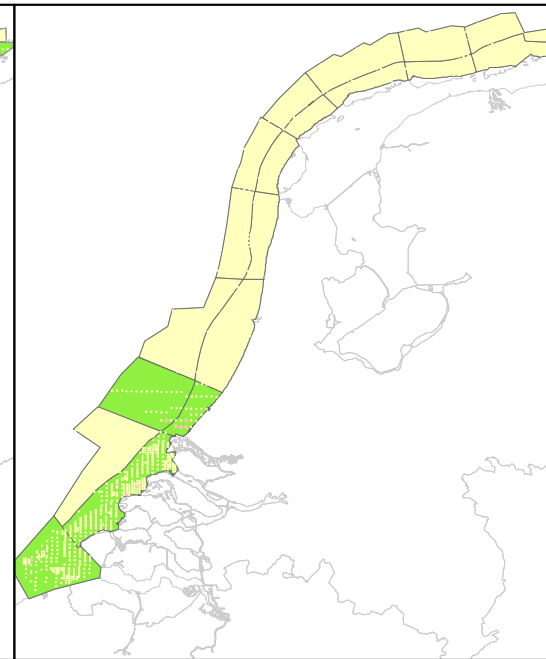
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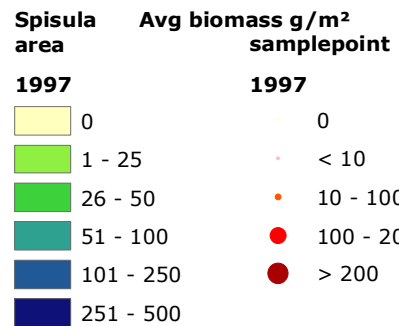
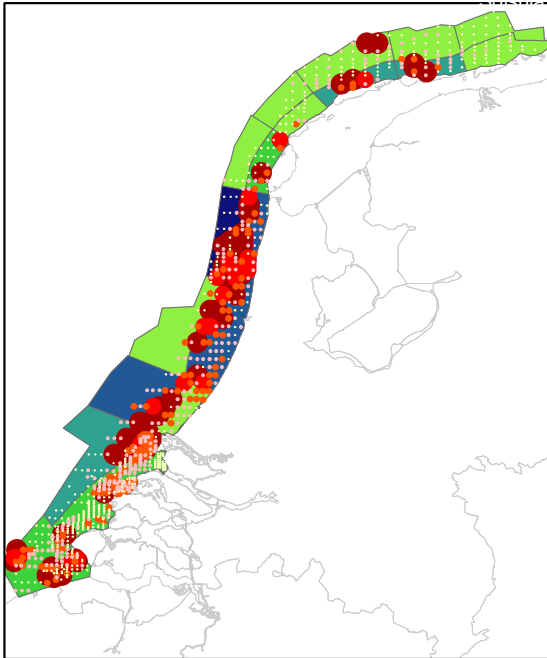
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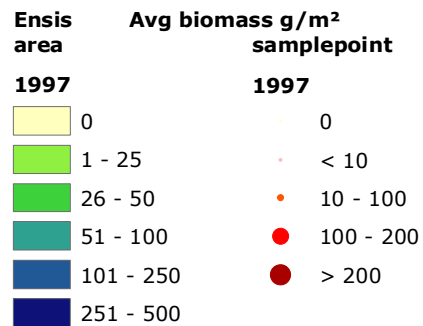
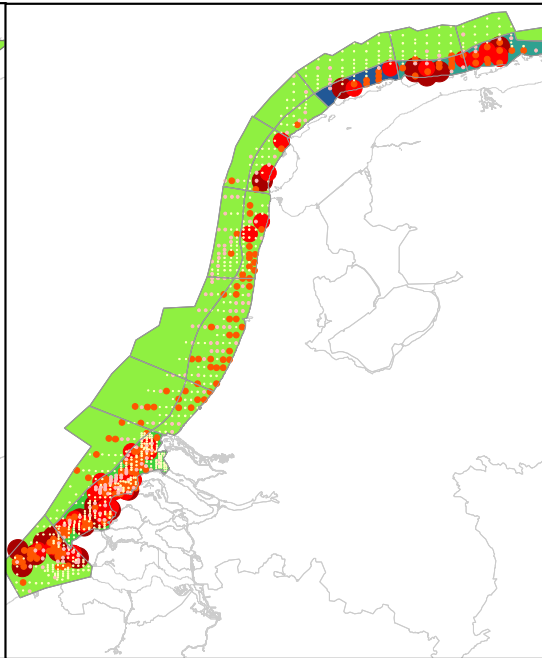
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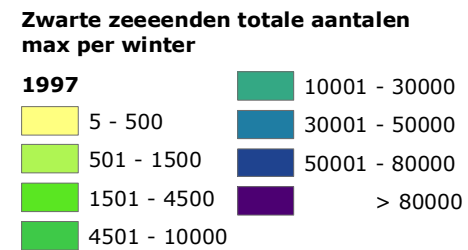
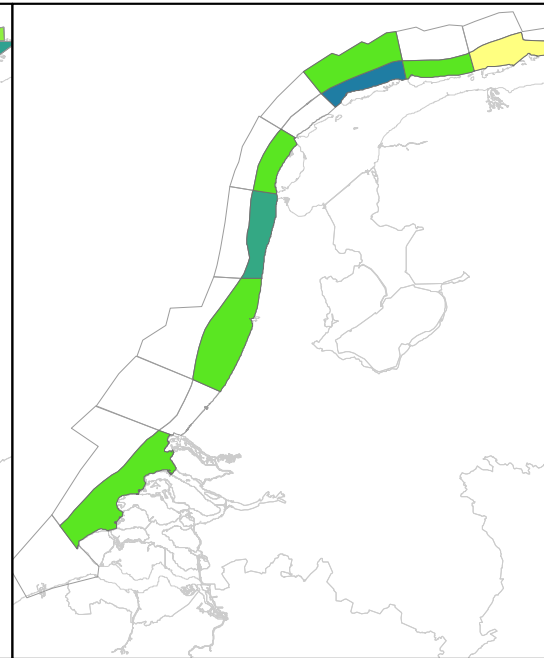
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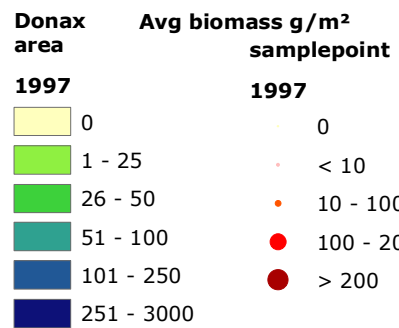
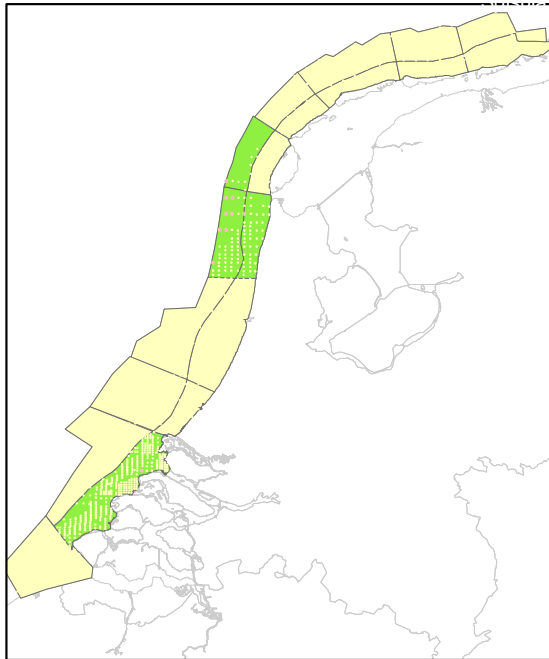
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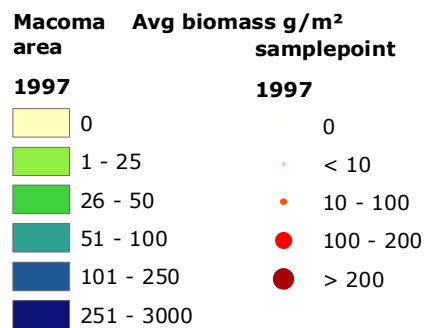
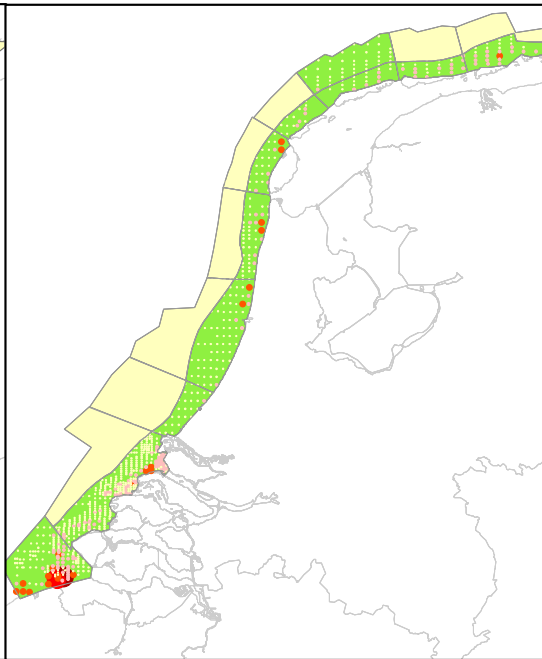
Zwarte zee-eenden



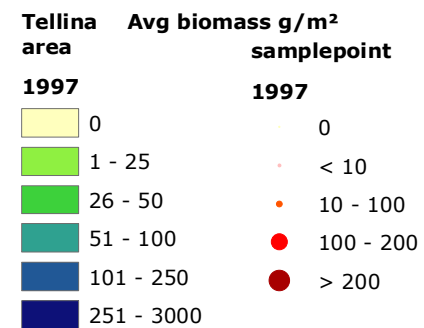
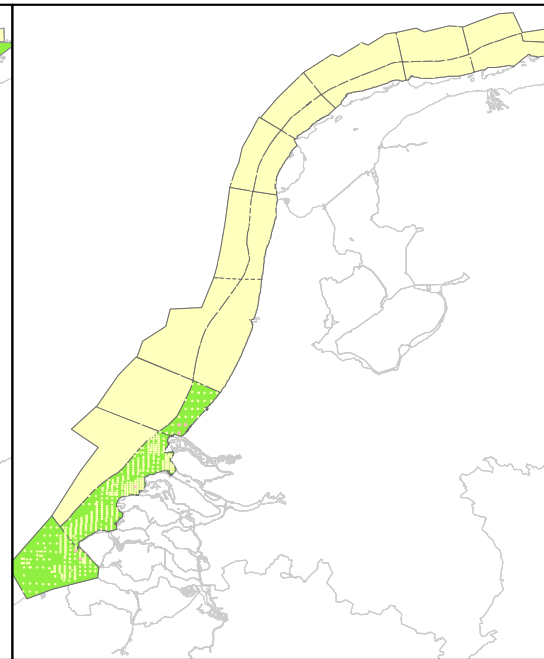
Donax



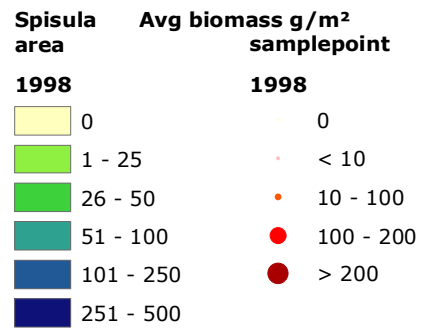
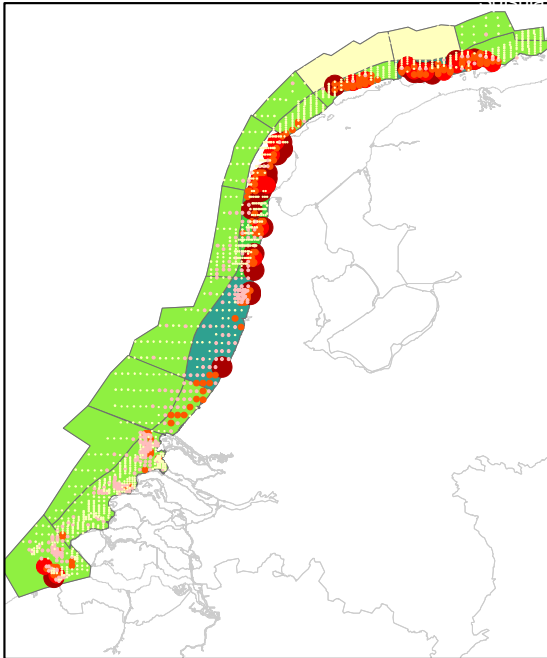
Macoma



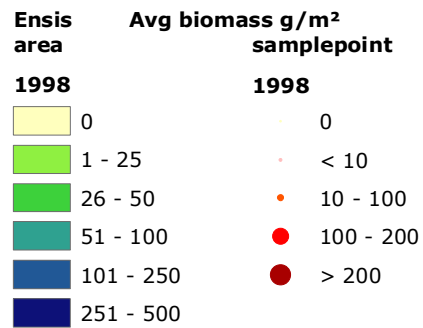
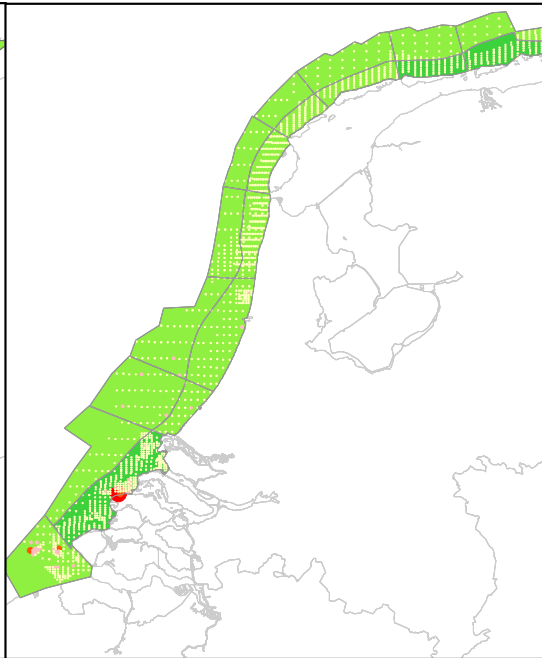
Tellina



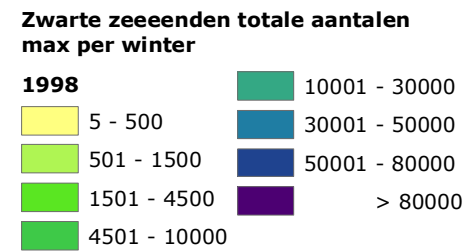
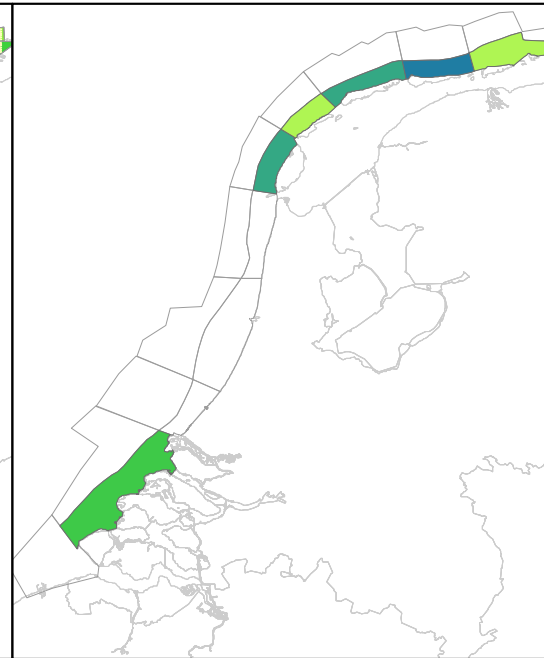
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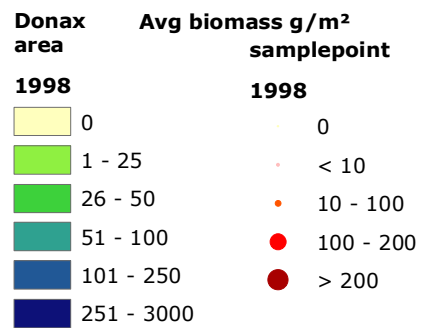
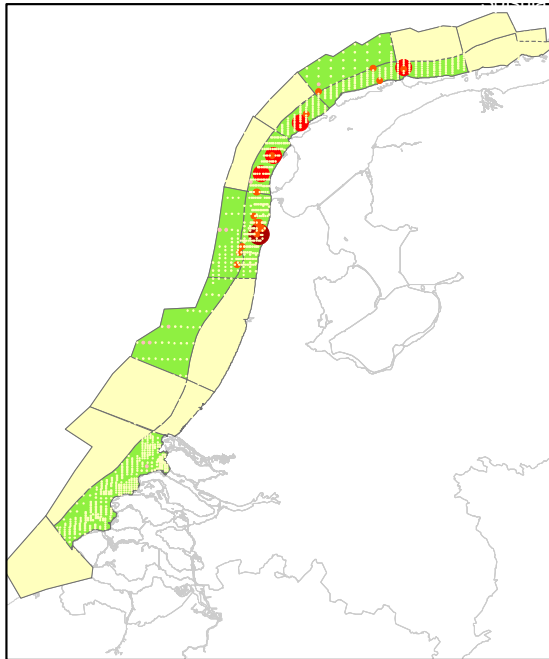
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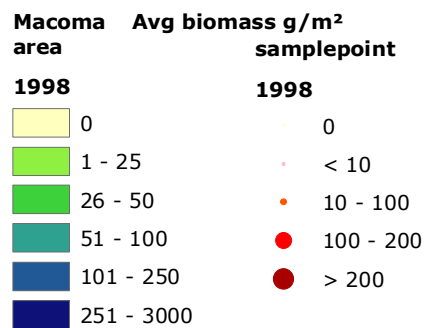
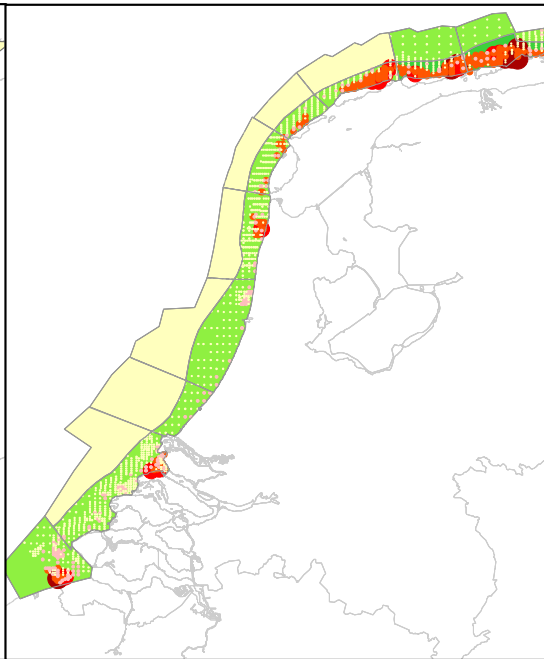
Zwarte zee-eenden



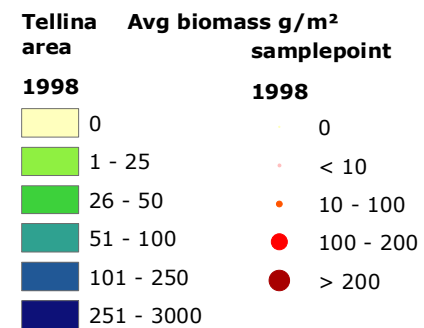
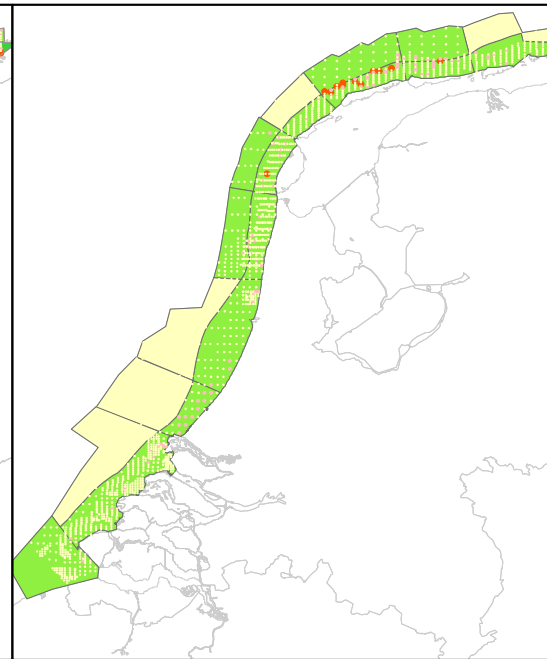
Donax



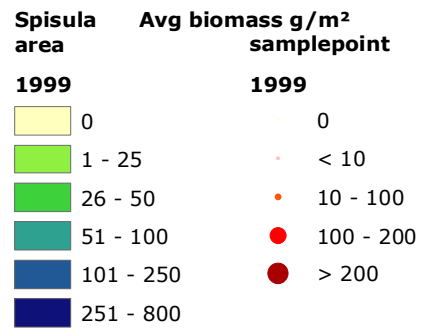
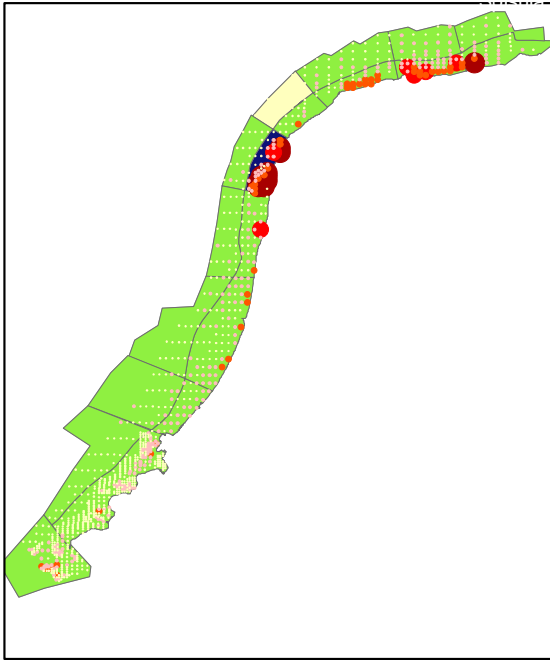
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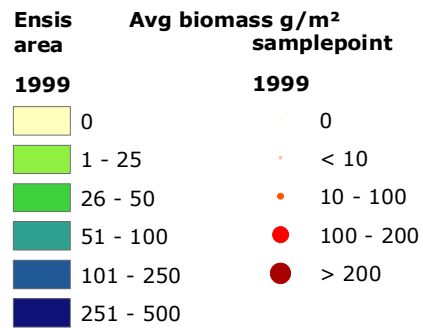
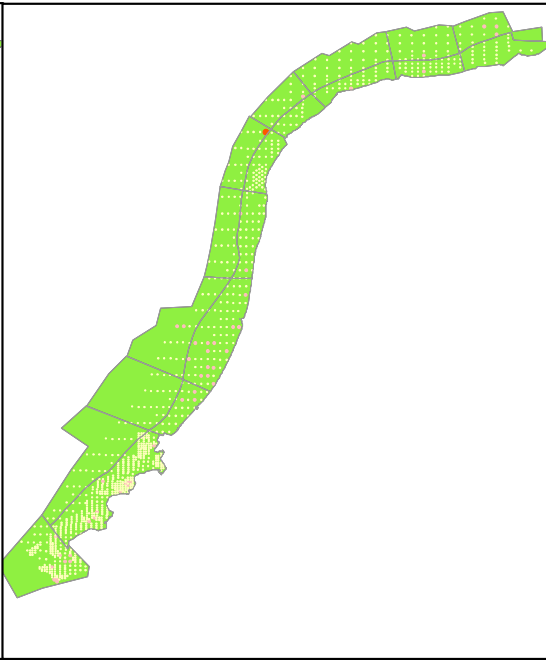
Tellina



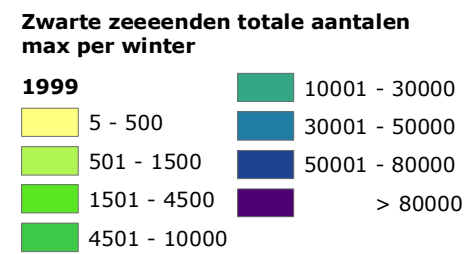
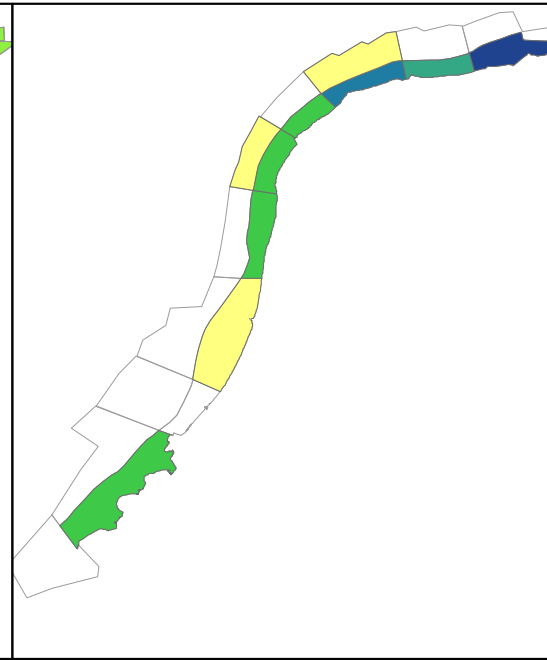
Spisula



Ensis



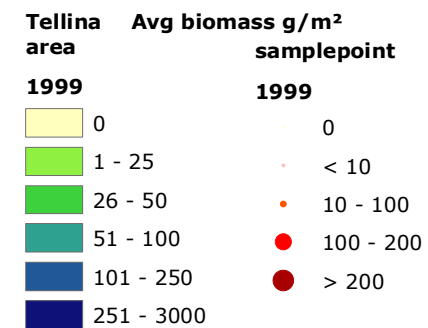
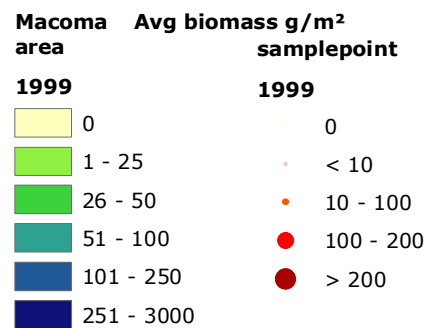
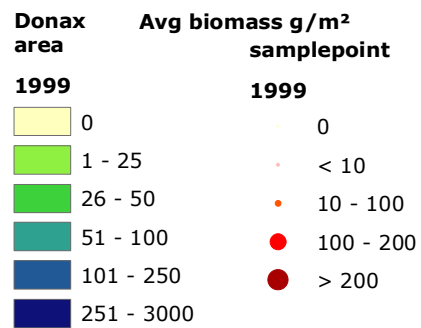
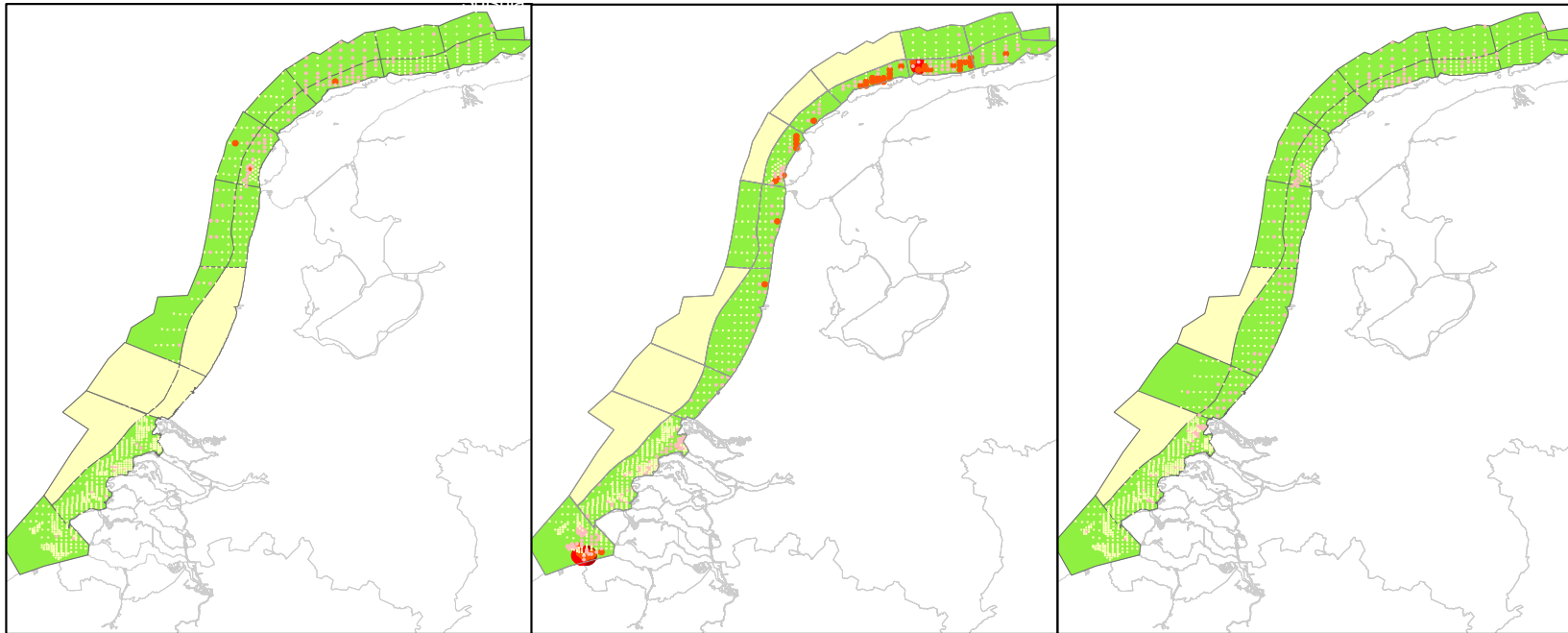
Zwarte zee-eenden



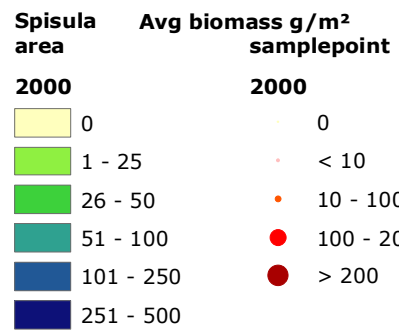
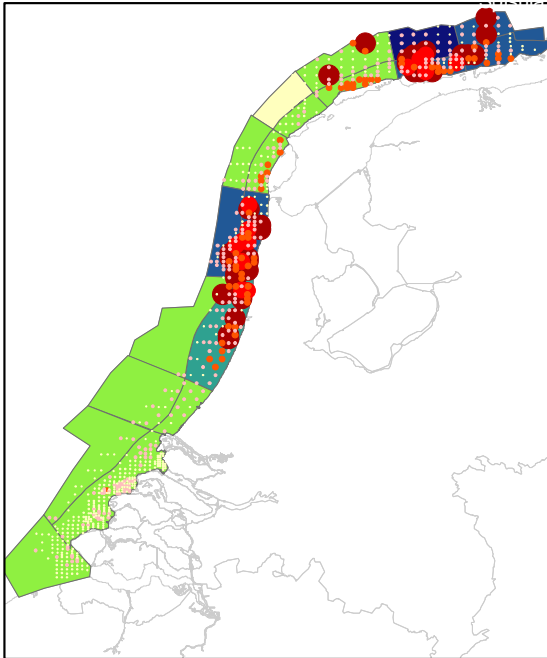
Donax

Macoma

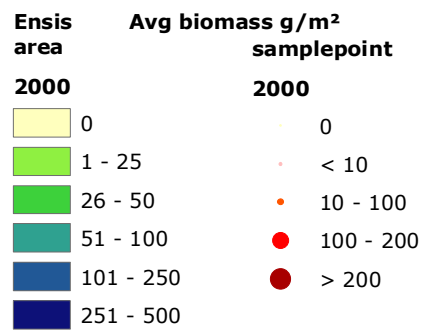
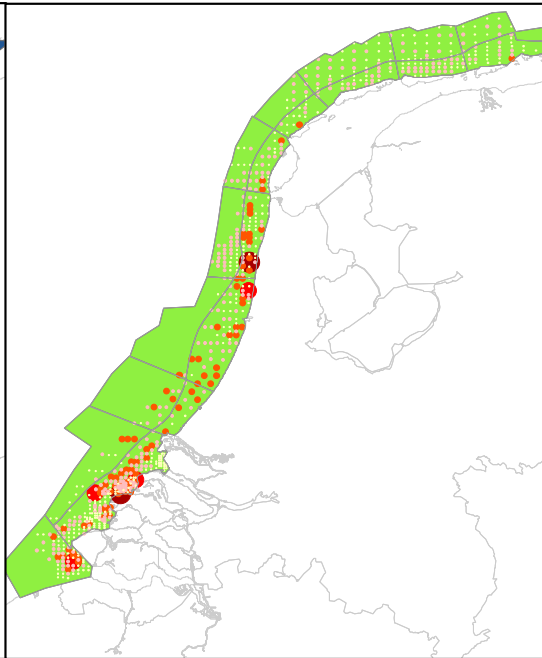
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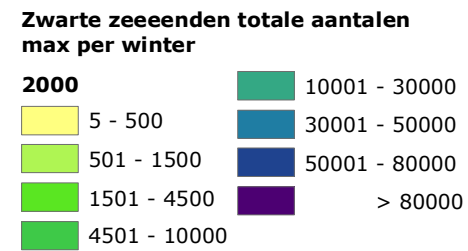
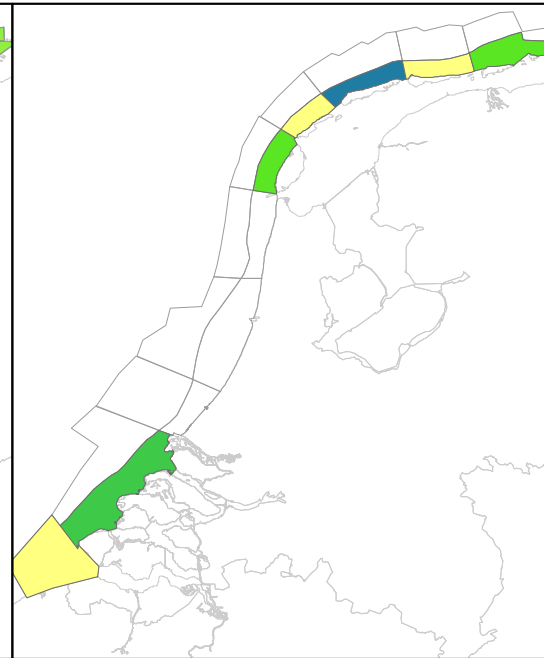
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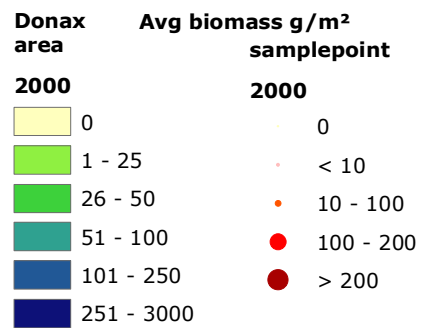
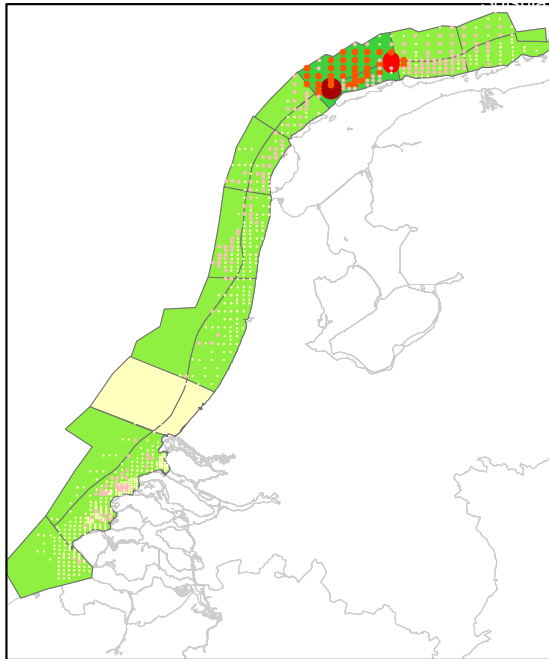
Ensis



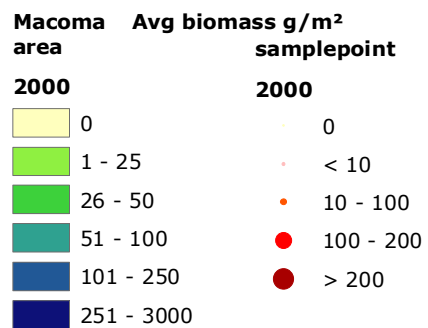
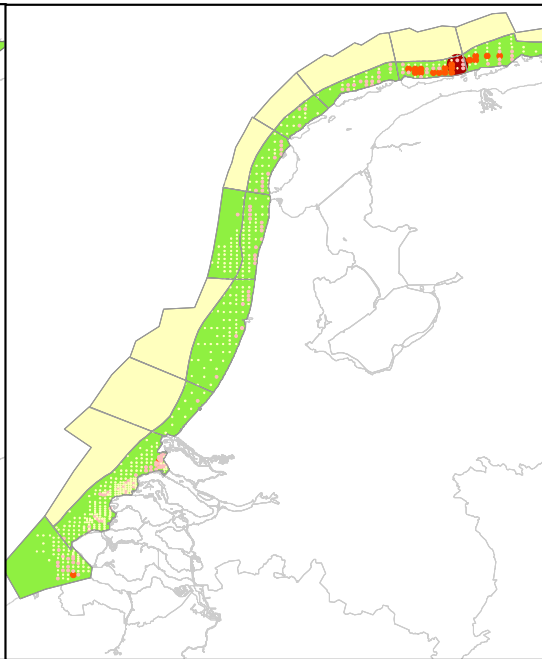
Zwarte zee-eenden



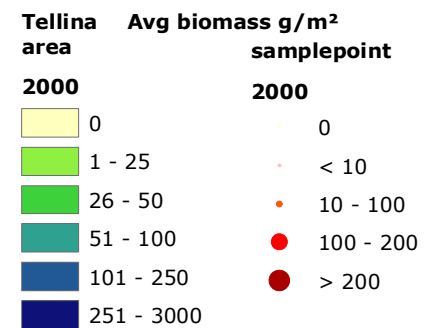
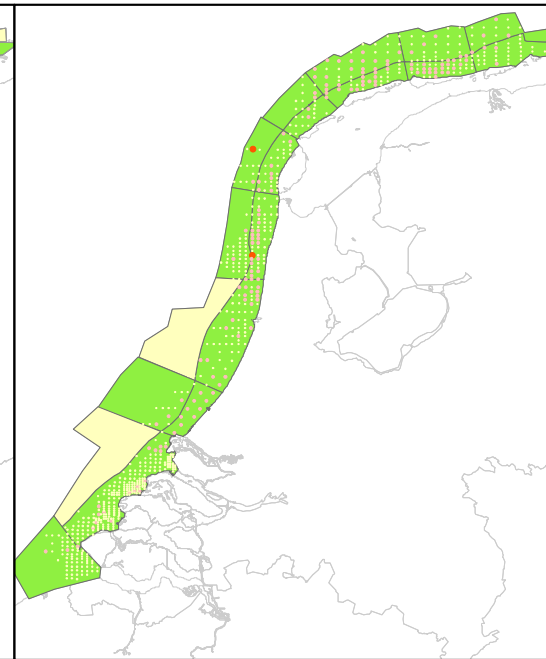
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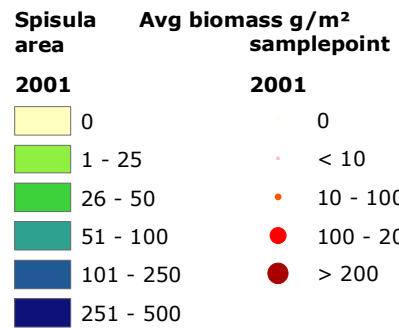
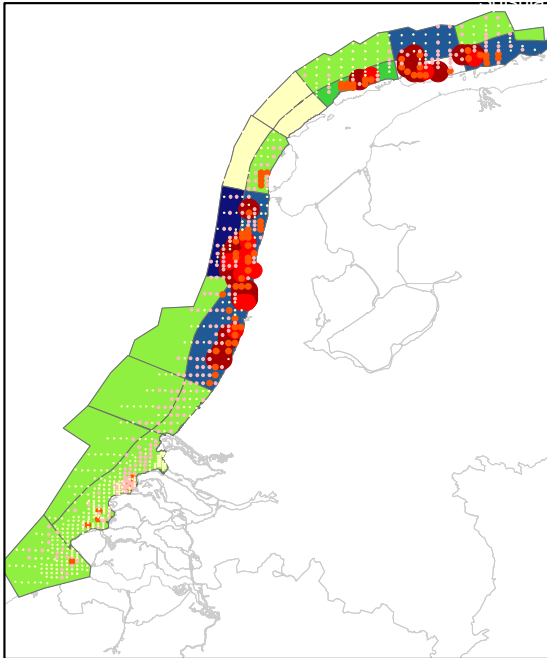
Macoma



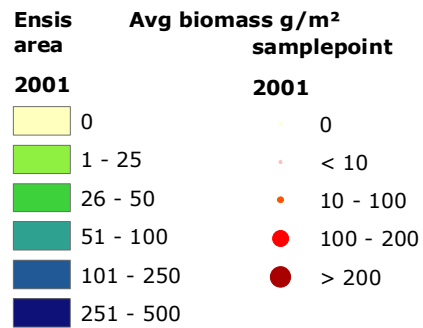
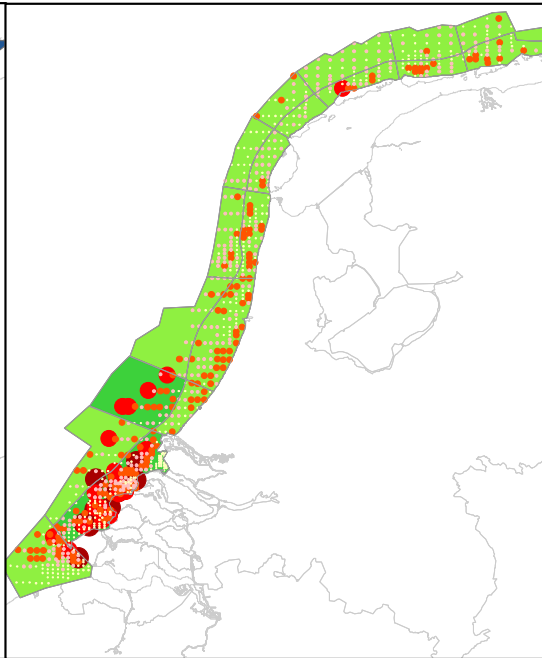
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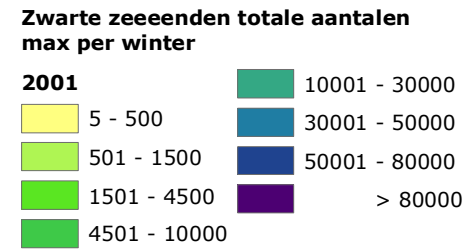
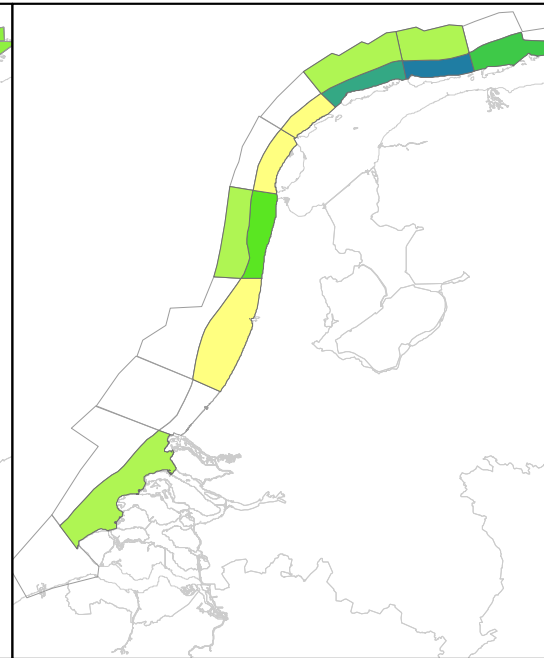
Spisula



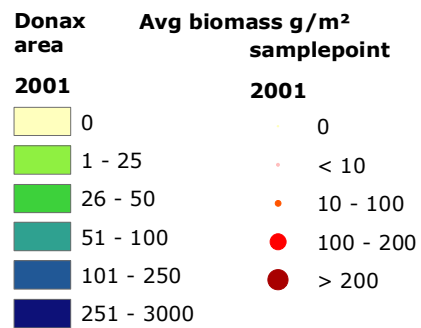
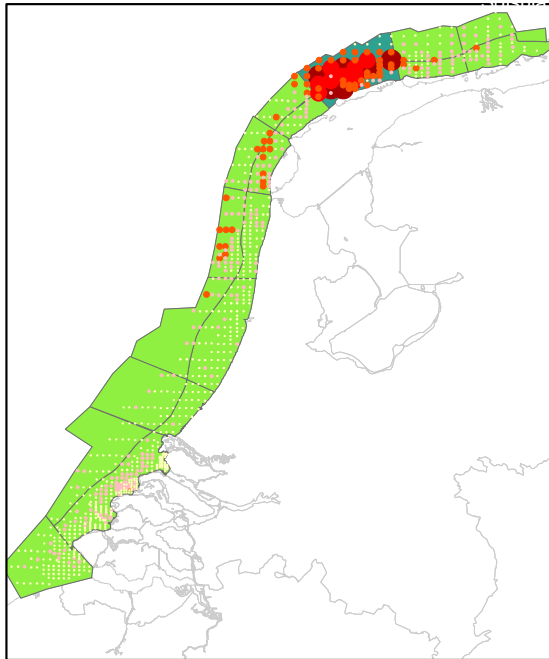
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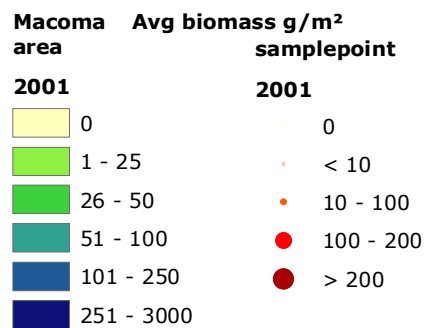
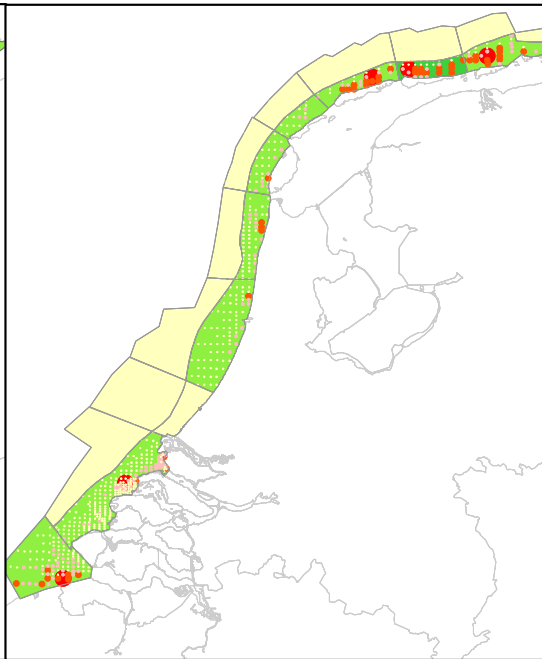
Zwarte zee-eenden



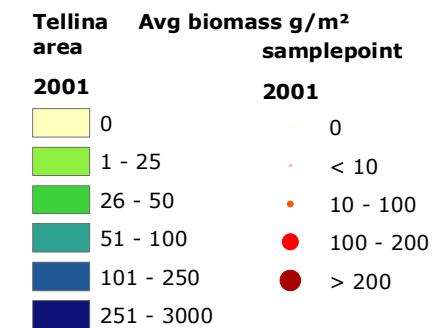
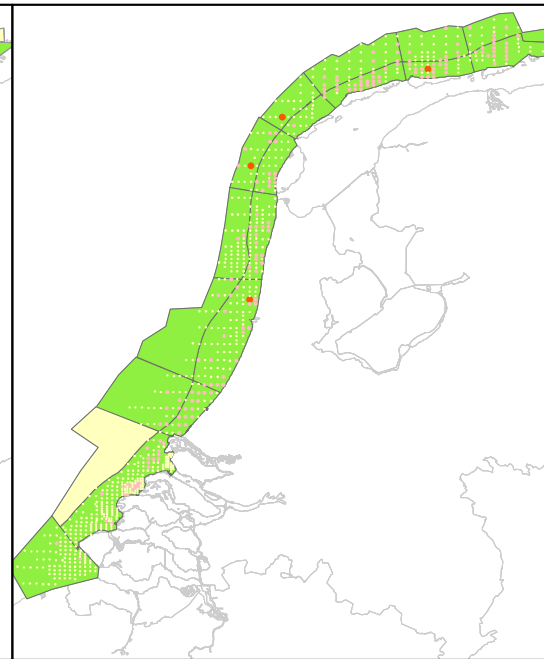
Donax



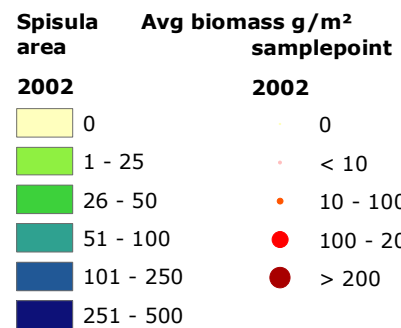
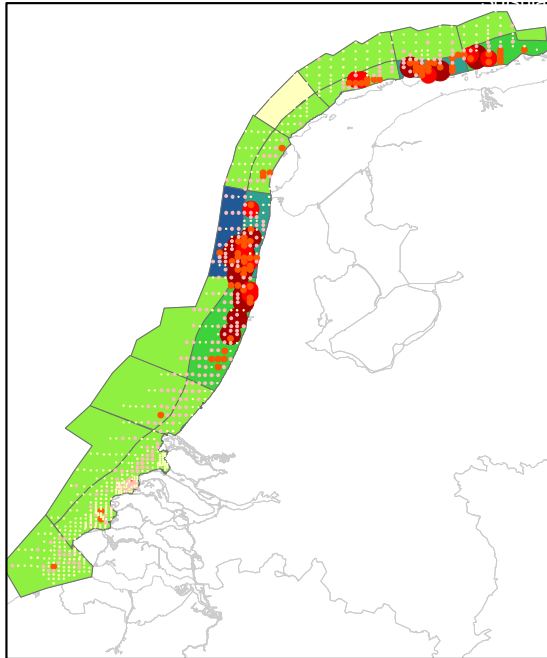
Macoma



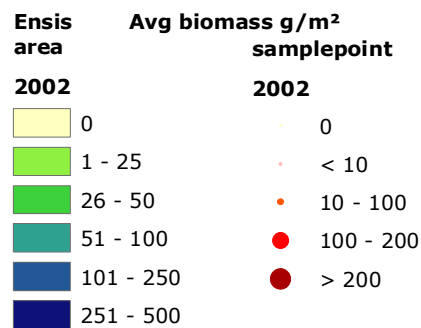
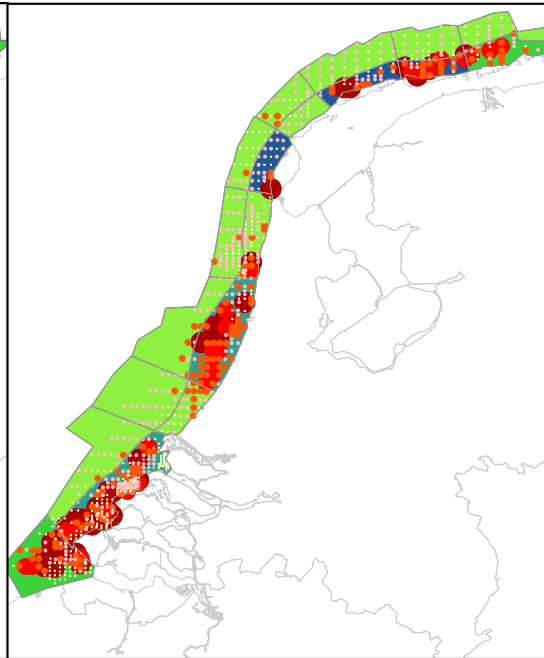
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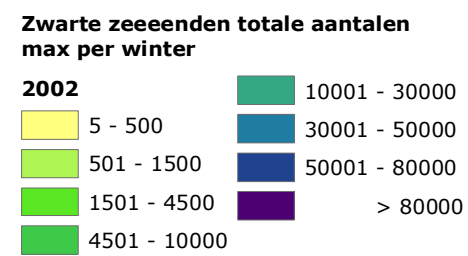
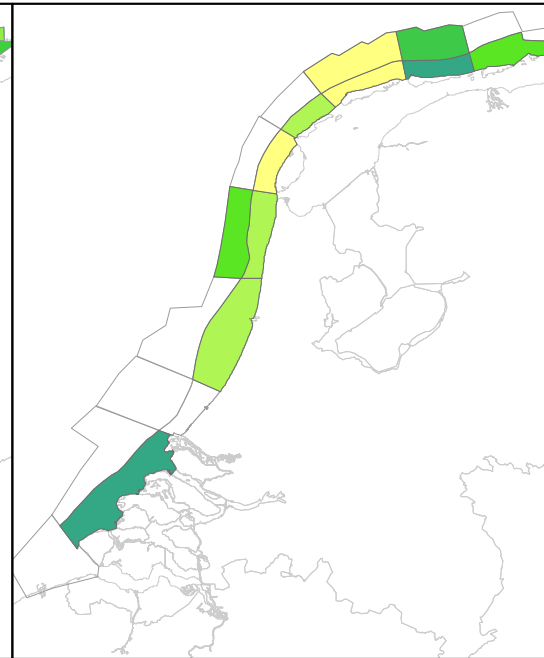
Spisula



Ensis



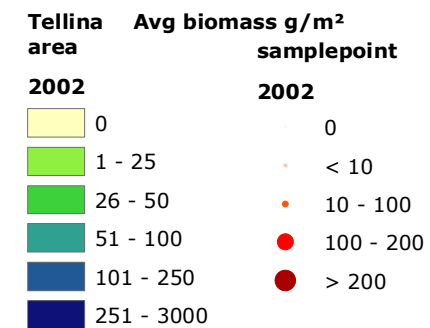
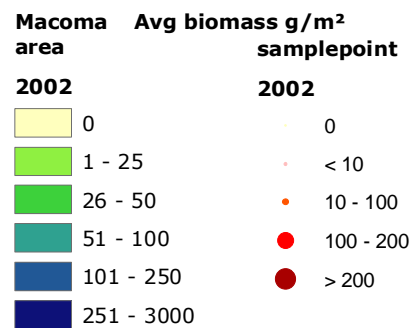
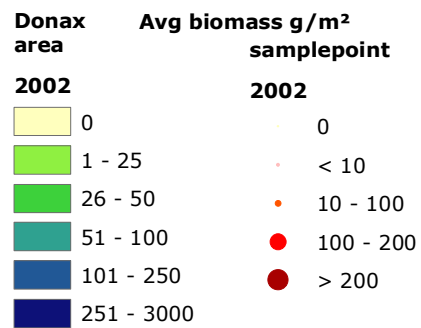
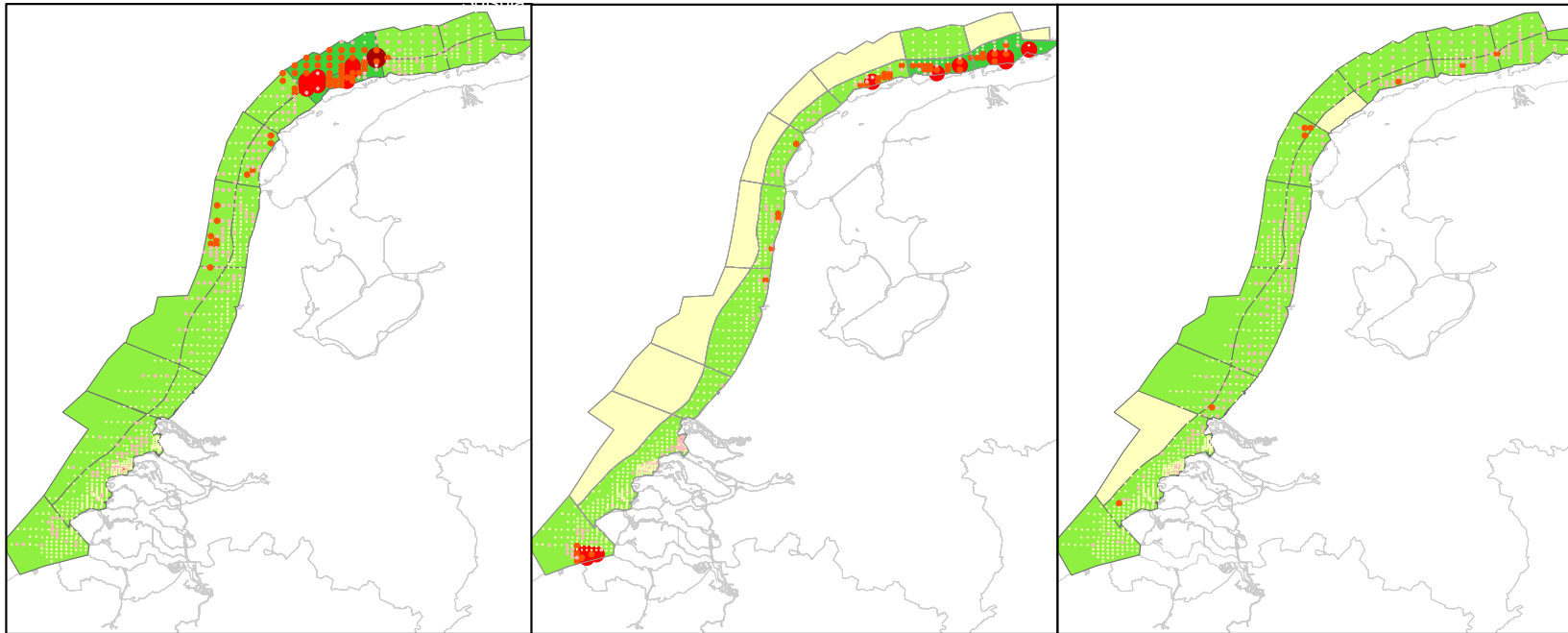
Zwarte zee-eenden



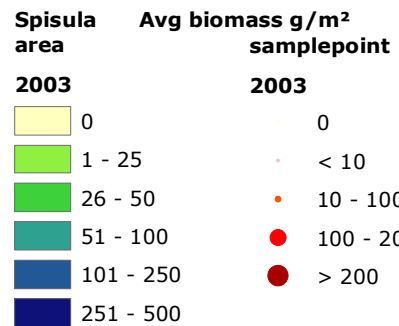
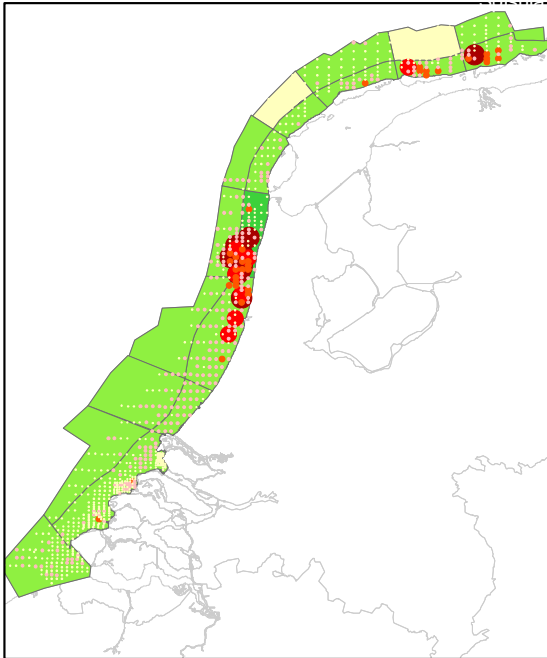
Donax

Macoma

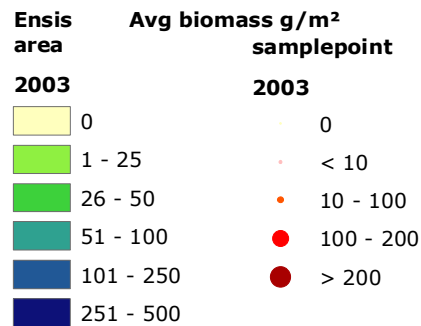
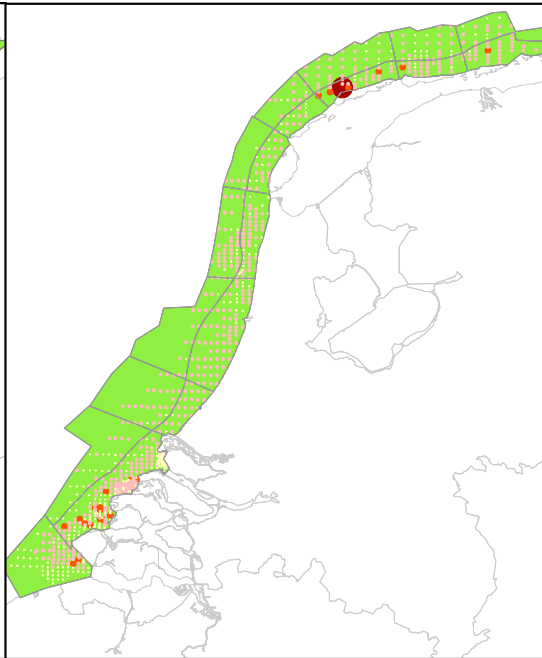
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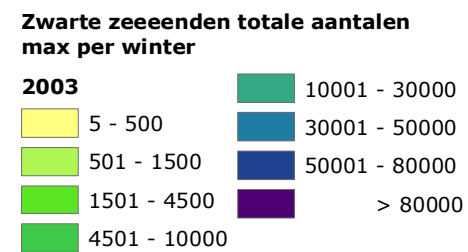
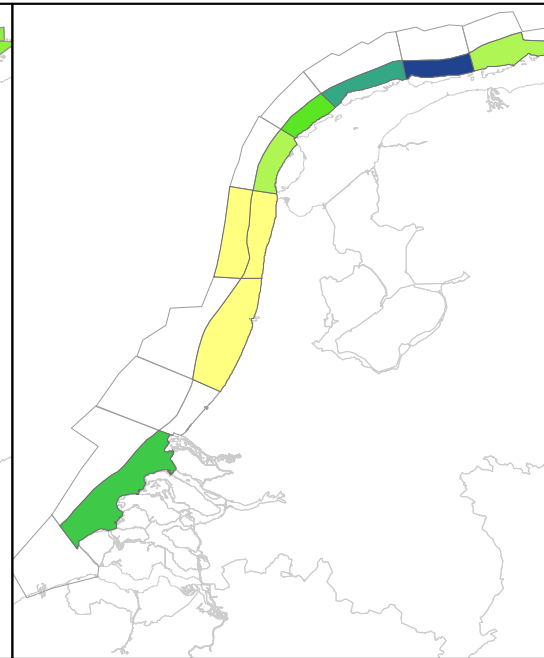
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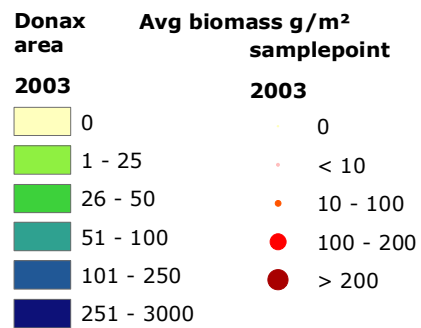
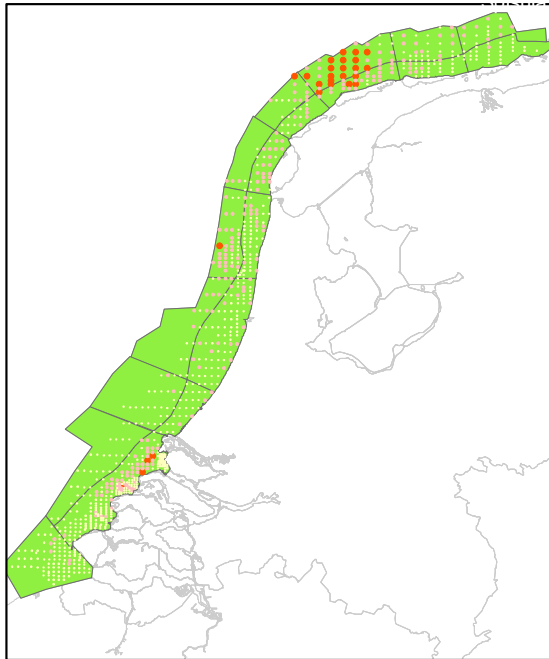
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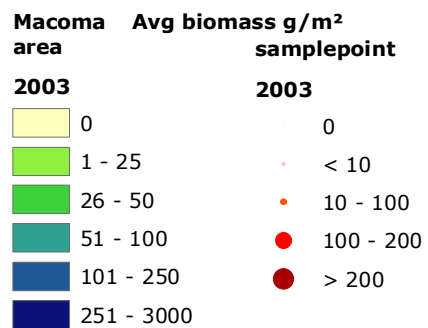
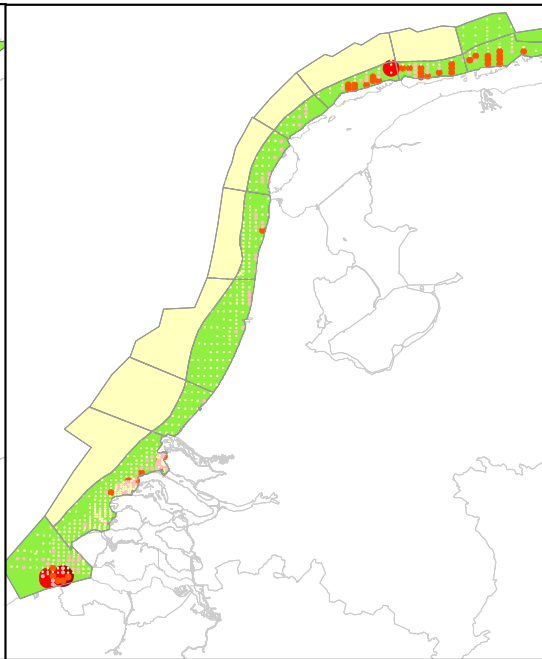
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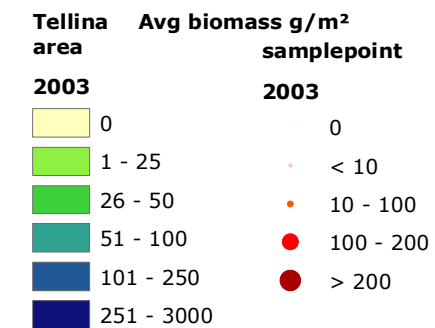
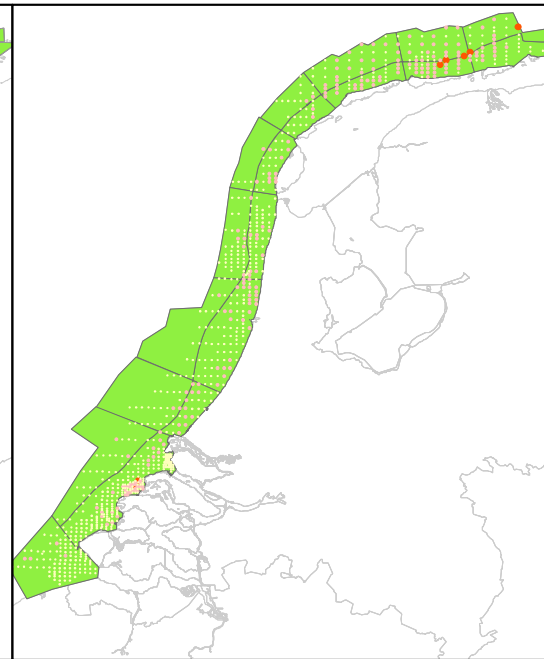
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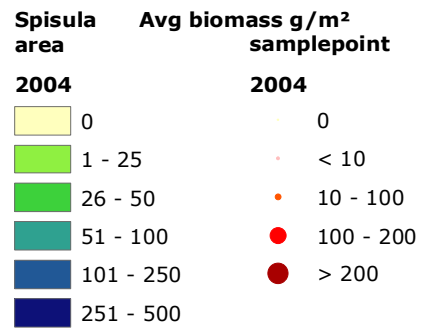
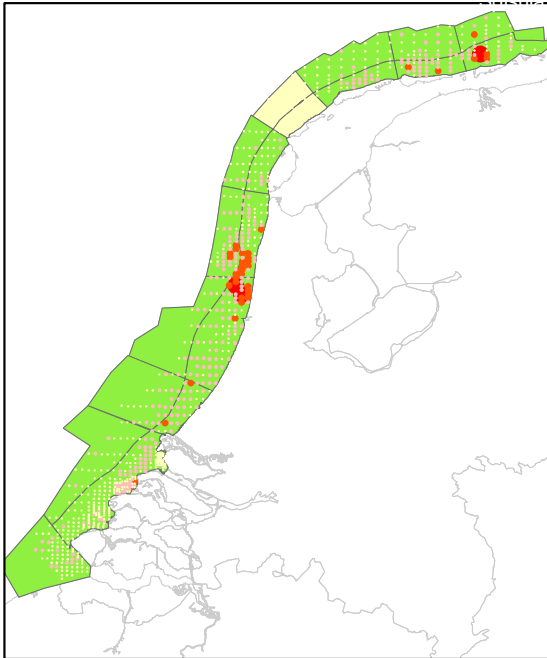
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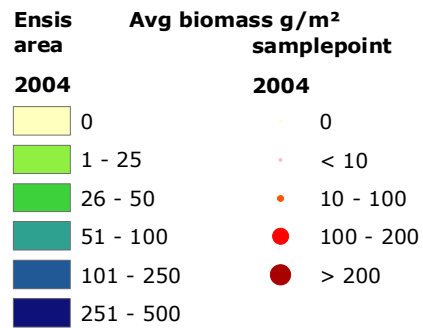
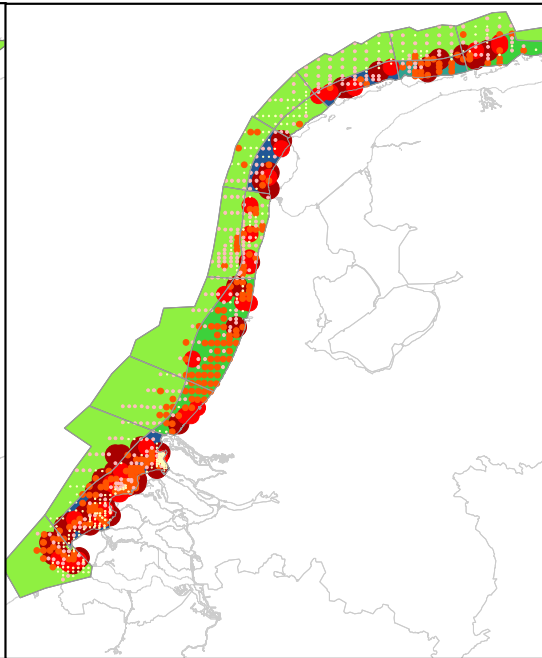
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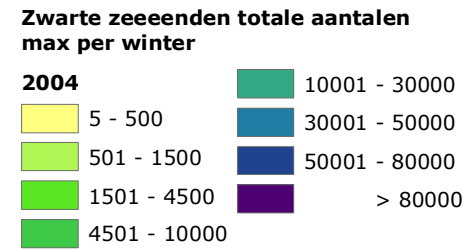
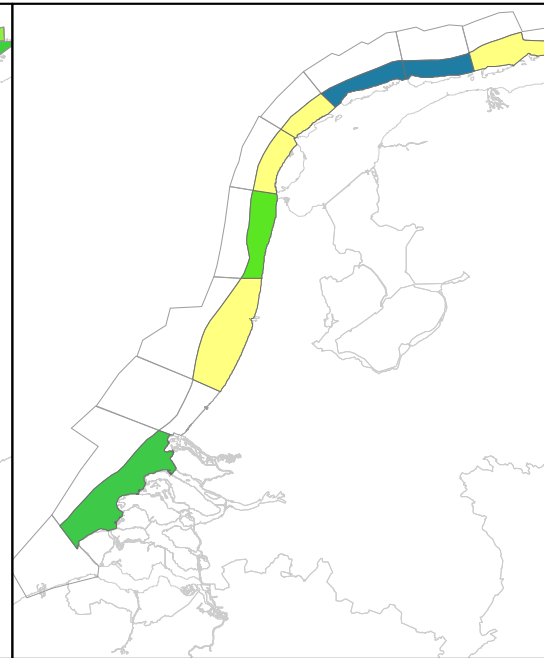
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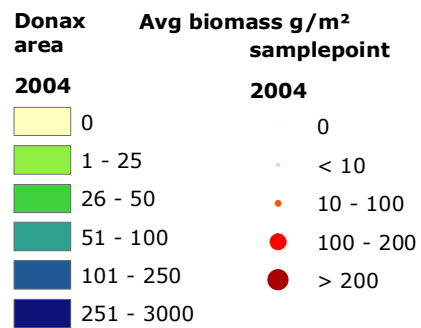
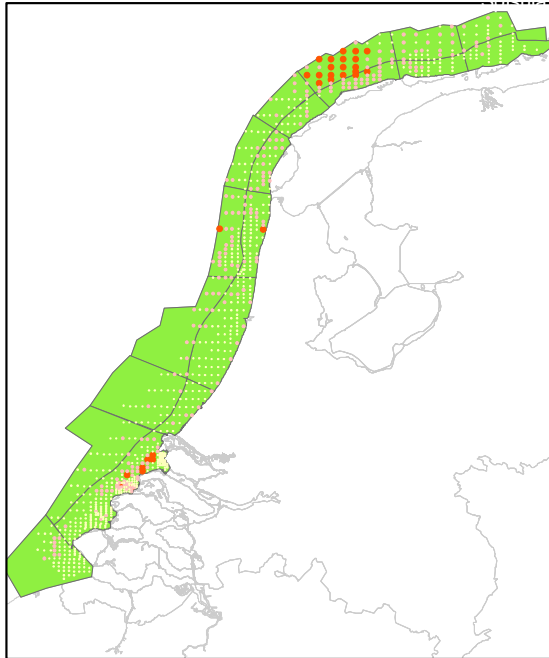
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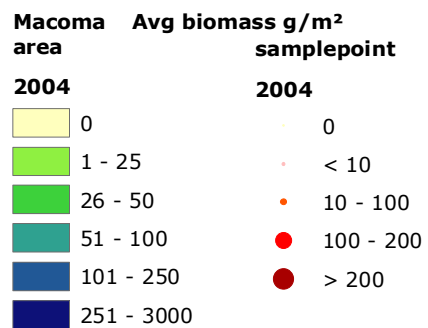
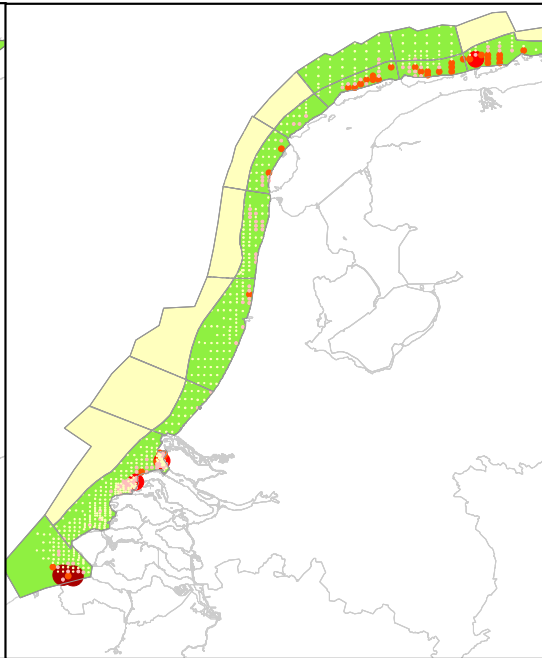
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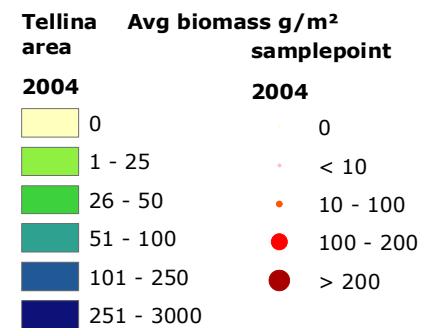
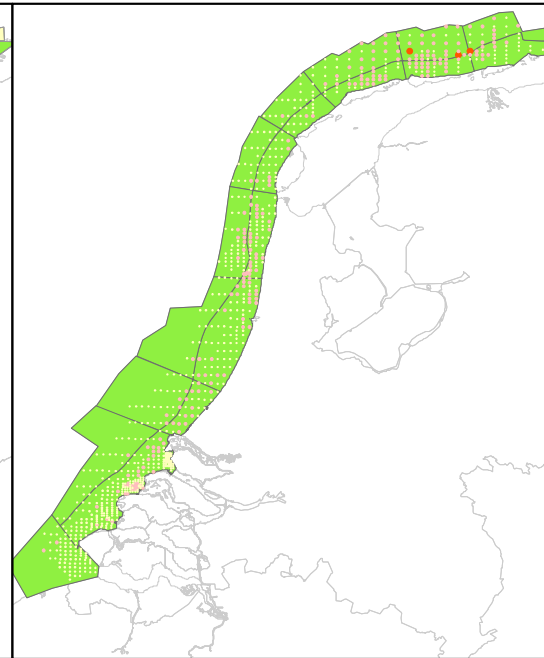
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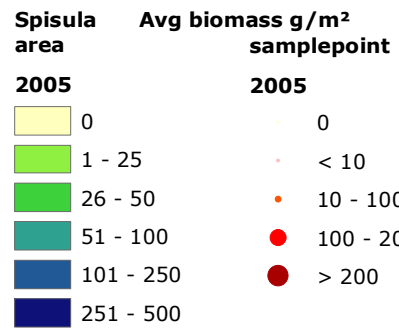
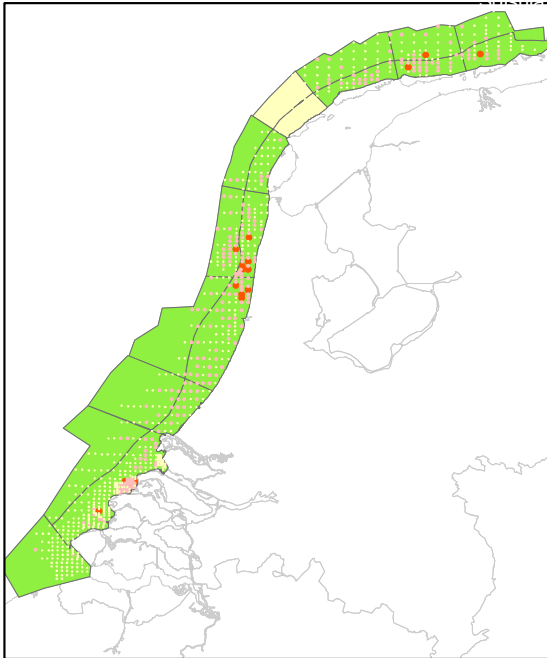
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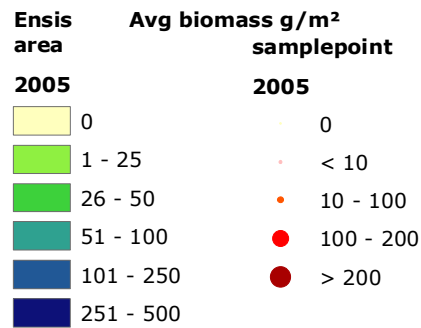
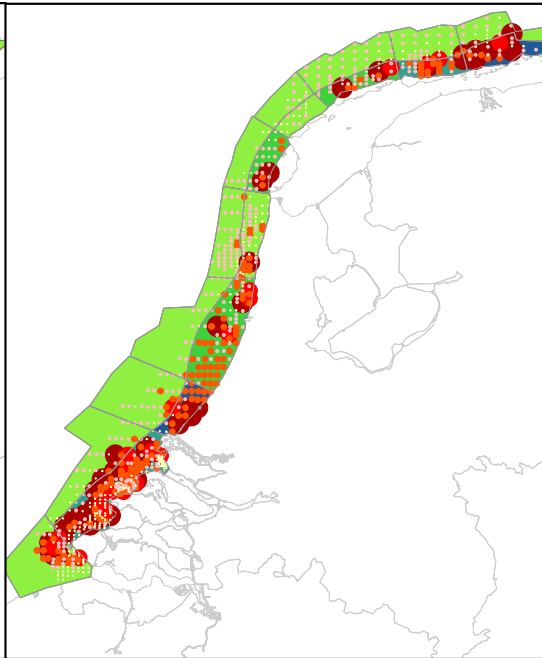
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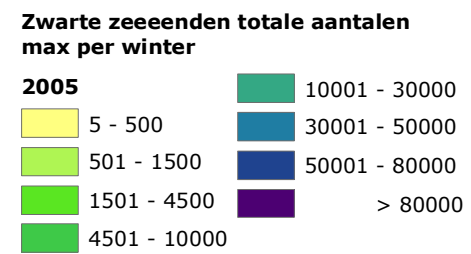
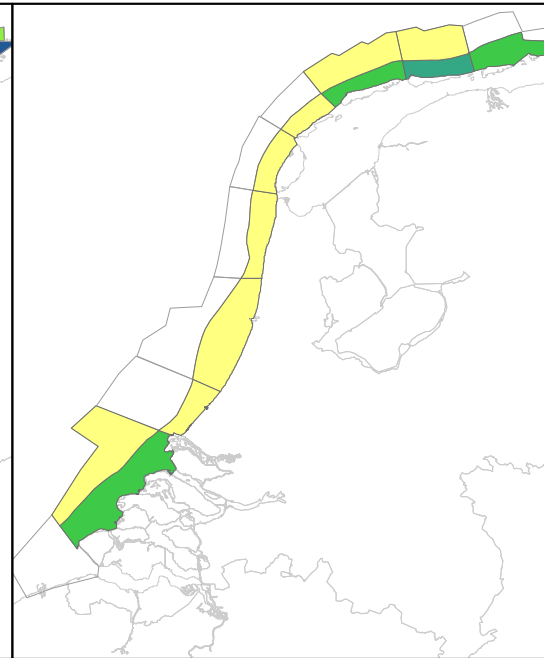
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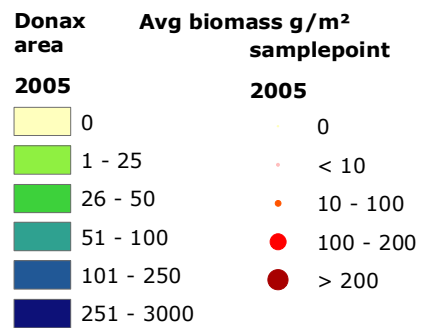
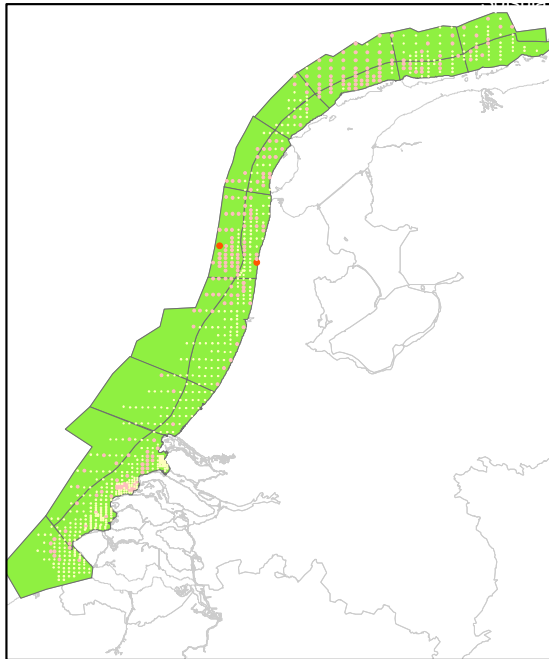
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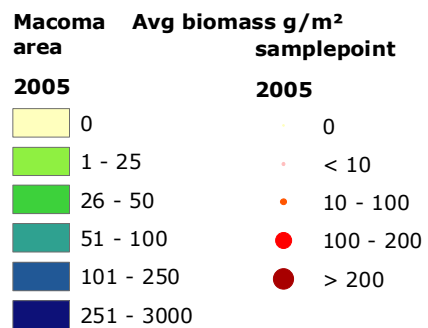
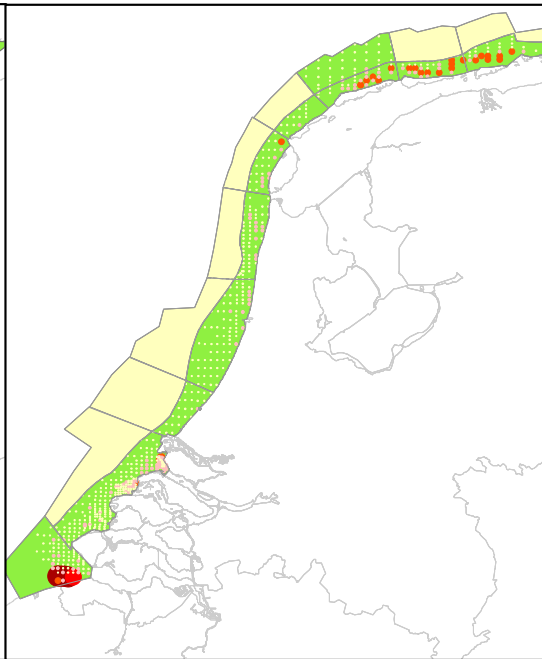
Zwarte zee-eenden



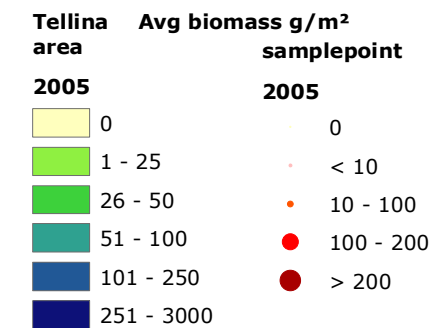
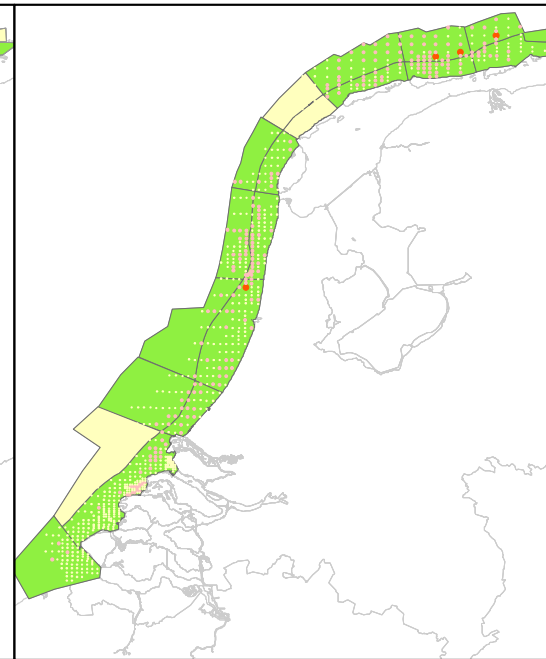
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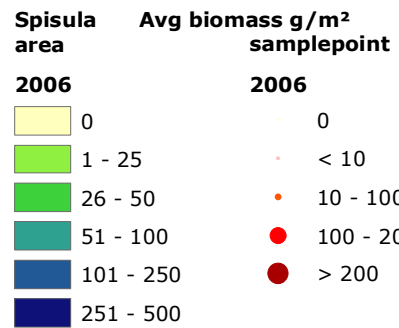
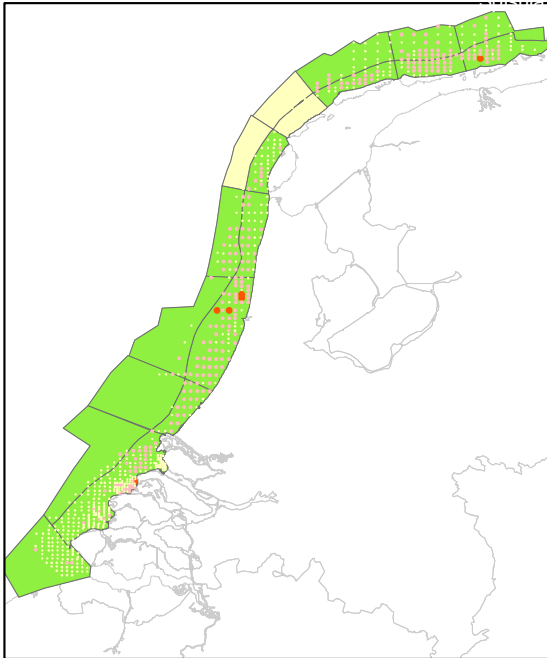
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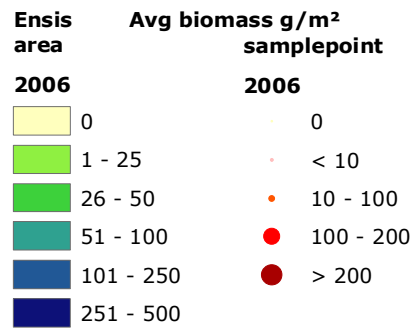
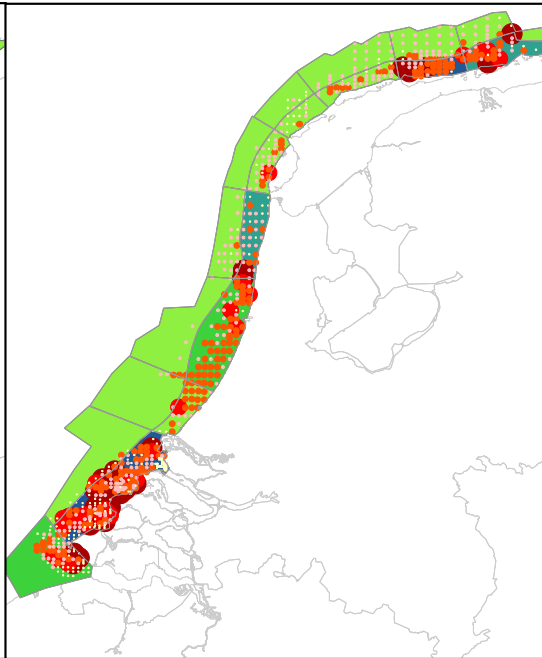
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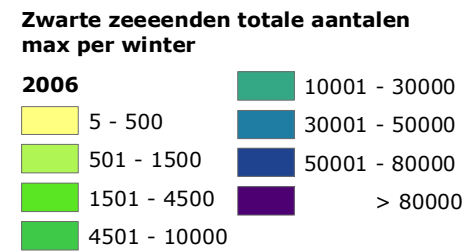
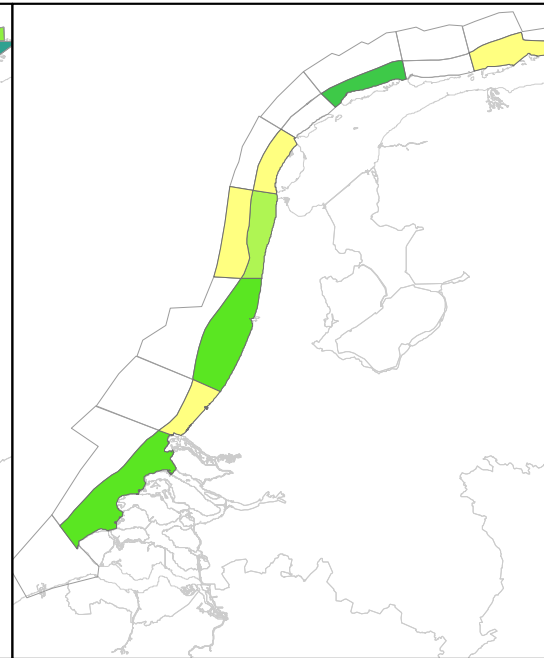
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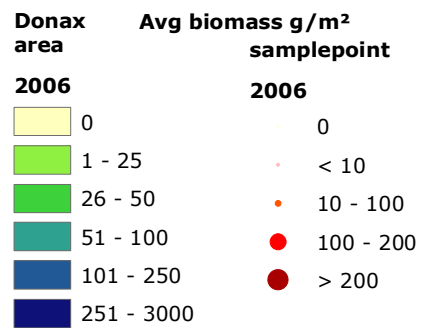
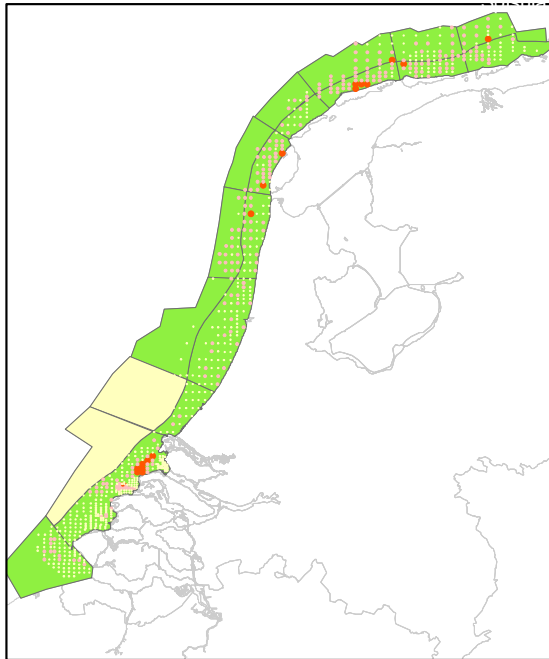
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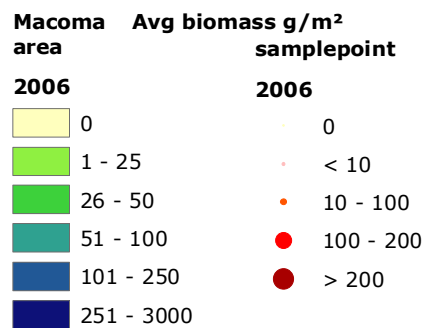
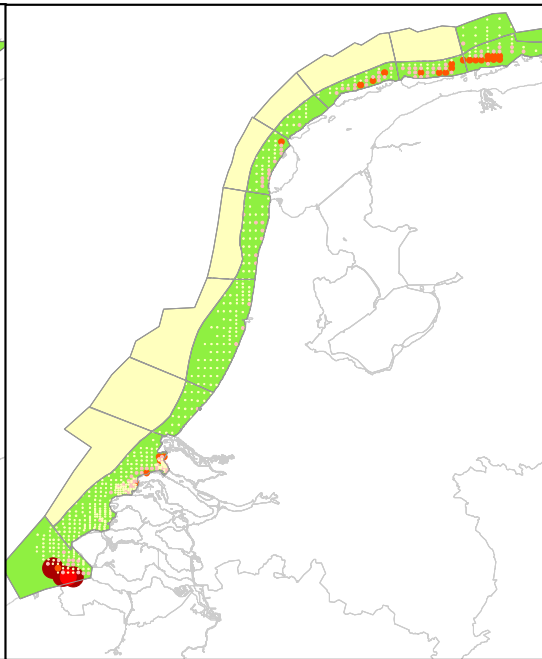
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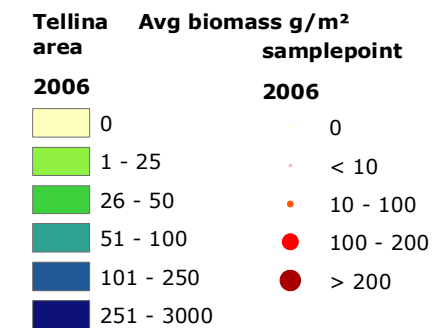
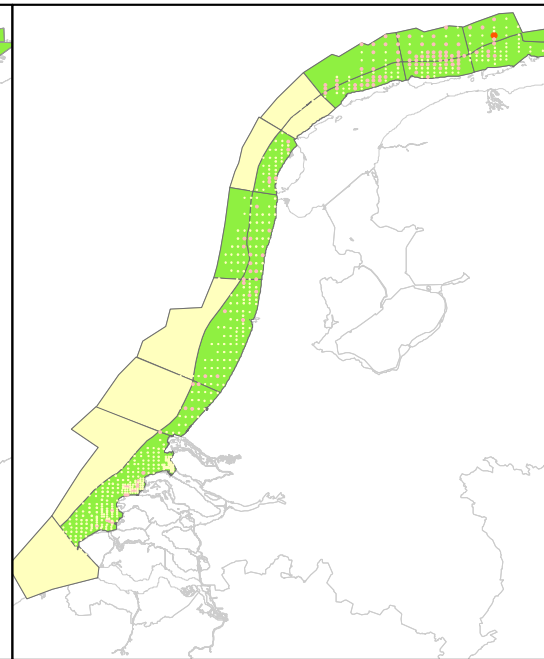
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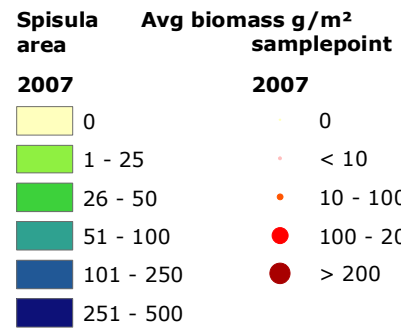
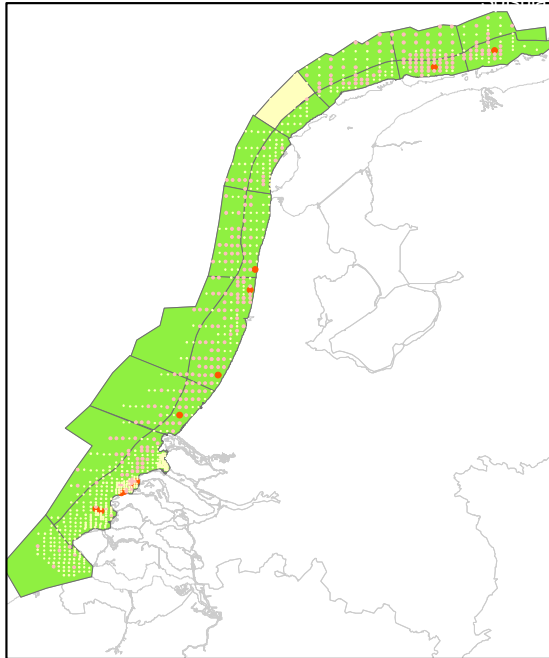
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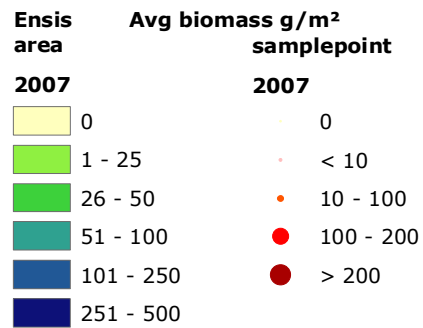
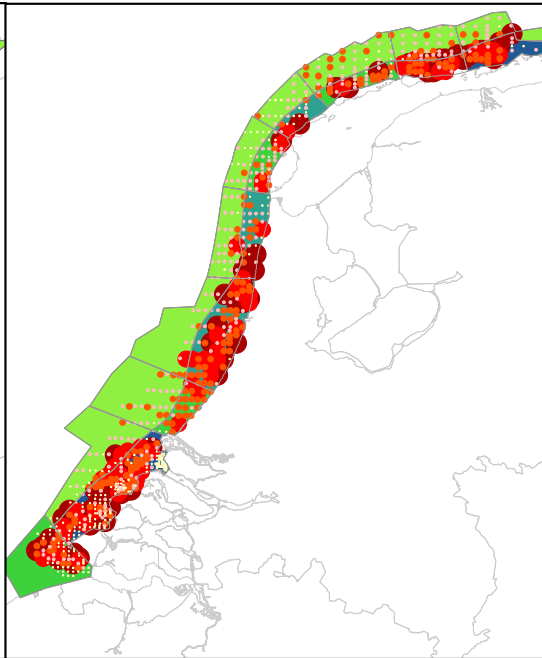
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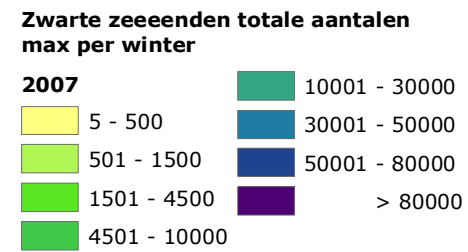
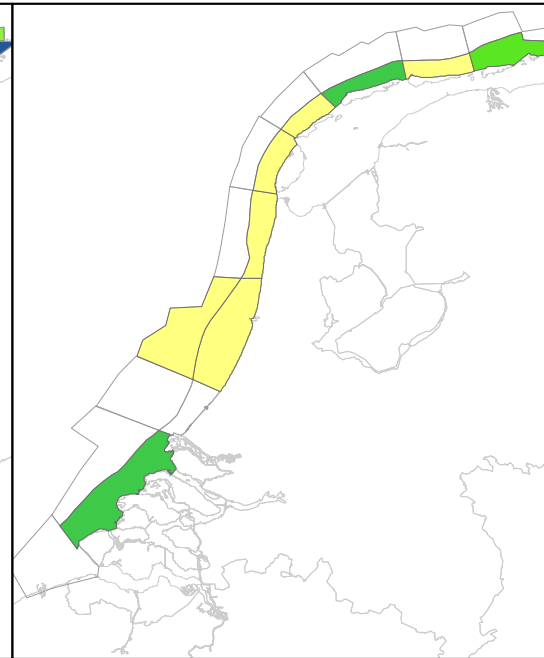
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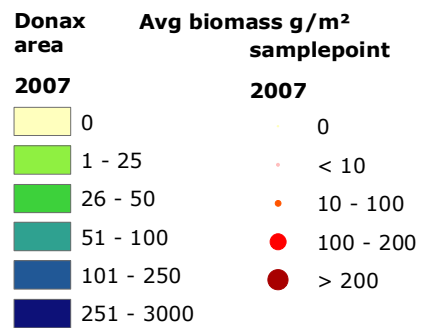
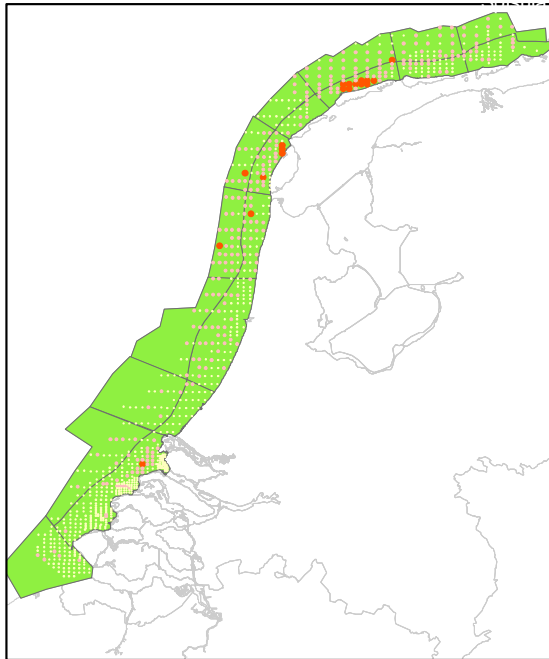
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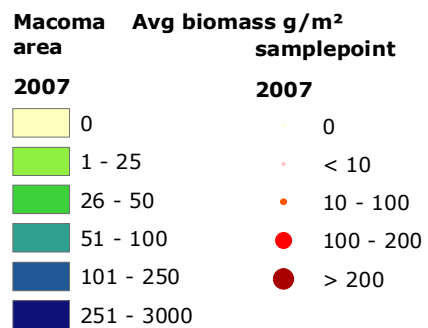
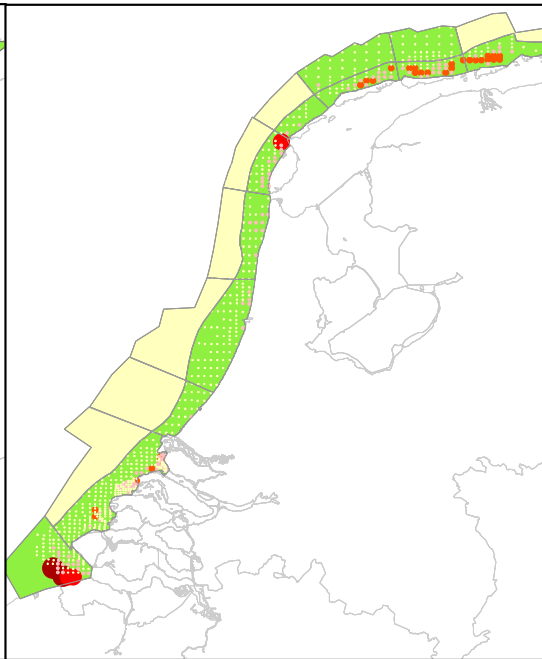
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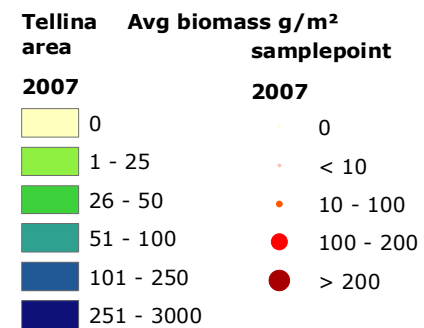
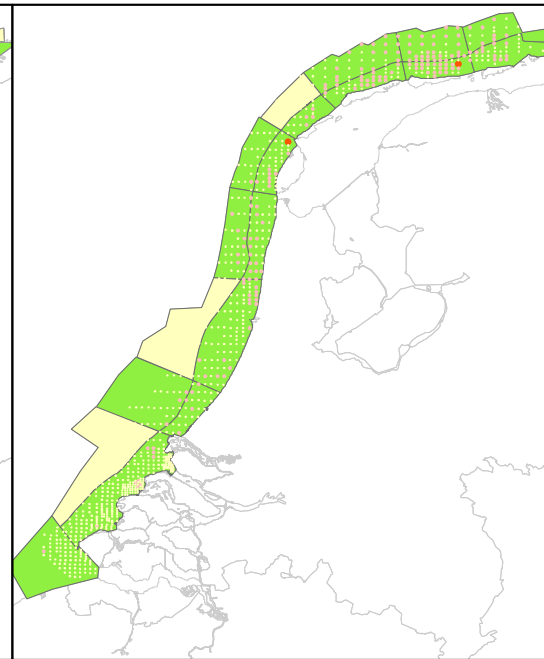
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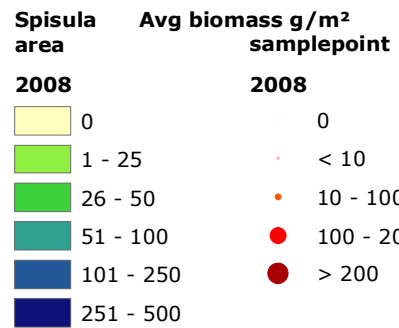
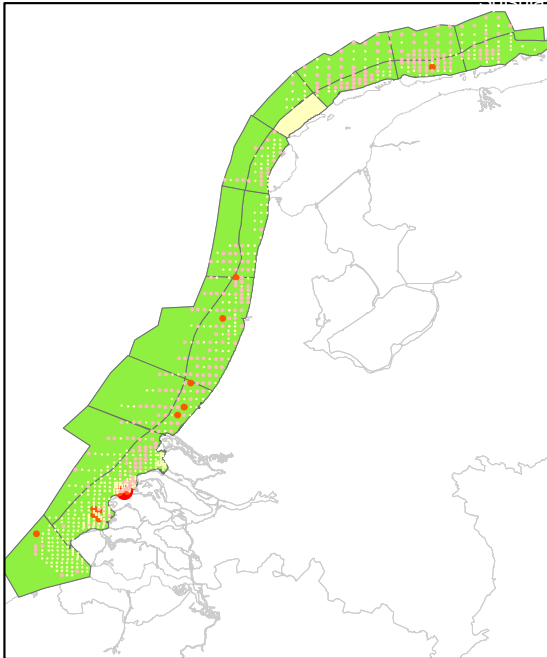
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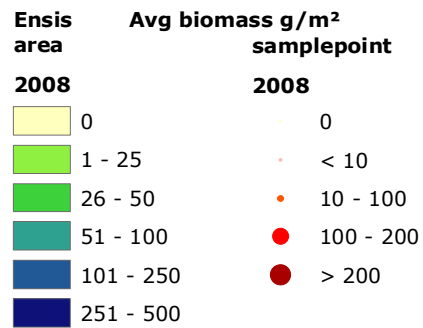
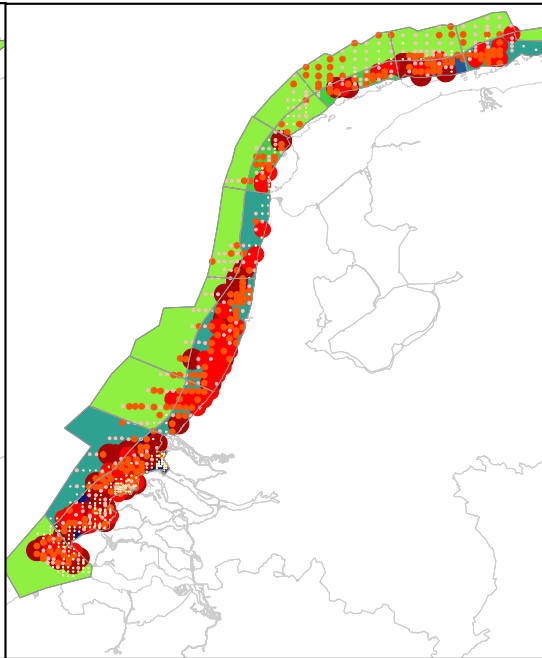
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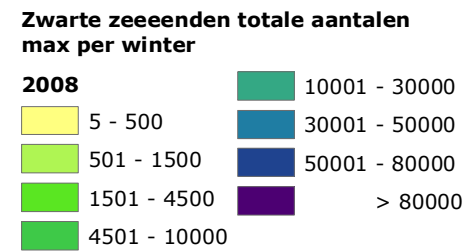
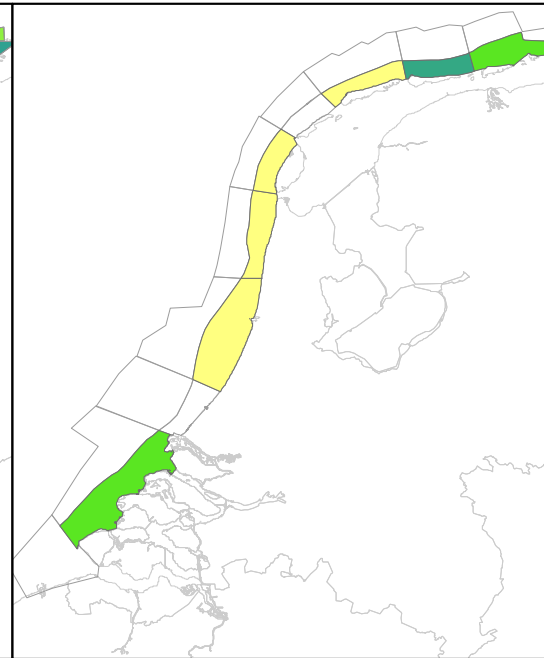
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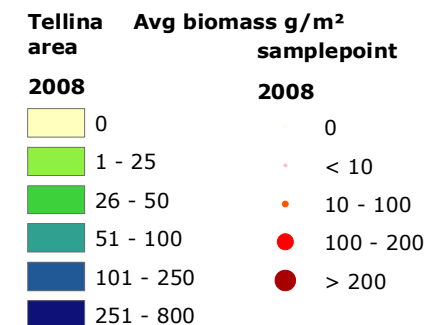
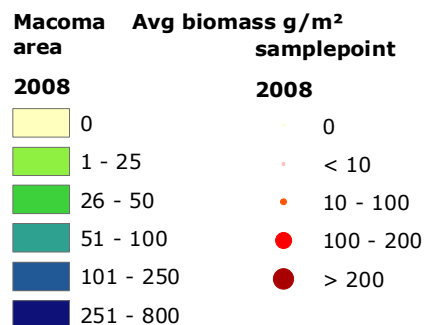
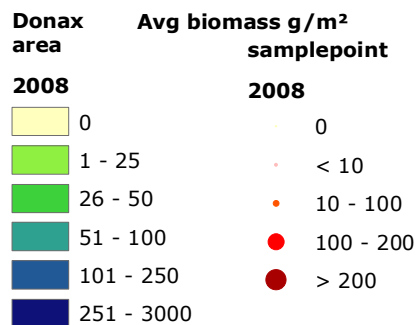
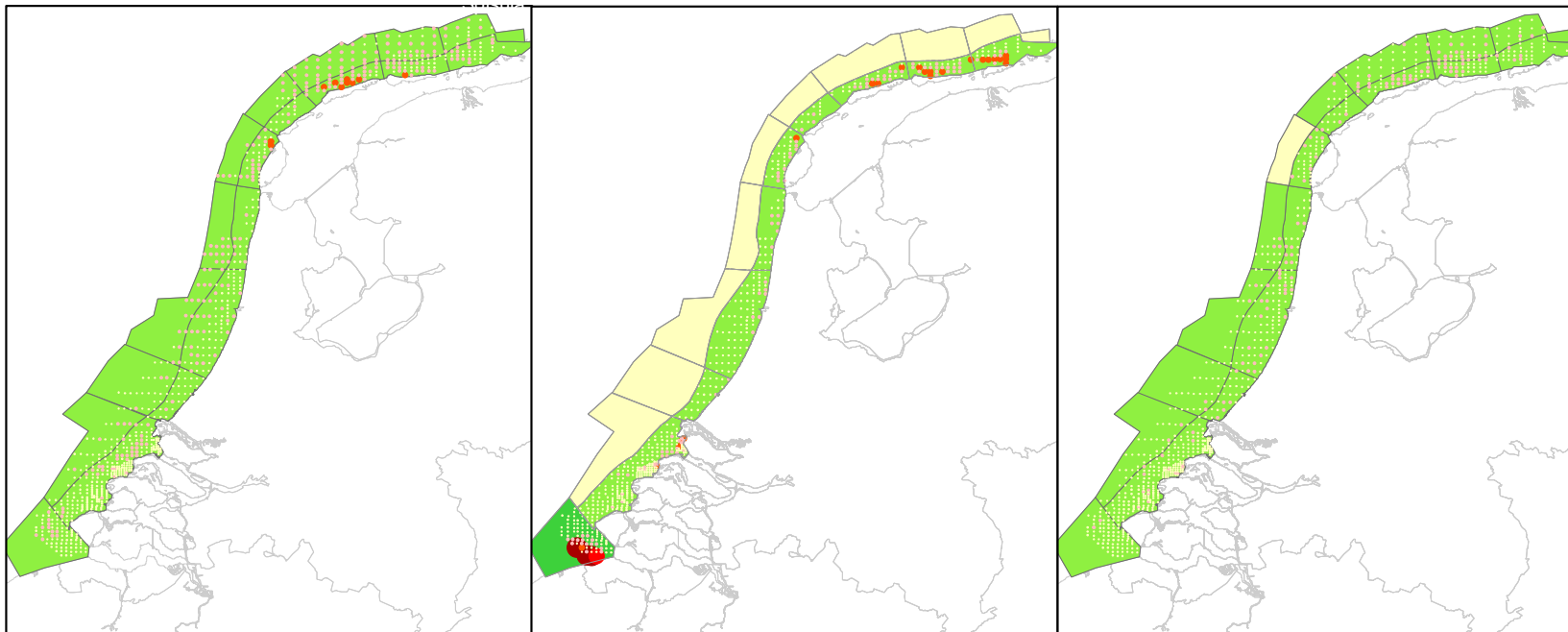
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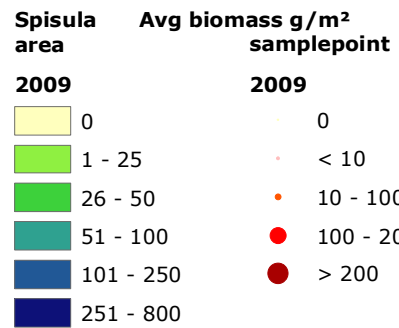
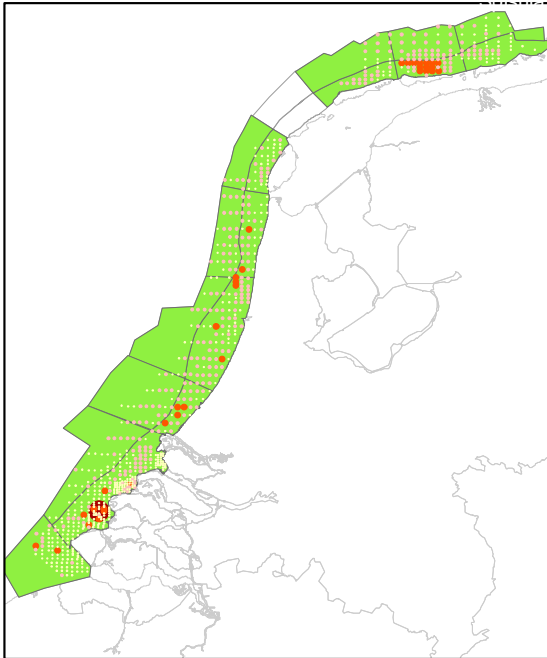
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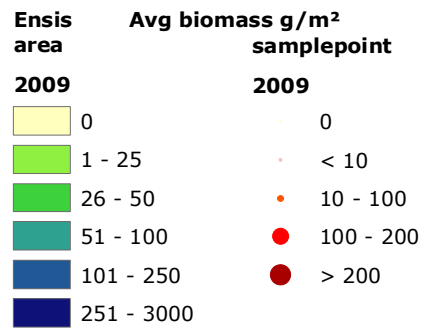
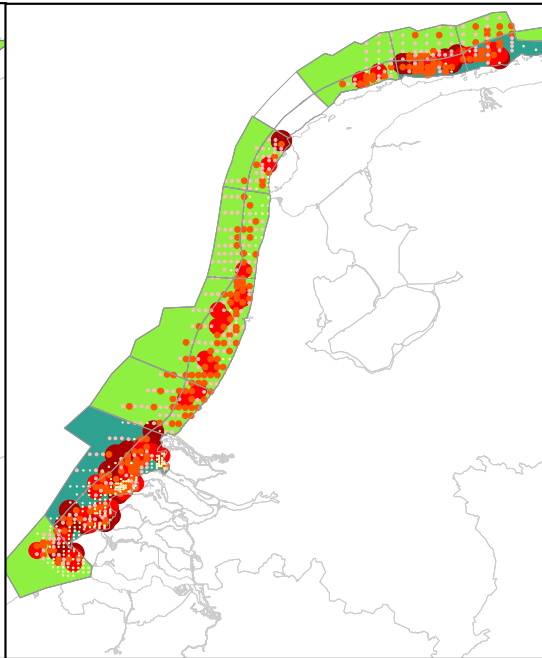
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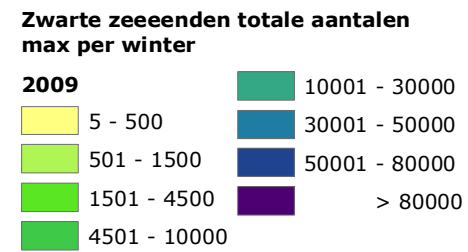
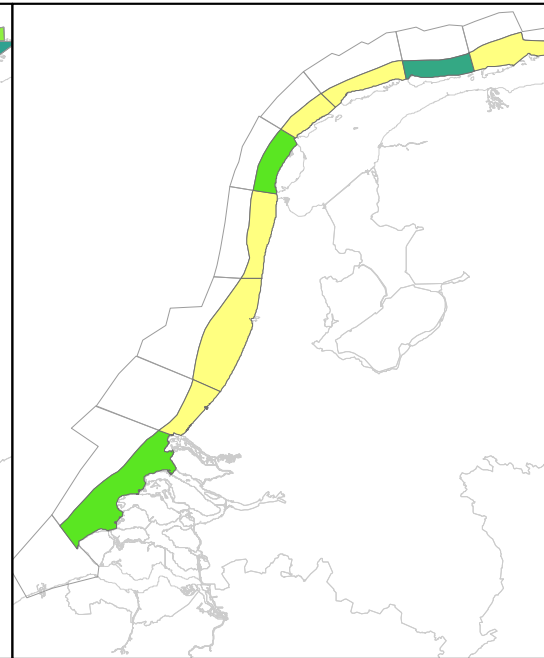
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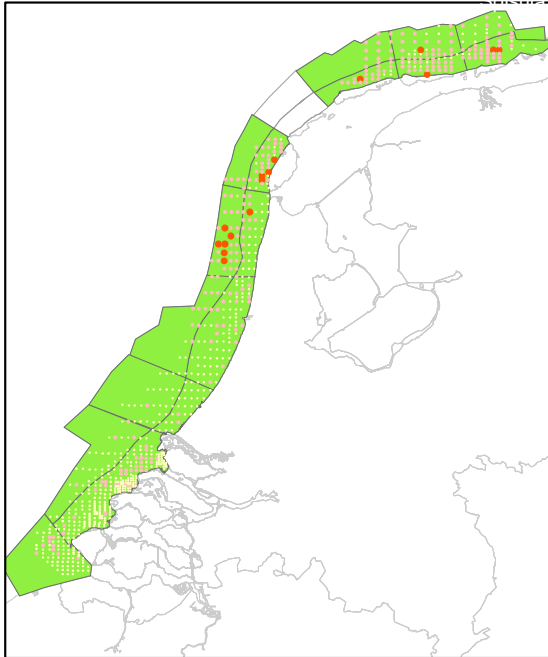
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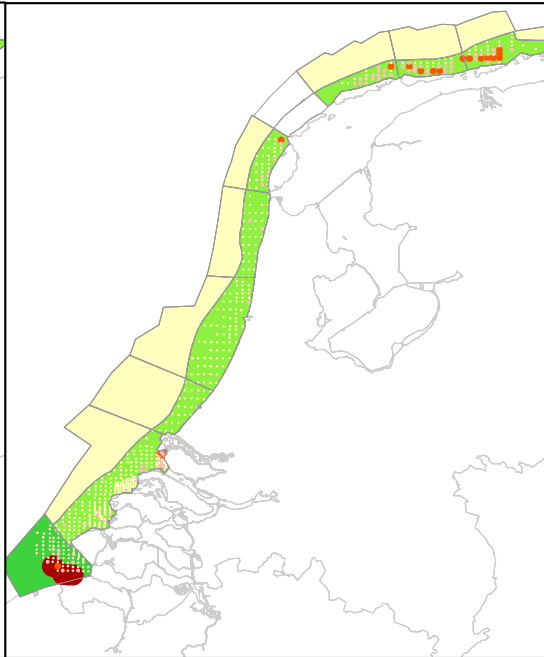
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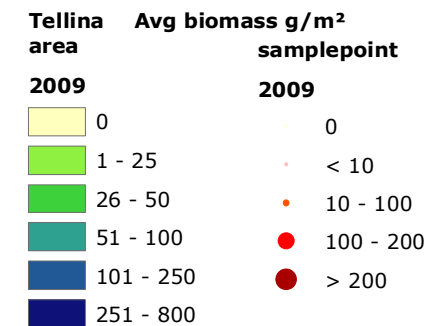
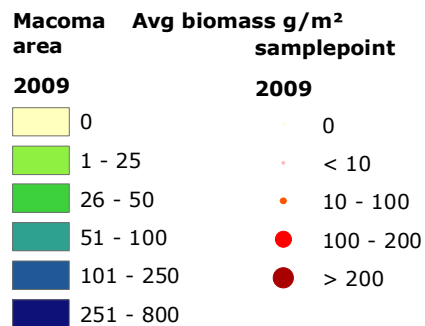
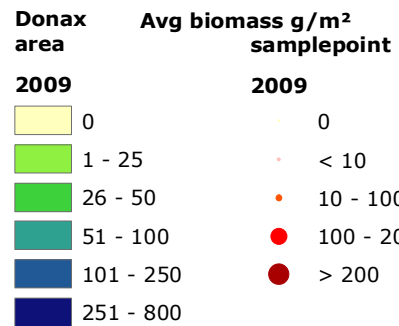
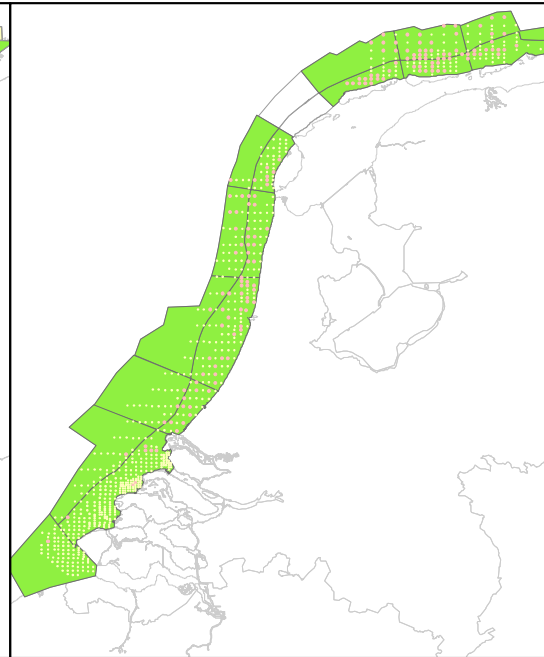
Donax



Macoma



Tellina



Bijlage J: Deelnemerslijst workshop 13 januari 2011 (Haarlem)

Saa Henry Kabuta
Johan Craeymeersch
Tim Schellekens
Mardik Leopold
Ilse De Mesel
Vincent Escaravage
Chris Dijkshoorn
Rik Duijts
Maarten Platteeuw
Marcel Rozemeijer
Martin Poot
Bot, Peter
Gerard van Berkel
John de Ronde
Luca van Duren
Johan de Kok
Joop Coolen

Verantwoording

Rapport C042/11
Projectnummer: 4303101101

Dit rapport is met grote zorgvuldigheid tot stand gekomen. De wetenschappelijke kwaliteit is intern getoetst door een collega-onderzoeker en het betreffende afdelingshoofd van IMARES.

Akkoord: Dr. Erik Meesters
Onderzoeker



Handtekening:

Datum: 30 maart 2011

Akkoord: Dr. Birgit Dauwe
Afdelingshoofd Delta



Handtekening:

Datum: 30 maart 2011