

University of Groningen

## Effects of vegetation patterns and grazers on tidal marshes

Elschot, Kelly

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2015

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Elschot, K. (2015). *Effects of vegetation patterns and grazers on tidal marshes*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.

### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

# References

## A

- Adler, P. B., D. A. Raff, and W. K. Lauenroth. 2001. The effect of grazing on the spatial heterogeneity of vegetation. *Oecologia* 128:465–479.
- Alberti, J., A. Méndez Casariego, P. Daleo, E. Fanjul, B. R. Silliman, M. D. Bertness, and O. O. Iribarne. 2010. Abiotic stress mediates top-down and bottom-up control in a Southwestern Atlantic salt marsh. *Oecologia* 163:181–91.
- Allen, J. R. L. 2000. Morphodynamics of Holocene salt marshes: a review sketch from the Atlantic and Southern North Sea coasts of Europe. *Quaternary Science Reviews* 19:1155–1231.
- Aller, R. C. 1994. Bioturbation and remineralization of sedimentary organic matter: effects of redox oscillation. *Chemical Geology* 114:331–345.
- Amat, J. A. 1986. Some aspects of the foraging ecology of a wintering Greylag Goose *Anser anser* population. *Bird study* 33:74–80.
- Amat, J. A. 1995. Effects of wintering greylag geese *Anser anser* on their *Scirpus* food plants. *Ecography* 18:155–163.
- Amat, J. A., and N. Varo. 2008. Grit ingestion and size-related consumption of tubers by graylag geese. *Waterbirds* 31:133–137.
- Andresen, H., J. P. Bakker, M. Brongers, B. Heydemann, and U. Irmiler. 1990. Long-term changes of salt marsh communities by cattle grazing. *Vegetatio* 89:137–148.
- De Araújo, W. S. 2013. Different relationships between galling and non-galling herbivore richness and plant species richness: a meta-analysis. *Arthropod-Plant Interactions* 7:373–377.
- Arsenault, R., and N. Owen-Smith. 2002. Facilitation versus competition in grazing herbivore assemblages. *Oikos* 97:313–318.
- Augustine, D. J., and T. L. Springer. 2013. Competition and facilitation between a native and a domestic herbivore: Trade-offs between forage quantity and quality. *Ecological Applications* 23:850–863.

## B

- Baas, A. C. W., and J. M. Nield. 2007. Modelling vegetated dune landscapes. *Geophysical Research Letters* 34:L06405.
- Baker, B. W., D. J. Augustine, J. A. Sedgwick, and B. C. Lubow. 2013. Ecosystem engineering varies spatially: a test of the vegetation modification paradigm for prairie dogs. *Ecography* 36:230–239.
- Bakker, E. S., M. E. Ritchie, H. Olf, D. G. Milchunas, and J. M. H. Knops. 2006. Herbivore impact on grassland plant diversity depends on habitat productivity and herbivore size. *Ecology letters* 9:780–8.
- Bakker, E. S., R. Van Der Wal, P. Esselink, and A. Siepel. 1999. Exploitation of a new staging area in the Dutch Wadden Sea by greylag geese *Anser anser*: the importance of food-plant dynamics. *Ardea* 87:1–13.
- Bakker, J. P. 1989. Nature management by grazing and cutting - On the ecological significance of grazing and cutting regimes applied to restore former species-rich grassland communities in the Netherlands. Kluwer Academic Publishing, Dordrecht.
- Bakker, J. P., D. Bos, and Y. De Vries. 2003. To graze or not to graze: that is the question. *in* W. J. Wolff, K. Essink, A. Kellerman, and M. A. Van Leeuwe, editors. *Challenges to the Wadden Sea Area. Proceedings of the 10th International Scientific Wadden Sea Symposium*. Ministry of Agriculture, Nature Management and Fisheries and Department of Marine Biology, University of Groningen, Groningen.
- Bakker, J. P., T. J. Bouma, and H. J. Van Wijnen. 2005. Interactions between microorganisms and intertidal plant communities. *Coastal and Estuarine Studies* 60:179–198.
- Bakker, J. P., J. De Leeuw, K. S. Dijkema, P. C. Leendertse, H. H. T. Prins, and J. Rozema. 1993. Salt marshes along the coast of The Netherlands. *Hydrobiologia* 265:73–95.
- Balke, T., P. C. Klaassen, A. Garbutt, D. Van Der Wal, P. M. J. Herman, and T. J. Bouma. 2012. Conditional outcome of ecosystem engineering: A case study on tussocks of the salt marsh pioneer *Spartina anglica*. *Geomorphology* 153–154:232–238.
- Bartholdy, J., J. B. T. Pedersen, and A. T. Bartholdy. 2010. Autocompaction of shallow silty salt marsh clay. *Sedimentary Geology* 223:310–319.
- Baustian, J. J., I. A. Mendelsohn, and M. W. Hester. 2012. Vegetation's importance in regulating surface elevation in a coastal salt marsh facing elevated rates of sea level rise. *Global Change Biology* 18:3377–3382.

- Beauchard, O., J. Teuchies, S. Jacobs, E. Struyf, T. Van Der Spiet, and P. Meire. 2013. Sediment Abiotic Patterns in Current and Newly Created Intertidal Habitats from an Impacted Estuary. *Estuaries and Coasts* 37:973–985.
- Di Bella, C. E., E. Jacobo, R. A. Golluscio, and A. M. Rodríguez. 2013. Effect of cattle grazing on soil salinity and vegetation composition along an elevation gradient in a temperate coastal salt marsh of Samborombón Bay (Argentina). *Wetlands Ecology and Management* 22:1–13.
- Bellard, C., C. Bertelsmeier, P. Leadley, W. Thuiller, and F. Courchamp. 2012. Impacts of climate change on the future of biodiversity. *Ecology letters* 15:365–377.
- Bertness, M. D., C. P. Brisson, M. C. Bevil, and S. M. Crotty. 2014. Herbivory drives the spread of salt marsh die-off. *PloS one* 9:e92916.
- Bertness, M. D., and G. H. Leonard. 1997. The role of positive interactions in communities: lessons from intertidal habitats. *Ecology* 78:1976–1989.
- Bochove, E. Van, S. Beauchemin, and G. Theriault. 2002. Continuous multiple measurement of soil redox potential using platinum microelectrodes. *Soil Science Society of America Journal* 66:1813–1820.
- Borja, Á., D. M. Dauer, M. Elliott, and C. A. Simenstad. 2010. Medium- and Long-term Recovery of Estuarine and Coastal Ecosystems: Patterns, Rates and Restoration Effectiveness. *Estuaries and Coasts* 33:1249–1260.
- Bos, D., J. P. Bakker, Y. De Vries, and S. Van Lieshout. 2002. Long-term vegetation changes in experimentally grazed and ungrazed back-barrier marshes in the Wadden Sea. *Applied Vegetation Science* 5:45–54.
- Bos, D., J. Van De Koppel, and F. J. Weissing. 2004. Dark-bellied Brent geese aggregate to cope with increased levels of primary production. *Oikos* 107:485–496.
- Boschker, H. T. S., J. F. C. De Brouwer, and T. E. Cappenberg. 1999. The contribution of macrophyte-derived organic matter to microbial biomass in salt-marsh sediments: Stable carbon isotope analysis of microbial biomarkers. *Limnology and Oceanography* 44:309–319.
- Bouchard, V., M. Tessier, F. Digaire, J.-P. Vivier, L. Valery, J.-C. Gloaguen, and J.-C. Lefeuvre. 2003. Sheep grazing as management tool in Western European saltmarshes. *Comptes Rendus Biologies* 326:148–157.
- Bouma, T. J., L. A. Van Duren, S. Temmerman, T. Claverie, A. Blanco-Garcia, T. Ysebaert, and P. M. J. Herman. 2007. Spatial flow and sedimentation patterns within patches of epibenthic structures: Combining field, flume and modelling experiments. *Continental Shelf Research* 27:1020–1045.
- Bouma, T. J., B. P. Koutstaal, M. Van Dongen, and K. L. Nielsen. 2001. Coping with low nutrient availability and inundation: root growth responses of three halophytic grass species from different elevations along a flooding gradient. *Oecologia* 126:472–481.
- Boumans, R. M. J., and J. W. Day. 1993. High precision measurements of sediment elevation in shallow coastal areas using a sedimentation-erosion table. *Estuaries* 16:375–380.
- Brown, S. L., E. A. Warman, S. Mcgrorty, M. Yates, R. J. Pakeman, L. A. Boorman, J. D. Goss-Custard, and A. J. Gray. 1998. Sediment fluxes in intertidal biotopes : BIOTA II. *Marine Pollution Bulletin* 37:173–181.
- C**
- Cahoon, D. R. 2006. A review of major storm impacts on coastal wetland elevations. *Estuaries and Coasts* 29:889–898.
- Cahoon, D. R., P. F. Hensel, T. Spencer, D. J. Reed, K. L. McKee, and N. Saintilan. 2006. Coastal wetland vulnerability to relative sea-level rise: wetland elevation trends and process controls. Pages 271–292 in J. T. A. Verhoeven, B. Beltman, R. Bobbink, and D. F. Whigham, editors. *Wetlands and natural resource management. Ecological studies Vol. 190.* Springer-Verlag, Berlin Heidelberg.
- Cahoon, D. R., B. C. Perez, B. D. Segura, and J. C. Lynch. 2011. Elevation trends and shrink–swell response of wetland soils to flooding and drying. *Estuarine, Coastal and Shelf Science* 91:463–474.
- Cahoon, D. R., and D. J. Reed. 1995. Relationships among marsh surface topography, hydroperiod, and soil accretion in a deteriorating Louisiana salt marsh. *Journal of Coastal Research* 11:357–369.
- Cahoon, D. R., D. J. Reed, and J. W. Day. 1995. Estimating shallow subsidence in microtidal salt marshes of the southeastern United States: Kaye and Barghoorn revisited. *Marine Geology* 128:1–9.

- Cahoon, S. M. P., P. F. Sullivan, E. Post, and J. M. Welker. 2012. Large herbivores limit CO<sub>2</sub> uptake and suppress carbon cycle responses to warming in West Greenland. *Global Change Biology* 18:469–479.
- Cannell, M. G. R., R. Milne, K. J. Hargreaves, T. A. W. Brown, M. M. Cruickshank, R. I. Bradley, T. Spencer, D. Hope, M. F. Billett, W. N. Adger, and S. Subak. 1999. National inventories of terrestrial carbon sources and sinks: the UK experience. *Climatic Change* 42:505–530.
- Cardinale, B. 2012. Impacts of biodiversity loss. *Science (New York, N.Y.)* 336:552–553.
- Castelijns, H., and C. Jacobusse. 2010. Spectaculaire toename van grauwe ganzen in Saeftinghe. *De Levende Natuur*:45–48.
- Castelijns, H., J. Maebe, and W. Van Kerkhoven. 1998. De grauwe ganzen *Anser anser* van het Verdrongen van Saeftinghe: aantallen, trends en voedsel. *Oriolus* 64:90–102.
- Center, T. D., and F. A. Dray. 2010. Bottom-up control of water hyacinth weevil populations: do the plants regulate the insects? *Journal of Applied Ecology* 47:329–337.
- Chapin, F. S., E. S. Zavaleta, V. T. Eviner, R. L. Naylor, P. M. Vitousek, H. L. Reynolds, D. U. Hooper, S. Lavorel, O. E. Sala, S. E. Hobbie, M. C. Mack, and S. Díaz. 2000. Consequences of changing biodiversity. *Nature* 405:234–42.
- Chmura, G. L., S. C. Anisfield, D. R. Cahoon, and J. C. Lynch. 2003. Global carbon sequestration in tidal, saline wetland soils. *Global Biogeochemical Cycles* 17:1111.
- Christianen, M. J. A., P. M. J. Herman, T. J. Bouma, L. P. M. Lamers, M. M. Van, T. Van Der Heide, P. J. Mumby, B. R. Silliman, S. L. Engelhard, M. Van, D. Kerk, W. Kiswara, J. Van De Koppel, M. M. Van Katwijk, and M. Van De Kerk. 2014. Habitat collapse due to overgrazing threatens turtle conservation in marine protected areas Habitat collapse due to overgrazing threatens turtle conservation in marine protected areas. *Proceedings of the Royal Society* 281.
- Christiansen, T., P. L. Wiberg, and T. G. Milligan. 2000. Flow and Sediment Transport on a Tidal Salt Marsh Surface. *Estuarine, Coastal and Shelf Science* 50:315–331.
- Church, J. A., and N. J. White. 2011. Sea-Level Rise from the Late 19th to the Early 21st Century. *Surveys in Geophysics* 32:585–602.
- Connor, R. F., G. L. Chmura, and C. B. Beecher. 2001. Carbon accumulation in Bay of Fundy salt marshes: Implications for restoration of reclaimed marshes. *Global Biogeochemical cycles* 15:943–954.
- Cornell, J. A., C. B. Craft, and J. P. Megonigal. 2007. Ecosystem gas exchange across a created salt marsh chronosequence. *Wetlands* 27:240–250.
- Costanza, J. K., A. Moody, and R. K. Peet. 2011. Multi-scale environmental heterogeneity as a predictor of plant species richness. *Landscape Ecology* 26:851–864.
- Costanza, R., O. Pérez-Maqueo, M. L. Martinez, P. Sutton, S. J. Anderson, and K. Mulder. 2008. The value of coastal wetlands for hurricane protection. *Ambio* 37:241–8.
- Coulombier, T., U. Neumeier, and P. Bernatchez. 2012. Sediment transport in a cold climate salt marsh (St. Lawrence Estuary, Canada), the importance of vegetation and waves. *Estuarine, Coastal and Shelf Science* 101:64–75.
- Craft, C., P. Megonigal, S. Broome, J. Stevenson, R. Freese, J. Cornell, L. Zheng, and J. Sacco. 2003. The Pace of Ecosystem Development of Constructed *Spartina alterniflora* Marshes. *Ecological applications* 13:1417–1432.
- D**
- Daleo, P., J. Alberti, and O. O. Iribarne. 2011. Crab herbivory regulates re-colonization of disturbed patches in a southwestern Atlantic salt marsh. *Oikos* 120:842–847.
- Davidson, A. D., and D. C. Lightfoot. 2006. Keystone rodent interactions: prairie dogs and kangaroo rats structure the biotic composition of a desertified grassland. *Ecography* 29:755–765.
- Davy, A. J., M. J. H. Brown, H. L. Mossman, and A. Grant. 2011. Colonization of a newly developing salt marsh: disentangling independent effects of elevation and redox potential on halophytes. *Journal of Ecology* 99:1350–1357.
- Day, J. W., G. P. Kemp, D. J. Reed, D. R. Cahoon, R. M. J. Boumans, J. M. Suhayda, and R. Gambrell. 2011. Vegetation death and rapid loss of surface elevation in two contrasting Mississippi delta salt marshes: The role of sedimentation, autocompaction and sea-level rise. *Ecological Engineering* 37:229–240.

- Díaz, S., S. Lavorel, S. McIntyre, V. Falczuk, F. Casanoves, D. G. Milchunas, C. Skarpe, G. Rusch, M. Sternberg, I. Noy-Meir, J. Landsberg, W. Zhang, H. Clark, and B. D. Campbell. 2007. Plant trait responses to grazing - a global synthesis. *Global Change Biology* 13:313–341.
- Dijkema, K. S. 1990. Salt and brackish marshes around the Baltic Sea and adjacent parts of the North Sea: Their vegetation and management. *Biological Conservation* 51:191–209.
- Dijkema, K. S., A. S. Kers, and W. E. Van Duin. 2010. Salt marshes : applied long-term monitoring salt marshes. Pages 35–40 *Wadden Sea Ecosystem* no. 26.
- Duarte, C. M., J. J. Middelburg, and N. Caraco. 2005. Major role of marine vegetation on the oceanic carbon cycle. *Biogeosciences* 2:1–8.
- E**
- Van Eerden, M. R., R. H. Drent, J. Stahl, and J. P. Bakker. 2005. Connecting seas: western Palaearctic continental flyway for water birds in the perspective of changing land use and climate. *Global Change Biology* 11:894–908.
- Elschot, K., T. J. Bouma, S. Temmerman, and J. P. Bakker. 2013. Effects of long-term grazing on sediment deposition and salt-marsh accretion rates. *Estuarine, Coastal and Shelf Science* 133:109–115.
- Esselink, P., G. J. F. Helder, B. A. Aerts, and K. Gerdes. 1997. The impact of grubbing by Greylag Geese (*Anser anser*) on the vegetation dynamics of a tidal marsh. *Aquatic Botany* 55:261–279.
- Esselink, P., J. Petersen, S. Arens, J. P. Bakker, J. Bunje, K. S. Dijkema, N. Hecker, U. Hellwig, A.-V. Jensen, A. S. Kers, P. Korber, E. J. Lammerts, M. Stock, R. M. Veeneklaas, M. Vreeken, and M. Wolters. 2009. Salt Marshes, Thematic report No. 8. *in* H. Marencic and J. de Vlas, editors. Quality report 2009, Wadden Sea Ecosystem No.25. Common Wadden Sea Secretariat, Trilateral monitoring and assessment Group, Wilhelmshaven, Germany.
- F**
- Fagherazzi, S., M. L. Kirwan, S. M. Mudd, G. R. Guntenspergen, S. Temmerman, A. D'Alpaos, J. Van De Koppel, J. M. Rybczyk, E. Reyes, C. Craft, and J. Clough. 2012. Numerical models of salt marsh evolution: Ecological, geomorphic, and climatic factors. *Reviews of Geophysics* 50:RG1002.
- Farnsworth, K. D., S. Focardi, and J. a. Beecham. 2002. Grassland-herbivore interactions: how do grazers coexist? *The American naturalist* 159:24–39.
- Figueroa, M. E., J. M. Castillo, S. Redondo, T. Luque, E. M. Castellanos, F. J. Nieva, C. J. Luque, A. E. Rubio-Casal, and A. J. Davy. 2003. Facilitated invasion by hybridization of *Sarcocornia* species in a salt-marsh succession. *Journal of Ecology* 91:616–626.
- First, M., and J. Hollibaugh. 2010. Environmental factors shaping microbial community structure in salt marsh sediments. *Marine Ecology Progress Series* 399:15–26.
- FitzGerald, D. M., M. S. Fenster, B. A. Argow, and I. V. Buynevich. 2008. Coastal impacts due to sea-level rise. *Annual Review of Earth and Planetary Sciences* 36:601–647.
- Fox, A. D., J. Madsen, H. Boyd, E. Kuijken, D. W. Norriss, I. M. Tombre, and D. A. Stroud. 2005. Effects of agricultural change on abundance, fitness components and distribution of two arctic-nesting goose populations. *Global Change Biology* 11:881–893.
- French, J. R., and T. Spencer. 1993. Dynamics of sedimentation in a tide-dominated backbarrier salt marsh, Norfolk, UK. *Marine Geology* 110:315–331.
- G**
- Gauthier, G., J.-F. Giroux, A. Reed, A. Bechet, and L. Belanger. 2005. Interactions between land use, habitat use, and population increase in greater snow geese: what are the consequences for natural wetlands? *Global Change Biology* 11:856–868.
- Gedan, K. B., C. M. Crain, and M. D. Bertness. 2009. Small-mammal herbivore control of secondary succession in New-England tidal marshes. *Ecology* 90:430–440.
- Gedan, K. B., M. L. Kirwan, E. Wolanski, E. B. Barbier, and B. R. Silliman. 2010. The present and future role of coastal wetland vegetation in protecting shorelines: answering recent challenges to the paradigm. *Climatic Change* 106:7–29.
- Godfree, R., B. Lepschi, A. Reside, T. Bolger, B. Robertson, D. Marshall, and M. Carnegie. 2011. Multi-scale topodaphic heterogeneity increases resilience and resistance of a dominant grassland species to extreme drought and climate change. *Global Change Biology* 17:943–958.

- Van Der Graaf, A. J., J. Stahl, and J. P. Bakker. 2005. Compensatory growth of *Festuca rubra* after grazing: can migratory herbivores increase their own harvest during staging? *Functional Ecology* 19:961–969.
- Van Der Graaf, A. J., J. Stahl, G. F. Veen, R. M. Havinga, and R. H. Drent. 2007. Patch choice of avian herbivores along a migration trajectory—From Temperate to Arctic. *Basic and Applied Ecology* 8:354–363.
- Gray, A. J., and R. G. H. Bunce. 1972. The ecology of Morecambe Bay. VI. Soils and vegetation of the salt marshes: A multivariate approach. *The Journal of Applied Ecology* 9:221–234.
- De Groot, A. V., R. M. Veeneklaas, and J. P. Bakker. 2011. Sand in the salt marsh: Contribution of high-energy conditions to salt-marsh accretion. *Marine Geology* 282:240–254.

## H

- Hairton, N. G., F. E. Smith, and B. Slobodkin. 1960. Community structure, population control, and competition. *American Naturalist* 94:421–425.
- Hansen, B. B., S. Henriksen, R. Aanes, and B.-E. Sæther. 2006. Ungulate impact on vegetation in a two-level trophic system. *Polar Biology* 30:549–558.
- He, Q., M. D. Bertness, and A. H. Altieri. 2013. Global shifts towards positive species interactions with increasing environmental stress. *Ecology Letters* 16:695–706.
- He, Y., X. Li, C. Craft, Z. Ma, and Y. Sun. 2011. Relationships between vegetation zonation and environmental factors in newly formed tidal marshes of the Yangtze River estuary. *Wetlands Ecology and Management* 19:341–349.
- Van Der Heide, T., J. S. Eklöf, E. H. Van Nes, E. M. Van Der Zee, S. Donadi, E. J. Weerman, H. Olf, and B. K. Eriksson. 2012. Ecosystem engineering by seagrasses interacts with grazing to shape an intertidal landscape. *PloS one* 7:e42060.
- Hemminga, M. A., J. De Leeuw, W. De Munck, and B. P. Koutstaal. 1991. Decomposition in estuarine salt marshes: the effect of soil salinity and soil water content. *Vegetatio* 94:25–33.
- Hooper, D. U., F. S. Chapin, J. J. Ewel, A. Hector, P. Inchausti, S. Lavorel, J. H. Lawton, D. M. Lodge, M. Loreau, S. Naeem, B. Schmid, H. Setälä, A. J. Symstad, J. Vandermeer, and D. A. Wardle. 2005. Effects of biodiversity on ecosystem functioning: a consensus of current knowledge. *Ecological Monographs* 75:3–35.
- Hopkins, A., and A. Del Prado. 2007. Implications of climate change for grassland in Europe: impacts, adaptations and mitigation options: a review. *Grass and Forage Science* 62:118–126.
- Howes, N. C., D. M. FitzGerald, Z. J. Hughes, I. Y. Georgiou, M. A. Kulp, M. D. Miner, J. M. Smith, and J. A. Barras. 2010. Hurricane-induced failure of low salinity wetlands. *Proceedings of the National Academy of Sciences of the United States of America* 107:14014–14019.
- Hunter, M., and P. Price. 1992. Playing chutes and ladders: heterogeneity and the relative roles of bottom-up and top-down forces in natural communities. *Ecology* 73:724–732.

## J

- Janzen, H. H. 2004. Carbon cycling in earth systems—a soil science perspective. *Agriculture, Ecosystems & Environment* 104:399–417.
- Jefferies, R. L., A. P. Jano, and K. F. Abraham. 2006. A biotic agent promotes large-scale catastrophic change in the coastal marshes of Hudson Bay. *Journal of Ecology* 94:234–242.
- Jobbágy, E., and R. Jackson. 2000. The vertical distribution of soil organic carbon and its relation to climate and vegetation. *Ecological applications* 10:423–436.

## K

- Kemp, D., and D. Michalk. 2007. Towards sustainable grassland and livestock management. *Journal of Agricultural Science* 145:543–564.
- Kerbes, R. H., P. M. Kotanen, and R. L. Jefferies. 1990. Destruction of wetland habitats by lesser snow geese: A keystone species on the west coast of Hudson Bay. *Journal of Applied Ecology* 27:242–258.
- Kiehl, K., I. Eischeid, S. Gettner, and J. Walter. 1996. Impact of different sheep grazing intensities on salt marsh vegetation in northern Germany. *Journal of Vegetation Science* 7:99–106.

- Kirwan, M. L., and G. R. Guntenspergen. 2010. Influence of tidal range on the stability of coastal marshland. *Journal of Geophysical Research* 115:F02009.
- Kirwan, M. L., G. R. Guntenspergen, A. D'Alpaos, J. T. Morris, S. M. Mudd, and S. Temmerman. 2010. Limits on the adaptability of coastal marshes to rising sea level. *Geophysical Research Letters* 37:1–5.
- Kirwan, M. L., and J. P. Megonigal. 2013. Tidal wetland stability in the face of human impacts and sea-level rise. *Nature* 504:53–60.
- Kirwan, M. L., and S. M. Mudd. 2012. Response of salt-marsh carbon accumulation to climate change. *Nature* 489:550–3.
- Kirwan, M. L., and S. Temmerman. 2009. Coastal marsh response to historical and future sea-level acceleration. *Quaternary Science Reviews* 28:1801–1808.
- Van Klink, R., C. Rickert, R. Vermeulen, O. Vorst, M. F. WallisDeVries, and J. P. Bakker. 2013. Grazed vegetation mosaics do not maximize arthropod diversity: Evidence from salt marshes. *Biological Conservation* 164:150–157.
- Van Klink, R., M. Schrama, S. Nolte, J. P. Bakker, M. F. WallisDeVries, and M. P. Berg. 2015. Defoliation and Soil Compaction Jointly Drive Large-Herbivore Grazing Effects on Plants and Soil Arthropods on Clay Soil. *Ecosystems* 18:671–685.
- Knapp, A. K., J. M. Briggs, S. L. Collins, S. R. Archer, M. S. Bret-Harte, B. E. Ewers, D. P. Peters, D. R. Young, G. R. Shaver, E. Pendall, and M. B. Cleary. 2008. Shrub encroachment in North American grasslands: shifts in growth form dominance rapidly alters control of ecosystem carbon inputs. *Global Change Biology* 14:615–623.
- Van De Koppel, J., J. Huisman, R. Van Der Wal, and H. Olf. 1996. Patterns of herbivory along a productivity gradient: an empirical and theoretical investigation. *Ecology* 77:736–745.
- Kuijper, D. P. J., and J. P. Bakker. 2005. Top-down control of small herbivores on salt-marsh vegetation along a productivity gradient. *Ecology* 86:914–923.
- Kuijper, D. P. J., P. Beek, S. E. Van Wieren, and J. P. Bakker. 2008. Time-scale effects in the interaction between a large and a small herbivore. *Basic and Applied Ecology* 9:126–134.
- Kuijper, D. P. J., D. J. Nijhoff, and J. P. Bakker. 2004. Herbivory and competition slow down invasion of a tall grass along a productivity gradient. *Oecologia* 141:452–9.
- L**
- Laffoley, D. d'A, and G. Grimsditch. 2009. The management of natural coastal carbon sinks. IUCN, Gland, Switzerland.
- Langbein, J., M. Hutchings, S. Harris, C. Stoate, S. C. Tapper, and S. Wray. 1999. Techniques for assessing the abundance of brown hares *Lepus europaeus*. *Mammal Review* 29:93–116.
- Langlois, E., A. Bonis, and J. B. Bouzillé. 2001. The response of *Puccinellia maritima* to burial: A key to understanding its role in salt-marsh dynamics? *Journal of Vegetation Science* 12:289–297.
- Langlois, E., A. Bonis, and J. B. Bouzillé. 2003. Sediment and plant dynamics in saltmarshes pioneer zone: *Puccinellia maritima* as a key species? *Estuarine, Coastal and Shelf Science* 56:239–249.
- Leendertse, P. C., A. J. M. Roozen, and J. Rozema. 1997. Long-term changes ( 1953 – 1990 ) in the salt marsh vegetation at the Boschplaat on Terschelling in relation to sedimentation and flooding. *Plant Ecology* 132:49–58.
- Lithgow, D., M. L. Martínez, J. B. Gallego-Fernández, P. A. Hesp, P. Flores, S. Gachuz, N. Rodríguez-Revelo, O. Jiménez-Orocio, G. Mendoza-González, and L. L. Álvarez-Molina. 2013. Linking restoration ecology with coastal dune restoration. *Geomorphology* 199:214–224.
- Lohmann, D., B. Tietjen, N. Blaum, D. F. Joubert, and F. Jeltsch. 2012. Shifting thresholds and changing degradation patterns: climate change effects on the simulated long-term response of a semi-arid savanna to grazing. *Journal of Applied Ecology* 49:814–823.
- Londo, G. 1976. The decimal scale for relevés of permanent quadrats. *Vegetatio* 33:61–64.
- Loucougaray, G., A. Bonis, and J.-B. Bouzillé. 2004. Effects of grazing by horses and/or cattle on the diversity of coastal grasslands in western France. *Biological Conservation* 116:59–71.
- Lovelock, C. E., M. F. Adame, V. Bennion, M. Hayes, J. O'Mara, R. Reef, and N. S. Santini. 2013. Contemporary Rates of Carbon Sequestration Through Vertical Accretion of Sediments in Mangrove Forests and Saltmarshes of South East Queensland, Australia. *Estuaries and Coasts* 37:763–771.



- Lovelock, C. E., V. Bennion, A. Grinham, and D. R. Cahoon. 2011. The role of surface and subsurface processes in keeping pace with sea level rise in intertidal wetlands of Moreton Bay, Queensland, Australia. *Ecosystems* 14:745–757.
- Lunstrum, A., and L. Chen. 2014. Soil carbon stocks and accumulation in young mangrove forests. *Soil Biology and Biochemistry* 75:223–232.
- M**
- Madsen, J. 1991. Status and trends of goose populations in the western Palearctic in the 1980s. *Ardea* 79:113–122.
- Madsen, J., G. Cracknell, and A. D. Fox. 1999. Goose populations of the Western Palearctic. A review of the status and distribution. *Wetlands International*, Wageningen.
- Madsen, J., C. Jaspers, M. Tamstorf, C. E. Mortensen, and F. Rigét. 2011. Long-term effects of grazing and global warming on the composition and carrying capacity of graminoid marshes for moulting geese in East Greenland. *Ambio* 40:638–649.
- Mandema, F. S., J. M. Tinbergen, J. Stahl, P. Esselink, and J. P. Bakker. 2014a. Habitat preference of geese is affected by livestock grazing - seasonal variation in an experimental field evaluation. *Wildlife Biology* 20:67–72.
- Mandema, F., J. Tinbergen, B. Ens, and J. P. Bakker. 2014b. Spatial diversity in canopy height at Redshank and Oystercatcher nest-sites in relation to livestock grazing. *Ardea* 101:105–112.
- Marino, A., M. Pascual, and R. Baldi. 2014. Ecological drivers of guanaco recruitment: Variable carrying capacity and density dependence. *Oecologia* 175:1189–1200.
- McKinney, T., T. Smith, and J. Hanna. 2001. Precipitation and desert bighorn sheep in the Mazatzal Mountains, Arizona. *The Southwestern Naturalist* 46:345–353.
- Mclaren, J. R., and R. L. Jefferies. 2004. Initiation and maintenance of vegetation mosaics in an Arctic salt marsh. *Journal of Ecology* 92:648–660.
- Mcleod, E., G. L. Chmura, S. Bouillon, R. Salm, M. Björk, C. M. Duarte, C. E. Lovelock, W. H. Schlesinger, and B. R. Silliman. 2011. A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO<sub>2</sub>. *Frontiers in Ecology and the Environment* 9:552–560.
- McNaughton, S. J. 1976. Serengeti migratory wildebeest -facilitation of energy- flow by grazing. *Science* 191:92–94.
- McNaughton, S. J. 1985. Ecology of a grazing ecosystem: the Serengeti. *Ecological monographs* 55:259–294.
- McNaughton, S. J., F. F. Banyikwa, and M. M. McNaughton. 1998. Root biomass and productivity in a grazing ecosystem: The serengeti. *Ecology* 79:587–592.
- Van Der Meijden, R. 2005. Heukel's flora van Nederland. 23rd edition. Wolters-Noordhoff bv., Groningen/Houten.
- Middelburg, J. J., and J. Nieuwenhuize. 1998. Carbon and nitrogen stable isotopes in suspended matter and sediments from the Schelde Estuary. *Marine Chemistry* 60:217–225.
- Mokany, K., R. J. Raison, and A. S. Prokushkin. 2006. Critical analysis of root: Shoot ratios in terrestrial biomes. *Global Change Biology* 12:84–96.
- Morris, J. T., and A. Jensen. 1998. The carbon balance of grazed and non-grazed *Spartina anglica* salt-marshes at Skallingen, Denmark. *Journal of Ecology* 86:229–242.
- Morris, J. T., P. V. Sundareshwar, C. T. Nietch, B. Kjerfve, and D. R. Cahoon. 2002. Responses of coastal wetlands to rising sea level. *Ecology* 83:2869–2877.
- Mossman, H. L., A. J. Davy, and A. Grant. 2012. Does managed coastal realignment create saltmarshes with “equivalent biological characteristics” to natural reference sites? *Journal of Applied Ecology* 49:1446–1456.
- Mudd, S. M., A. D'Alpaos, and J. T. Morris. 2010. How does vegetation affect sedimentation on tidal marshes? Investigating particle capture and hydrodynamic controls on biologically mediated sedimentation. *Journal of Geophysical Research* 115:1–14.
- Mysterud, A. 2006. The concept of overgrazing and its role in management of large herbivores. *Wildlife Biology* 12:129–141.

## N

- Neubauer, S. C. 2008. Contributions of mineral and organic components to tidal freshwater marsh accretion. *Estuarine, Coastal and Shelf Science* 78:78–88.
- Neuhaus, R., T. Stelter, and K. Kiehl. 1999. Sedimentation in salt marshes affected by grazing regime, topographical patterns and regional differences. *Senckenbergiana maritima* 29:113–116.
- Neumeier, U., and C. L. Amos. 2006a. Turbulence reduction by the canopy of coastal *Spartina* salt-marshes. *Journal of Coastal Research* 39:433–439.
- Neumeier, U., and C. L. Amos. 2006b. The influence of vegetation on turbulence and flow velocities in European salt-marshes. *Sedimentology* 53:259–277.
- Neumeier, U., and P. Ciavola. 2004. Flow resistance and associated sedimentary processes in a *Spartina maritima* salt-marsh. *Journal of Coastal Research* 20:435–447.
- Nieuwenhuize, J., Y. E. M. Maas, and J. J. Middelburg. 1994. Rapid analysis of organic carbon and nitrogen in particulate materials. *Marine Chemistry* 45:217–224.
- Nolte, S., P. Esselink, J. P. Bakker, and C. Smit. 2015. Effects of livestock species and stocking density on accretion rates in grazed salt marshes. *Estuarine, Coastal and Shelf Science* 152:109–115.
- Nolte, S., P. Esselink, C. Smit, and J. P. Bakker. 2013a. Herbivore species and density affect vegetation-structure patchiness in salt marshes. *Agriculture, Ecosystems & Environment* 185:41–47.
- Nolte, S., E. C. Koppenaar, P. Esselink, K. S. Dijkema, M. Schuerch, A. V. Groot, J. P. Bakker, and S. Temmerman. 2013b. Measuring sedimentation in tidal marshes: a review on methods and their applicability in biogeomorphological studies. *Journal of Coastal Conservation* 17:301–325.
- Nolte, S., F. Müller, M. Schuerch, A. Wanner, P. Esselink, J. P. Bakker, and K. Jensen. 2013c. Does livestock grazing affect sediment deposition and accretion rates in salt marshes? *Estuarine, Coastal and Shelf Science* 135:296–305.
- Nyman, J. A., R. J. Walters, R. D. Delaune, and W. H. Patrick. 2006. Marsh vertical accretion via vegetative growth. *Estuarine, Coastal and Shelf Science* 69:370–380.

## O

- Oene, H. Van, E. van Deursen, and F. Berendse. 1999. Plant-herbivore interaction and its consequences for succession in wetland ecosystems: A modeling approach. *Ecosystems* 2:122–138.
- Oenema, O., and R. D. Delaune. 1988. Accretion rates in salt marshes in the Eastern Scheldt, southwest Netherlands. *Estuarine, Coastal and Shelf Science* 26:379–394.
- Oksanen, L., S. Fretwell, J. Arruda, and P. Niemela. 1981. Exploitation ecosystems in gradients of primary productivity. *American Naturalist* 118:240–261.
- Oloff, H., J. De Leeuw, J. P. Bakker, R. J. Platerink, and H. J. Van Wijnen. 1997. Vegetation succession and herbivory in a salt marsh: Changes induced by sea level rise and silt deposition along an elevational gradient. *Journal of Ecology* 85:799–814.
- Oloff, H., and M. E. Ritchie. 1998. Effects of herbivores on grassland plant diversity. *Trends in Ecology & Evolution* 13:261–265.
- Olsen, Y. S., A. Dausse, A. Garbutt, H. Ford, D. N. Thomas, and D. L. Jones. 2011. Cattle grazing drives nitrogen and carbon cycling in a temperate salt marsh. *Soil Biology and Biochemistry* 43:531–541.
- Osland, M. J., A. C. Spivak, J. A. Nestlerode, J. M. Lessmann, A. E. Almario, P. T. Heitmuller, M. J. Russell, K. W. Krauss, F. Alvarez, D. D. Dantin, J. E. Harvey, A. S. From, N. Cormier, and C. L. Stagg. 2012. Ecosystem Development After Mangrove Wetland Creation: Plant-Soil Change Across a 20-Year Chronosequence. *Ecosystems* 15:848–866.
- Owen, M. 1971. The selection of feeding site by white-fronted geese in winter. *Journal of Applied Ecology* 8:905–917.

## P

- Packham, J. R., and M. J. Liddle. 1970. The Cefni salt marsh, Anglesey, and its recent development. *Field studies* 3:331–356.
- Peh, K. S.-H., and S. L. Lewis. 2012. Conservation implications of recent advances in biodiversity-functioning research. *Biological Conservation* 151:26–31.
- Peralta, G., L. A. Van Duren, E. P. Morris, and T. J. Bouma. 2008. Consequences of shoot density and stiffness for ecosystem engineering by benthic macrophytes in flow dominated areas: a hydrodynamic flume study. *Marine Ecology Progress Series* 368:103–115.

- Perea, R., R. Perea-García-Calvo, C. G. Díaz-Ambrona, and A. San Miguel. 2015. The reintroduction of a flagship ungulate *Capra pyrenaica*: Assessing sustainability by surveying woody vegetation. *Biological Conservation* 181:9–17.
- Peterson, S., R. Rockwell, C. Witte, and D. Koons. 2013. The Legacy of Destructive Snow Goose Foraging on Supratidal Marsh Habitat in the Hudson Bay Lowlands. *Arctic, Antarctic, and Alpine Research* 45:575–583.
- Piernik, A. 2005. Vegetation-environment relations on inland saline habitats in Central Poland. *Phytocoenologia* 35:19–38.
- Pont, D., J. W. Day, P. Hensel, E. Franquet, F. Torre, P. Rioual, C. Ibàñez, and E. Coulet. 2002. Response scenarios for the deltaic plain of the Rhône in the face of an acceleration in the rate of sea-level rise with special attention to *Salicornia*-type environments. *Estuaries* 25:337–358.

## Q

- Le Quéré, C., M. R. Raupach, J. G. Canadell, G. Marland, L. Bopp, P. Ciais, T. J. Conway, S. C. Doney, R. Feely, P. Foster, P. Friedlingstein, K. Gurney, R. Houghton, J. I. House, C. Huntingford, P. E. Levy, M. R. Lomas, J. Majkut, N. Metzl, J. P. Ometto, G. P. Peters, I. C. Prentice, J. T. Randerson, S. W. Running, J. L. Sarmiento, U. Schuster, S. Sitch, T. Takahashi, N. Viovy, G. R. Van Der Werf, and F. I. Woodward. 2009. Trends in the sources and sinks of carbon dioxide. *Nature Geoscience* 2:831–836.

## R

- R Development Core Team, A. 2011. R: A language and environment for statistical computing. R foundation for Statistical Computing, Vienna, Austria.
- Reitsma, J. M. 2006. Toelichting bij vegetatie kartering Westerschelde 2004.
- Ricklefs, R. E. 1977. Environmental Heterogeneity and Plant Species Diversity: A Hypothesis. *The American Naturalist* 111:376–381.
- Rodriguez, A. B., S. R. Fegley, J. T. Ridge, B. M. VanDusen, and N. Anderson. 2013. Contribution of aeolian sand to backbarrier marsh sedimentation. *Estuarine, Coastal and Shelf Science* 117:248–259.
- Ruifrok, J. L., F. Postma, H. Olf, and C. Smit. 2014. Scale-dependent effects of grazing and topographic heterogeneity on plant species richness in a Dutch salt marsh ecosystem. *Applied Vegetation Science* 17:615–624.

## S

- Saintilan, N., K. Rogers, D. Mazumder, and C. Woodroffe. 2013. Allochthonous and autochthonous contributions to carbon accumulation and carbon store in southeastern Australian coastal wetlands. *Estuarine, Coastal and Shelf Science* 128:84–92.
- Scheepens, J. F., R. M. Veeneklaas, L. Van De Zande, and J. P. Bakker. 2007. Clonal structure of *Elytrogia atherica* along different successional stages of a salt marsh. *Molecular ecology* 16:1115–24.
- Scholten, M., and J. Rozema. 1990. The competitive ability of *Spartina anglica* on Dutch salt marshes. Pages 39–47 in A. J. Gray and P. E. M. Benham, editors. *Spartina anglica*, a research review. Institute of Terrestrial Ecology, London.
- Schrama, M., M. P. Berg, and H. Olf. 2012. Ecosystem assembly rules: The interplay of green and brown webs during salt marsh succession. *Ecology* 93:2353–2364.
- Schrama, M., P. Heijning, J. P. Bakker, H. J. Van Wijnen, M. P. Berg, and H. Olf. 2013a. Herbivore trampling as an alternative pathway for explaining differences in nitrogen mineralization in moist grasslands. *Oecologia* 172:231–43.
- Schrama, M. J. J., G. F. (Ciska) Veen, E. S. Bakker, J. L. Ruifrok, J. P. Bakker, and H. Olf. 2013b. An integrated perspective to explain nitrogen mineralization in grazed ecosystems. *Perspectives in Plant Ecology, Evolution and Systematics* 15:32–44.
- Shumway, S., and M. D. Bertness. 1994. Patch size effects on marsh plant secondary succession mechanisms. *Ecology* 75:564–568.
- Silliman, B. R., J. Van De Koppel, M. D. Bertness, L. E. Stanton, and I. A. Mendelssohn. 2005. Drought, snails, and large-scale die-off of southern U.S. salt marshes. *Science* 310:1803–1806.
- Silva, H., J. M. Dias, and I. Caçador. 2008. Is the salt marsh vegetation a determining factor in the sedimentation processes? *Hydrobiologia* 621:33–47.

- Sinclair, A. R. E., and C. J. Krebs. 2002. Complex numerical responses to top-down and bottom-up processes in vertebrate populations. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences* 357:1221–31.
- Sjögersten, S., R. Van Der Wal, and S. J. Woodin. 2008. Habitat type determines herbivory controls over CO<sub>2</sub> fluxes in a warmer arctic. *Ecology* 89:2103–2116.
- Sjögersten, S., R. Van Der Wal, and S. J. Woodin. 2012. Impacts of grazing and climate warming on C pools and decomposition rates in arctic environments. *Ecosystems* 15:349–362.
- Snyder, R. E., and P. Chesson. 2004. How the spatial scales of dispersal, competition, and environmental heterogeneity interact to affect coexistence. *The American naturalist* 164:633–50.
- Srivastava, D., and R. L. Jefferies. 1996. A positive feedback: herbivory, plant growth, salinity, and the desertification of an Arctic salt-marsh. *Journal of Ecology* 84:31–42.
- Staszak, L. A., and A. R. Armitage. 2013. Evaluating Salt Marsh Restoration Success with an Index of Ecosystem Integrity. *Journal of Coastal Research* 287:410–418.
- Stein, A., K. Gerstner, and H. Krefl. 2014. Environmental heterogeneity as a universal driver of species richness across taxa, biomes and spatial scales. *Ecology letters* 17:866–80.
- Stewart, K. E. J., N. A. D. Bourn, and J. A. Thomas. 2001. An evaluation of three quick methods commonly used to assess sward height in ecology. *Journal of Applied Ecology* 38:1148–1154.
- Van Straalen, N. M., and P. C. Rijninks. 1982. The efficiency of Tullgren apparatus with respect to interpreting seasonal-changes in age structure of soil arthropod populations. *Pedobiologia* 24:197–209.
- Stralberg, D., M. Brennan, J. C. Callaway, J. K. Wood, L. M. Schile, D. Jongsomjit, M. Kelly, V. T. Parker, and S. Crooks. 2011. Evaluating tidal marsh sustainability in the face of sea-level rise: a hybrid modeling approach applied to San Francisco Bay. *PLoS one* 6:e27388.
- Stribling, J., J. Cornwell, and O. Glahn. 2007. Microtopography in tidal marshes: Ecosystem engineering by vegetation? *Estuaries and Coasts* 30:1007–1015.
- Suchrow, S., N. Pohlmann, M. Stock, and K. Jensen. 2012. Long-term surface elevation changes in German North Sea salt marshes. *Estuarine, Coastal and Shelf Science* 98:71–83.
- Sun, M., R. C. Aller, C. Lee, and S. Wakeham. 2002. Effects of oxygen and redox oscillation on degradation of cell-associated lipids in surficial marine sediments. *Geochimica et Cosmochimica Acta* 66:2003–2012.
- T**
- Taylor, D. I., and B. R. Allanson. 1993. Impacts of dense crab populations on carbon exchanges across the surface of a salt marsh. *Marine Ecology Progress Series* 101:119–129.
- Temmerman, S., T. J. Bouma, J. Van De Koppel, D. Van Der Wal, M. B. De Vries, and P. M. J. Herman. 2007. Vegetation causes channel erosion in a tidal landscape. *Geology* 35:631.
- Temmerman, S., G. Govers, P. Meire, and S. Wartel. 2003a. Modelling long-term tidal marsh growth under changing tidal conditions and suspended sediment concentrations, Scheldt estuary, Belgium. *Marine Geology* 193:151–169.
- Temmerman, S., G. Govers, S. Wartel, and P. Meire. 2003b. Spatial and temporal factors controlling short-term sedimentation in a salt and freshwater tidal marsh, Scheldt estuary, Belgium, SW Netherlands. *Earth Surface Processes and Landforms* 28:739–755.
- Temmerman, S., G. Govers, S. Wartel, and P. Meire. 2004. Modelling estuarine variations in tidal marsh sedimentation: response to changing sea level and suspended sediment concentrations. *Marine Geology* 212:1–19.
- Temmerman, S., P. Meire, T. J. Bouma, P. M. J. Herman, T. Ysebaert, and H. J. De Vriend. 2013. Ecosystem-based coastal defence in the face of global change. *Nature* 504:79–83.
- Temmerman, S., P. Moonen, J. Schoelynck, G. Govers, and T. J. Bouma. 2012a. Impact of vegetation die-off on spatial flow patterns over a tidal marsh. *Geophysical Research Letters* 39:L03406.
- Temmerman, S., M. B. De Vries, and T. J. Bouma. 2012b. Coastal marsh die-off and reduced attenuation of coastal floods: A model analysis. *Global and Planetary Change* 92–93:267–274.
- Thomas, C. D., A. Cameron, R. E. Green, M. Bakkenes, L. J. Beaumont, Y. C. Collingham, B. F. N. Erasmus, M. F. De Siqueira, A. Grainger, L. Hannah, L. Hughes, B. Huntley, A. S. Van Jaarsveld, G. F. Midgley, L. Miles, M. A. Ortega-Huerta, A. T. Peterson, O. L. Phillips, and S. E. Williams. 2004. Extinction risk from climate change. *Nature* 427:145–8.

Tuomisto, H. 2012. An updated consumer's guide to evenness and related indices. *Oikos* 121:1203–1218.

## V

- Valery, L., V. Bouchard, and J. Lefeuvre. 2004. Impact of the invasive native species *Elymus athericus* on carbon pools in a salt marsh. *Wetlands* 24:268–276.
- Vandenbruwaene, W., T. J. Bouma, P. Meire, and S. Temmerman. 2013. Bio-geomorphic effects on tidal channel evolution: impact of vegetation establishment and tidal prism change. *Earth Surface Processes and Landforms* 38:122–132.
- Veeneklaas, R. M., K. S. Dijkema, N. Hecker, and J. P. Bakker. 2013. Spatio-temporal dynamics of the invasive plant species *Elytrigia atherica* on natural salt marshes. *Applied Vegetation Science* 16:205–216.
- Veldhuis, M. P., R. A. Howison, R. W. Fokkema, E. Tielens, and H. Olf. 2014. A novel mechanism for grazing lawn formation: large herbivore-induced modification of the plant-soil water balance. *Journal of Ecology* 102:1506–1517.
- De Visser, S. N., B. P. Freymann, and H. Olf. 2011. The Serengeti food web: empirical quantification and analysis of topological changes under increasing human impact. *Journal of animal ecology* 80:484–494.
- Voslamber, B., C. Klok, H. Schekkerman, F. Willems, B. Ebbing, and C. Van Turnhout. 2010. Analysis of population development and effectiveness of management in resident greylag geese *Anser anser* in the Netherlands. *Animal Biology* 60:373–393.

## W

- Wacker, L., O. Baudois, S. Eichenberger-Glinz, and B. Schmid. 2008. Environmental heterogeneity increases complementarity in experimental grassland communities. *Basic and Applied Ecology* 9:467–474.
- Van Der Wal, R., M. Egas, A. Van Der Veen, and J. P. Bakker. 2000a. Effects of resource competition and herbivory on plant performance along a natural productivity gradient. *Journal of Ecology* 88:317–330.
- Van Der Wal, R., J. Van De Koppel, and M. Sagel. 1998. On the relation between herbivore foraging efficiency and plant standing crop: an experiment with barnacle geese. *Oikos* 82:123–130.
- Van Der Wal, R., S. Lieshout, D. Bos, and R. H. Drent. 2000b. Are spring staging brent geese evicted by vegetation succession? *Ecography* 23:60–69.
- Van Der Wal, R., S. Sjögersten, S. J. Woodin, E. J. Cooper, I. S. Jónsdóttir, D. Kuijper, T. A. D. Fox, and A. D. Huiskes. 2007. Spring feeding by pink-footed geese reduces carbon stocks and sink strength in tundra ecosystems. *Global Change Biology* 13:539–545.
- Van Der Wal, R., H. J. Van Wijnen, S. E. Van Wieren, O. Beucher, and D. Bos. 2000c. On facilitation between herbivores: how brent geese profit from brown hares. *Ecology* 81:969–980.
- Wang, C., and S. Temmerman. 2013. Does biogeomorphic feedback lead to abrupt shifts between alternative landscape states?: An empirical study on intertidal flats and marshes. *Journal of Geophysical Research: Earth Surface* 118:229–240.
- Wanner, A., S. Suchrow, K. Kiehl, W. Meyer, N. Pohlmann, M. Stock, and K. Jensen. 2014. Scale matters: Impact of management regime on plant species richness and vegetation type diversity in Wadden Sea salt marshes. *Agriculture, Ecosystems & Environment* 182:69–79.
- Warren, R., J. Price, A. Fischlin, S. Nava Santos, and G. Midgley. 2010. Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise. *Climatic Change* 106:141–177.
- Van Wesenbeeck, B. K., J. Van De Koppel, P. M. J. Herman, and T. J. Bouma. 2008. Does scale-dependent feedback explain spatial complexity in salt-marsh ecosystems? *Oikos* 117:152–159.
- White, R., S. Murray, and M. Rohweder. 2000. Pilot analysis of global ecosystems: Grassland ecosystems. World Resources Institute, Washington, D.C.
- White, T. C. R. 2008. The role of food, weather and climate in limiting the abundance of animals. *Biological reviews of the Cambridge Philosophical Society* 83:227–48.
- Van Wieren, S. E., and J. P. Bakker. 2008. The impacts of browsing and grazing herbivores on biodiversity. in I. J. Gordon and H. H. T. Prins, editors. *The ecology of grazing and browsing*. Springer-Verlag, Berlin Heidelberg.

- Więski, K., H. Guo, C. B. Craft, and S. C. Pennings. 2009. Ecosystem Functions of Tidal Fresh, Brackish, and Salt Marshes on the Georgia Coast. *Estuaries and Coasts* 33:161–169.
- Van Wijnen, H. J., and J. P. Bakker. 1997. Nitrogen accumulation and plant species replacement in three salt marsh systems in the Wadden Sea. *Journal of Coastal Conservation* 3:19–26.
- Van Wijnen, H. J., and J. P. Bakker. 2000. Annual nitrogen budget of a temperate coastal barrier salt-marsh system along a productivity gradient at low and high marsh elevation. *Perspectives in Plant Ecology, Evolution and Systematics* 3:128–141.
- Van Wijnen, H. J., and J. P. Bakker. 2001. Long-term surface elevation change in salt marshes: a prediction of marsh response to future sea-level rise. *Estuarine, Coastal and Shelf Science* 52:381–390.
- Van Wijnen, H. J., R. Van Der Wal, and J. P. Bakker. 1999. The impact of herbivores on nitrogen mineralization rate: consequences for salt-marsh succession. *Oecologia* 118:225–231.
- Wohlgemuth, T. 1998. Modelling floristic species richness on a regional scale: a case study in Switzerland. *Biodiversity and Conservation* 7:159–177.
- Woodworth, P. L., W. R. Gehrels, and R. S. Nerem. 2011. Nineteenth and twentieth century changes in sea level. *Oceanography* 24:80–93.
- Wuczynski, A., B. Smyk, P. Kołodziejczyk, W. Lenkiewicz, G. Orłowski, and A. Pola. 2012. Long-term changes in numbers of geese stopping over and wintering in south-western Poland. *Central European Journal of Biology* 7:495–506.

## Y

- Yang, S. L., H. Li, T. Ysebaert, T. J. Bouma, W. X. Zhang, Y. Y. Wang, P. Li, M. Li, and P. X. Ding. 2008. Spatial and temporal variations in sediment grain size in tidal wetlands, Yangtze Delta: On the role of physical and biotic controls. *Estuarine, Coastal and Shelf Science* 77:657–671.
- Yu, O. T., and G. L. Chmura. 2010. Soil carbon may be maintained under grazing in a St Lawrence Estuary tidal marsh. *Environmental Conservation* 36:312–320.

## Z

- Zehetner, F., G. J. Lair, and M. H. Gerzabek. 2009. Rapid carbon accretion and organic matter pool stabilization in riverine floodplain soils. *Global Biogeochemical Cycles* 23:1–7.
- Zehnder, C., and M. Hunter. 2008. Effects of nitrogen deposition on the interaction between an aphid and its host plant. *Ecological Entomology* 33:24–30.
- Zimmerman, R. C., D. G. Kohrs, and R. S. Alberte. 1996. Top-down impact through a bottom-up mechanism: the effect of limpet grazing on growth, productivity and carbon allocation of *Zostera marina* L. (eelgrass). *Oecologia* 107:560–567.

