



Operational Directorate Natural Environment
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WinMon Outreach 2005-2015

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Royal Belgian Institute of Natural Sciences (RBINS)
Operational Directorate Natural Environment (OD Nature)
Aquatic and Terrestrial Ecology (ATECO)
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Reference

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This report is reviewed by Steven Degraer (team leader MARECO)

For approval:

A handwritten signature in blue ink, appearing to read "S. Degraer".

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Preface

Belgium has allocated a 238 km² zone of the Belgian part of the North Sea to offshore renewable energy production, for example offshore wind farms. Prior to construction, a developer needs obtaining a domain concession and an environmental permit. The latter includes a number of terms and conditions to minimise or mitigate the environmental impact of the wind farm project. This also imposes a monitoring programme to assess the potential impacts on the marine environment.

The environmental monitoring programme targets physical (hydro-geomorphology and underwater noise), biological (epifouling community on the hard substratum, macro and epibenthos of the soft substratum, fish, seabirds and marine mammals), as well as socio-economic (seascape perception and offshore renewables appreciation) aspects of the marine environment. The Operational Directorate Natural Environment (OD Nature) of the Royal Belgian Institute of Natural Sciences (RBINS) coordinates the monitoring programme. To cover all necessary scientific expertise OD Nature collaborates with several institutes: the Research Institute for Nature and Forest (INBO), the Institute for Agricultural and Fisheries Research (ILVO - Bio-Environmental research group), Ghent University (Marine Biology Research Group and INTEC), International Marine and Dredging Consultants (IMDC) and Grontmij Belgium NV.

The Belgian offshore wind farm environmental monitoring programme started in 2005 with the t₁ data collection at C-Power wind farm on the Thorntonbank, where the first windmills were installed in 2008. The monitoring programme is running continuously since 2008 (i.e. t₀) and now (July 2015) covers three wind farms (i.e. C-Power, Belwind and Northwind) with a total of 181 windmills.

The environmental monitoring programme led to a variety of scientific outreach products relevant to offshore wind farm impact assessment and mitigation. These products cover scientific publications, workshop and conference contributions, press releases, and education. This report provides an up to date overview of outreach products directly and indirectly derived from the execution of the Belgian offshore wind farm monitoring programme, spanning the period December 2005 – July 2015.

Steven Degraer

Scientific coordinator Belgian offshore wind farm environmental monitoring programme

1. Publications

1.1. Publications published in international, peer-reviewed journals with ISI impact factor (a1 publications)

1.1.1. Hydrobiologia 756: Special Issue on WinMon.BE 2013 Conference

1. Brabant, R.* , Vanermen, N.* , Stienen, E.W.M., Degraer, S. (* shared first authorship), 2015. Towards a cumulative collision risk assessment of local and migrating birds in North Sea offshore wind farms. *Hydrobiologia* 756: 63-74. DOI: 10.1007/s10750-015-2224-2.
2. Coates, D.A., Van Hoey, G., Colson, L., Vincx, M., Vanaverbeke, J., 2015. Rapid macrobenthic recovery after dredging activities in an offshore wind farm in the Belgian part of the North Sea. *Hydrobiologia* 756: 3-18. DOI: 10.1007/s10750-014-2103-2.
3. De Mesel, I., Kerckhof, F., Norro, A., Rumes, B., Degraer, S., 2015. Succession and seasonal dynamics of the epifauna community on offshore wind farm foundations and their role as stepping stones for non-indigenous species. *Hydrobiologia* 756: 37-50. DOI: 10.1007/s10750-014-2157-1.
4. Degraer, S., Dannheim, J., Gill, A.B., Lindeboom, H., Wilhelmsson, D., 2015. Preface: the WinMon.BE 2013 conference: steps towards an efficient and effective offshore wind farm environmental impact assessment. *Hydrobiologia* 756: 1-2. DOI: 10.1007/s10750-015-2286-1.
5. Haelters, J., Duli  re, V., Vigin, L., Degraer, S., 2015. Towards a numerical model to simulate the observed displacement of harbour porpoises *Phocoena phocoena* due to pile driving in Belgian waters. *Hydrobiologia* 756: 105-116. DOI: 10.1007/s10750-014-2138-4.
6. Lindeboom, H., Degraer, S., Dannheim, J., Gill, A.B., Wilhelmsson, D., 2015. Offshore wind park monitoring programmes, lessons learned and recommendations for the future. *Hydrobiologia* 756: 169-180. DOI: 10.1007/s10750-015-2267-4
7. Vandendriessche, S., Derweduwen, J., Hostens, K., 2015. Equivocal effects of offshore wind farms in Belgium on soft substrate epibenthos and fish assemblages. *Hydrobiologia* 756: 19-35. DOI: 10.1007/s10750-014-1997-z.
8. Vanermen, N., Onkelinx, T., Verschelde, P., Courtens, W., Van de walle, M., Verstraete, H., Stienen, E.W.M., 2015. Seabird avoidance and attraction at an offshore wind farm in the Belgian part of the North Sea. *Hydrobiologia* 756: 51-61. DOI: 0.1007/s10750-014-2088-x.
9. Vanermen, N., Onkelinx, T., Verschelde, P., Courtens, W., Van de walle, M., Verstraete, H., Stienen, E.W.M., 2015. Assessing seabird displacement effects at offshore wind farms - power ranges of a monitoring and data handling protocol. *Hydrobiologia* 756: 155-167. DOI: 10.1007/s10750-014-2156-2.

1.1.2. Other

1. Coates, D.A., Deschutter, Y., Vincx, M., Vanaverbeke, J., 2014. Enrichment and shifts in macrobenthic assemblages in an offshore wind farm area in the Belgian part of the North Sea. *Marine Environmental Research.* 95: 1-12.
2. Coates, D.A., Kapasakali D., Vincx, M., Vanaverbeke, J. Submitted. Short-term effects of fisheries exclusion in offshore wind farms on macrofaunal communities in the Belgian part of the North Sea. *Fisheries Research.*
3. De Backer, A., Van Hoey, G., Coates, D., Vanaverbeke, J., Hostens, K., 2014. Similar diversity-disturbance response to different physical impacts: Three cases of small-scale biodiversity increase in the Belgian part of the North Sea. *Marine Pollution Bulletin.* 84 (1-2): 251-262.
4. De Troch, M., Reubens, J.T., Heirman, E., Degraer, S., Vincx, M., 2013. Energy profiling of demersal fish: a case-study in wind farm artificial reefs. *Marine Environmental Research* 92: 224-233. DOI: 10.1016/j.marenvres.2013.10.001.
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8. Doom, M., Cornillie, P., Gielen, I., Haelters, J., 2013. De invloed van geluidspollutie op zeezoogdieren. *Vlaams Diergeneeskundig Tijdschrift* 82(5): 265-272.
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12. Norro, A., Rumes, B., Degraer, S., 2013. Differentiating between underwater construction noise of monopile and jacket foundations for offshore windmills: A case study from the Belgian part of the North Sea. *The Scientific World Journal*, Volume 2013, Article ID 897624, 7 pages.
13. Reubens, J.T., Degraer, S., Vincx, M., 2011. Aggregation and feeding behaviour of pouting (*Trisopterus luscus*) at wind turbines in the Belgian part of the North Sea. *Fisheries Research* 108:223-227. DOI: 10.1016/j.fishres.2010.11.025.
14. Reubens, J.T., Delbare, D., Degraer, S., Vincx, M., 2012. The effect of insertion of a dummy acoustic transmitter on the survival of pouting, *Trisopterus luscus* L. *Belgian Journal of Zoology* 142(2): 130-132.
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16. Reubens, J.T., Vandendriessche, S., Zenner, A., Degraer, S., Vincx, M., 2013. Offshore wind farms as productive sites or ecological traps for gadoid fishes? – Impact on growth, condition index and diet composition. *Marine Environmental Research* 90: 66-74. DOI: 10.1016/j.marenvres.2013.05.013.
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2. De Blauwe, H., Kind, B., Kuhlenkamp, R., Cuperus, J., van der Weide, B., Kerckhof, F., 2014. Recent observations of the introduced *Fenestrulina delicia* Winston, Hayward & Craig, 2000 (Bryozoa) in Western Europe. Studi Trent. Sci. Nat. 94: 45-51.
3. Kerckhof, F., Rumes, B., Jacques, J., Degraer, S., Norro, A., 2010. Early development of the subtidal marine biofouling on a concrete offshore windmill foundation on the Thornton Bank (southern North Sea): first monitoring results. International Journal of the Society for Underwater Technology 29(3):137-149. DOI:10.3723/ut.29.137.

1.2. Publications published in national journals (a3-a4 publications)

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2. Doom, M., Haelters, J., 2013. De invloed van geluidspollutie op zeezoogdieren. In: Jonckheere, A., Lagae, B., Wautier, K., Segers, D. (Eds). Wetenschap zet de toon. Uit het Wetenschappelijk verleden 8:pp 67-79.
3. Pirlet, H., Rumes, B., Degraer, S., Lauwaert, B., 2014. Offshore E – Windmolens in de Belgische Noordzee. Ruimte 22: pp 68-71.
4. Vanermen, N., Courtens, W., Stienen, E.W.M., Van de walle, M., Verstraete, H., 2009. Monitoring van de effecten van offshore windparken op zeevogels. In: Devos K. et al., 2009. Vogelnieuws 12: pp 4-9.
5. Vanermen, N., Stienen, E.W.M., Courtens, W., Onkelinx, T., Van de walle, M., Verstraete, H., 2013. Zeevogels en offshore windmolenparken. In: Vermeersch G. et al., 2013. Vogelnieuws 21: pp 18-23.

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1. Brabant, R., Degraer, S., et al., 2009. A brief introduction to offshore wind farms in the Belgian part of the North Sea. In: Degraer, S., Brabant, R. (Eds.), 2009. Offshore wind farms in the Belgian part of the North Sea: State of the art after two years of environmental

monitoring. Royal Belgian Institute for Natural Sciences, Management Unit of the North Sea Mathematical Models. Marine ecosystem management unit. pp.13-16.

2. Brabant, R., Jacques, T.G., 2009. Research strategy and equipment for studying flying birds in wind farms in the Belgian part of the North Sea. In: Degraer, S., Brabant, R. (Eds.), 2009. Offshore wind farms in the Belgian part of the North Sea: State of the art after two years of environmental monitoring. Royal Belgian Institute for Natural Sciences, Management Unit of the North Sea Mathematical Models. Marine ecosystem management unit. pp.223-235.
3. Brabant, R., Jacques, T.G., 2010. Offshore wind energy development in the Belgian part of the North Sea & anticipated impacts. In: Degraer, S., Brabant, R., Rumes, B., (eds.), 2010. Offshore wind farms in the Belgian part of the North Sea. Early environmental impact assessment and spatio-temporal variability. Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models, Marine Ecosystem Management Unit. pp. 9-18.
4. Brabant, R., Degraer, S., Rumes, B., 2011. Offshore wind energy development in the Belgian part of the North Sea & anticipated impacts: an update. In: Degraer, S., Brabant, R., Rumes, B. (Eds.), 2011. Offshore wind farm in the Belgian part of the North Sea: selected findings from the baseline and targeted monitoring. Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models, Marine Ecosystem Management Unit. pp 9-16.
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- Di Marcantonio, M., 2010. Environmental impact of offshore windfarms: first results of two windfarms in the Belgian part of the North Sea. Oral presentation.

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VLIZ Young Scientists' Day, Bruges (BE), 25 February 2011.

- Reubens, J., Degraer, S., Vincx, M., 2011. Site fidelity and movements of cod (*Gadus morhua*) at a wind farm using acoustic telemetry. Oral presentation.
- Coates, D., Vanaverbeke, J., Vincx, M., 2011. A close up on the soft-sediment macrobenthos around offshore wind turbines. Poster.
- Reubens, J., Degraer, S., Vincx, M., 2011. Site fidelity and movements of cod (*Gadus morhua*) at a wind farm using acoustic telemetry. Poster.
- Rumes, B., Kerckhof, F., 2011. On the occurrence and habitat of *Telmatobius japonicus* Tokunaga (Diptera; Chironomidae) in the Southern Bight of the North Sea. Poster.

European Wind energy Association, annual conference, Brussels (BE), 14-17 March 2011.

- Degraer, S., Brabant, R., Rumes, B., 2011. Offshore wind farms in the Belgian part of the North Sea: monitoring the environmental impact. Poster.

Conference on Wind energy and Wildlife impacts, Trondheim (NO), May 2011.

- Brabant, R., Degraer, S., Rumes, B., 2011. Offshore wind farms in the Belgian part of the North Sea – Early environmental impacts and spatio-temporal variability. Poster .
- Vanermen, N., Stienen, E.W.M., Onkelinx, T., Courtens, W., Van de walle, M., 2011. Monitoring displacement effects of the Thorntonbank wind farm on seabirds. Poster.

ICES/NAFO symposium on the variability of the North Atlantic and its marine ecosystems during 2000-2009, Santander (SP), 10-12 May 2011.

- Coates, D., Vanaverbeke, J., Vincx, M., 2011. Temporal analysis of the macrobenthic data along the wind farm concession areas in the Belgian part of the North Sea. Poster.

Conference on Underwater acoustic measurements, Kos (GR), June 2011.

- Norro, A., Haelters, J., Rumes, B., Degraer, S., 2011. Measuring underwater noise produced by the piling activities during the construction of the Belwind offshore windfarm (Bligh Bank, Belgian marine waters). Oral presentation.

International Conference on Fish Telemetry (ICFT), Hokkaido (JA), 12-18 June 2011.

- Reubens, J., Degraer, S., Vincx, M., 2011. Spatial and temporal movements of cod (*Gadus morhua*) at a wind farm using acoustic telemetry, a VPS study – assessment as a marine reserve. Oral presentation.

ILVO seminarie “Passieve visserij en maricultuur binnen de Vlaamse windmolenvelden?”, Oostende (BE), 30 June 2011.

- Reubens, J., Degraer, S., Vincx, M., 2011. Het effect van offshore windmolens op vis. Oral presentation.
- Vandendriessche, S., 2011. De effecten van windmolens en de ermee gepaard gaande veranderingen in visserijactiviteit op de aanwezige bodemfauna. Oral presentation.

Workshop mariene exoten, Leiden (NL), 23 September 2011.

- Kerckhof, F., 2011. Windmolenvelden op zee: een nieuw habitat voor niet inheemse soorten. Oral presentation.

World Conference on Marine Biodiversity, Aberdeen (UK), 26-30 September 2011.

- Coates, D., Vincx, M., Vanaverbeke, J. , 2011. A close up on the soft-sediment macrobenthos around offshore wind turbines. Oral presentation.

Mares Science Café, Ghent (BE), 6 February 2012.

- Coates, D., 2012. Monitoring offshore wind farms in the Belgian part of the North Sea. Oral presentation.

Symposium Sound Solutions, Amsterdam (NL), 10 February 2012.

- Deelname Debusschere, E. en Derweduwen J., 2012.

12th VLIZ Young Scientists' Day, Bruges (BE), 24 February 2012.

- Derweduwen, J., Hostens, K., Reubens, J., Vandendriessche, S., 2012. Do windmill parks function as a refugium? Oral presentation.
- Coates, D., Vanaverbeke, J., Vincx, M., 2012. A historical view of the macrobenthic communities on the Thorntonbank and Goote Bank. Poster.
- Reubens, J., Degraer, S., Vincx, M., 2012. The secret life of Atlantic cod (*Gadus morhua*) at a wind farm in the Belgian part of the North Sea: where ecology meets economy. Poster.

- Rumes, B., Di Marcantonio, M., Lauwaert, B., 2012. Assessing the environmental impact of offshore wind farms in the Belgian part of the North Sea. Poster.

Doctoraatssymposium 2012 UGent, Gent (BE), 22 March 2012.

- Reubens, J., Degraer, S., Vincx, M., 2012. Site fidelity and movements of cod (*Gadus morhua*) at a wind farm using acoustic telemetry. Oral presentation.

NecoV studiedag 'Duin & Kust', Rotterdam (NL), 27 March 2012.

- Vanermen, N., Courtens, W., Stienen, E.W.M., Van de walle, M. & Verstraete, H., 2012. Zeevogels & offshore windmolens - de toepassing van 'seabirds at sea' data in impact analyse. Oral presentation.

ICES Workshop on Effects of Offshore Wind farms on Marine Benthos (WKEOMB) - Facilitating a closer international collaboration throughout the North Atlantic Region, Bremerhaven (DE), 27-29 March 2012.

- Degraer, S., 2012. Co-convenor of ICES Workshop on Effects of Offshore Wind farms on Marine Benthos - Facilitating a closer international collaboration throughout the North Atlantic Region. Organisation and chairing.
- Coates, D., Vanaverbeke, J., Vincx, M., 2012. Soft-sediment macrobenthos around offshore wind farms in the Belgian part of the North Sea. Poster.
- Derweduwen, J., Vandendriessche, S., Hostens, K., 2012. Monitoring the effects of the Belgian windmill parks on the epibenthic and demersal fish fauna of soft bottom sediments. Poster.
- Reubens, J., Degraer, S., Vincx, M., 2012. The secret life of Atlantic cod (*Gadus morhua*) at a wind farm in the Belgian part of the North Sea: where ecology meets economy. Poster.

DeceMBSS, Ghent (BE), 30 March 2012.

- Reubens, J., Degraer, S., Vincx, M., 2012. Unravelling the life cycle of Atlantic cod (*Gadus morhua*) and pouting (*Trisopterus luscus*) at windmill artificial reefs – resolving the mysteries? Oral presentation.

First International Conference on Environmental Interactions of Marine Renewable Energy Technologies (EIMR2014), Kirkwall, Orkneys, Scotland (UK) 30 April – 04 May 2012.

- Rumes, B., Kerckhof, F., Norro, A., Degraer, S., 2012. Offshore intertidal hard substrata: a new habitat promoting non-indigenous species in the Southern North Sea. Oral presentation.

Research at Alpha Ventus, Bremerhaven (DE), 8-10 May 2012.

- Rumes, B., 2012. Offshore windfarms in the Belgian part of the North Sea early environmental impacts and selected findings. Invited oral presentation.

Estuarine, Coastal and Shelf Science 50: Today's Science for tomorrow's management, Venice (IT), 3-7 June 2012.

- Kerckhof, F., Degraer, S., Norro, A., Rumes, B., 2012. Offshore intertidal hard substrata: a new habitat promoting non-indigenous species in the Southern North Sea. Poster.

- Rumes, B., Di Marcantonio, M., Lauwaert, B., 2012. Assessing the Transboundary Environmental Impacts of Offshore Wind Farm Developments in the Belgian part of the North Sea. Oral presentation.

Conférence « Les Energies Marines Renouvelables et Vous? Les premières rencontres sur les EMR et leur acceptabilité sociale », Caen (FR), 20 juin 2012.

- Degraer, S., 2012. «Environmental impact monitoring of offshore wind farms in Belgian waters ». Invited oral presentation.

ICES Annual science Conference 2012, Bergen (NO), 17-21 September 2012.

- Degraer, S., 2012. Co-convener of Session O “How does renewable energy production affect aquatic life?” Organisation and chairing.
- Birchenough, S.N.R., Warr, K., Rumes, B., Degaer, S., 2012. Ecosystem impacts from offshore wind farms: Cross-border overview of lessons learnt from UK and Belgium. Oral presentation.
- Coates, D., Vanaverbeke, J., Vincx, M., 2012. The added value of small-scale monitoring of the soft-sediment endobenthos around offshore wind farms in the BPNS. Oral presentation.
- Dannheim, J., et al., 2012. A call for hypotheses-based benthos research in offshore wind farm environmental impact studies. Oral presentation.
- Derweduwen, J., Vandendriessche, S., Hostens, K., 2012. Monitoring the effects of the Belgian windmill parks on the epibenthic and demersal fish fauna of soft bottom sediments. Oral presentation.
- Haelters, J., Vigin, L., Degaer, S., 2012. Quantifying harbour porpoise disturbance by offshore wind farm piling Activities. Oral presentation.
- Reubens, J., Degaer, S., Vincx, M., 2012. Unravelling the life cycle of Atlantic cod (*Gadus morhua*) and pouting (*Trisopterus luscus*) at windmill artificial reefs. Oral presentation.
- Debusschere, E., Norro, A., Vandendriessche, S., Hostens, K., Vincx, M., Botteldooren, D., Degaer, S., 2012. The impact of underwater noise on the early life stages of fish. Poster.
- Degaer, S., Brabant, R., Rumes, B., 2012. Environmental monitoring of offshore renewable energy installations: A plea for timely knowledge sharing. Poster.
- Degaer, S., et al., 2012. Targeted monitoring in offshore wind farms – the need to understand cause-effect relationships in the marine benthos. Poster.
- Kerckhof, F., Degaer, S., Norro, A., Rumes, B., 2012. Offshore intertidal Hard Substrata: a New Habitat Promoting Non-indigenous Species in the Southern North Sea. Poster.

Offshore Wind and Ecology Congress (OWEZ), Amsterdam (NL), 12 October 2012.

- Brabant R., Degaer, S., Rumes, B., 2012. Offshore wind farms in the Belgian Part of the North Sea. Heading for an understanding of environmental impacts. Poster.
- Haelters, J., Vigin, L., Degaer, S., 2012. The effect of piling activities on harbour porpoises in Belgian waters. Poster and abstract.
- Vanermen, N., Stienen, E.W.M., Courtens, W., Van de walle, M., 2012. Monitoring displacement effects of an offshore wind farm on seabirds. Poster.

Symposium Protecting the Dutch whale – crossing boundaries (North Sea Foundation, WWF and ENECO), Amsterdam (NL), 18 October 2012.

- Haelters, J., Vigin, L., Degaer, S., 2012. The effect of piling activities on harbour porpoises in Belgian waters. Oral presentation.

Our Seas of Tomorrow, Brussels (BE), 31 October 2012.

- Rumes, B., 2012. The return of Don Quixote? Challenges and opportunities for Belgian offshore wind farms. Oral presentation.

Conference on Wind power and Environmental impacts, Stockholm (SE), 5-7 February 2013

- Degräer, S., Brabant, R., Rumes, B., 2013. Offshore wind farms in the Belgian Part of the North Sea. Heading for an understanding of environmental impacts. Poster.

13th VLIZ Young Scientists' Day, Bruges (BE), 15 February 2013.

- Brabant, R., Vigin, L., Stienen, E.W.M., Vanermen, N., Degräer, S., 2013. Radar research on the impact of offshore wind farms on birds: preparing to go offshore. Poster
- Coates, D., Vanaverbeke, J., Vincx, M., 2013. 31 years of macrobenthic data on the Thorntonbank and Goote Bank: a parallel evolution or not? Poster.
- Debusschere, E., Hillewaert, H., Vandendriessche, S., Hostens, K., Vincx, M., Botteldooren, D., Degräer, S., 2013. The impact of pile-driving on seabass eggs and larvae. Poster.
- Reubens, J., De Rijcke, M., Degräer, S., Vincx, M., 2013. Acoustic tagging of Atlantic cod - the silver bullet to investigate behaviour? Poster.

Jaarvergadering van de Strandwerkgroep België, De Panne (BE), 16 February 2013.

- Reubens, J., 2013. Het effect van offshore windmolens op de ecologie van demersale vissen Attractie-productie? Oral presentation.

UndeceMBSS, Ghent (BE), 8 March 2013.

- Coates, D., Vanaverbeke, J., Vincx, M., 2013. Macrofaunal enrichment near wind turbines on the Thorntonbank: succession or steady-state? Oral presentation.
- Debusschere, E., Vandendriessche, S., Hostens, K., Botteldooren, D., Vincx, M., Degräer, S., 2013. Underwater noise emissions and fish, a destructive marriage? Oral presentation.

ICES Working Group on Marine Benthal and Renewable Energy Developments (WGMBRED), Caen (FR), 19-22 March 2013.

- Debusschere, E., Hillewaert, H., Vandendriessche, S., Hostens, K., Vincx, M., Botteldooren, D., Degräer, S., 2013. The impact of pile-driving on seabass eggs and larvae. Poster.

Joint meeting ICES WGITMO – WGBOSV, Montreal (CA), 20-22 March 2013.

- Kerckhof, F., 2013. Non-native species issues associated with artificial structures in the marine environment. Oral presentation.

27th Conference of the European cetacean society: Interdisciplinary approaches in the study of marine mammals, Setubal (PT), 8-10 April 2013.

- Haelters, J., Legrand, S., Vigin, L., Degräer, S., 2013. The effect of piling activities on harbour porpoises in Belgian waters: impact modeling and testing. Oral presentation.

Seminar on Environmental Impact Assessment in offshore wind farms and other large marine infrastructure and new developments at EU legislation, Riga (LV), 21-22 May 2013.

- Degraer, S., et al., 2013. Environmental impact of Belgian offshore wind farms: Learning from the past to optimise future monitoring programmes. Invited oral presentation.

Conference on underwater acoustic, Corfu (GR), 24-28 June 2013.

- Norro, A., 2013. Underwater sound emitted during construction and operation of offshore wind park. Focus on different foundations type presents in the Belgian North Sea zone. Oral presentation.

Conference on effects of noise on aquatic life, Budapest (HU), 11-16 August 2013.

- Debusschere, E., Vandendriessche, S., Hostens, K., Decoensel, B., Vincx, M., Degraer, S., 2013. Effects of pile driving on fish larvae: a field experiment. Oral presentation.

Doctoraatsverdediging, Gent (BE), 30 August 2013.

- Reubens, J., 2013. The ecology of Benthopelagic fish at offshore wind farms. Towards an integrated management approach. Oral presentation.

Studiedag 'Wetenschap zet de toon', Universiteit Gent (BE), 24 October 2013.

- Doom, M., Haelters, J., 2013. De invloed van geluidspollutie op zeezoogdieren. Oral presentation.

Estonian Offshore Wind Energy Conference, Hiiumaa (EST), 29 – 30 October 2013.

- Brabant, R., Degraer, S., 2013. Environmental impact of Belgian offshore wind farms: Learning from the past to optimise future monitoring programmes. Invited oral presentation.

StUKplus Conference: Five Years of Ecological Research at Alpha Ventus - Challenges, Results and Perspectives, Berlin (DE), 30-31 October 2013.

- Degraer, S., et al., 2013. Environmental impact of Belgian offshore wind farms: Learning from the past to optimise future monitoring programmes. Invited oral presentation.
- De Mesel, I., Kerckhof, K., Rumes, B., Norro, A., Degraer, S., 2013. Epifouling community development on the offshore wind farms in the Belgian part of the North Sea. Poster.

Studiedag 'Bescherming van zoogdieren', Zoogdierenwerkgroep van Natuurpunt - Nederlandse Zoogdiervereniging, Antwerpen (BE), 9 November 2013.

- Haelters, J., 2013. De bruinvissen in Belgische wateren: veel lawaai voor niets? Oral presentation.

EWEA OFFSHORE 2013, Frankfurt (DE), 19-21 November 2013.

- Rumes, B., 2013. Offshore wind in the Belgian part of the North Sea: Understanding environmental impacts. Oral presentation.

Conference on non-indigenous species in the North-East Atlantic, Ostend (BE), 20-22 November 2013.

- Kerckhof, F., De Mesel, I., Rumes, B., Degraer, S., 2013. The ongoing hardening of the coasts, an ecosystem altering mechanism favouring non-indigenous species. Oral presentation.

Lezingenavond: onderzoek naar duurzame vismethode in België, Gent (BE), 21 November 2013.

- Reubens, J., 2013. The ecology of Benthopelagic fish at offshore wind farms. Towards sustainable fisheries? Oral presentation.

Conference “Environmental impact of offshore wind farms: Learning from the past to optimise future monitoring programmes”, Brussels (BE), 26-28 November 2013.

- Degraer, S., 2013. Organiser, chair scientific committee of “Environmental impact of offshore wind farms: Learning from the past to optimise future monitoring programmes”. Organisation and chairing.
- Brabant, R., Di Marcantonio, M., Houthaeve, R., Rumes, B., Vanhulle, A., 2013. Setting the scene. Oral presentation.
- Coates, D., Reubens, J., 2013. Attraction & Production? WINMON.BE 2013 Conference. Monitoring environmental impacts of offshore wind farms in the Belgian part of the North Sea – Learning from the past to optimize the future monitoring. Joint oral presentation.
- Degraer, S., 2013. Reflections for an optimisation of future offshore wind farm monitoring programmes. Oral presentation.
- De Mesel, I., Kerckhof, F., 2013. Impacts on hard substrate fauna. Oral presentation.
- Haelters, J., Vanermen, N., 2013. Impacts on top predators. Joint oral presentation.
- Reubens, J., 2013. Should we allow small-scale fisheries at offshore wind farms? Oral presentation.
- Vandendriessche, S., Van den Eynde, D., Baeye, M., Brabant, R., Coates, D., Courtens, W., De Maersschalck, V., Derweduwen, J., Fettweis, M., Francken, F., Haerens, P., Hostens, K., Mathys, M., Reubens, J., Sas, M., Stienen, E., Vanaverbeke, J., Vanden Eede, S., Van Hoey, G., Van Lancker, V., Vincx, M., 2013. What happens with the sand and its inhabitants?. Oral presentation.
- Vanaverbeke, J., 2013. Indirect effect of wind mill farms on benthic ecosystem functioning: experimental results. Oral presentation.
- Rumes, B., 2013. Size matters. Oral presentation.
- Coates, D., Kapasakali, D., Vincx, M., Vanaverbeke, J., 2013. Large and small scale changes in macrobenthic communities in Belgian Offshore wind farms. Poster.
- Debusschere, E., Decoensel, B., Botteldooren, D., Hostens, K., Vandendriessche, S., Vincx, M., Degraer, S., 2013. Where the action is: underwater noise and its effects on sea bass larvae (*Dicentrarchus labrax*) at a piling platform. Poster.
- Vanhellemont Q. et al., 2013. Satellite observations of turbidity and suspended sediments in support of offshore wind farms. Poster.

VLIZ Young Scientists' Day, Bruges (BE), 7 March 2014.

- Debusschere, E., De Coensel, B., Adriaens, D., Bajek, A., Botteldooren, D., Hostens, K., Vanaverbeke, J., Vandendriessche, S., Van Ginderdeuren, K., Vincx, M., Degraer, S., 2014.

Impact of pile-driving of offshore monopile foundations on young sea bass. Oral presentation.

- Haelters, J., Dulière, V., Vigin, L., Degraer, S., 2014. Towards a model for the redistribution of harbour porpoises (*Phocoena phocoena*) due to pile driving in Belgian waters. In: J. Mees et al. (Ed.). VLIZ Young Scientists' Day, Book of abstracts, Brugge, Belgium, 7 March 2014. VLIZ Special Publication 67: 65. Poster.

International Marine Conservation Congress, Glasgow (UK), 16 March 2014.

- Vanermen, N., Onkelinx, T., Courtens, W., Van de walle, M., Verstraete, H. , Stienen E.W.M., 2014. Seabird displacement at the Bligh Bank offshore wind farm. Oral presentation.

Lezingenavond Sea First Foundation: Vis en Zee wat is er mis mee?, Gent (BE), 19 maart 2014.

- Reubens, J., 2014. The ecology of benthopelagic fish at offshore wind farms. Towards sustainable fisheries? Oral presentation.

ICES Working Group on Marine Benthal and Renewable Energy Development (WGMBRED), Tallin (EST), 25-28 March 2014.

- Derweduwen, J., Vandendriessche, S., Debusschere, E., Hostens, K., 2014. Monitoring environmental impacts of offshore wind farms in the Belgian Part of the North Sea. Oral presentation.

Thetis « Conférence sur les Energies Marines Renouvelable », Cherbourg (FR), 9-10 April 2014.

- Degraer, S., et al., 2014. Environmental impact of Belgian offshore wind farms: Learning from the past to optimise future monitoring programmes. Invited oral contribution.

2nd International Conference on Environmental Interactions of Marine Renewable Energy Technologies (EIMR2014), Stornoway, Isle of Lewis, Outer Hebrides, Scotland (UK), 28 April – 02 May 2014.

- Degraer, S., Brabant, R., Rumes, B., 2014. Offshore wind in the Belgian part of the North Sea: Understanding environmental impacts. Poster.

Week van de Zee, Vlaams Bezoekers- en Natuureducatie Centrum "De Nachtegaal", De Panne (BE), 8 May 2014.

- Rumes, B., 2014. Offshore wind en het mariene milieu. Oral presentation.

XVIème Séminaire du Réseau National Echouages, Nord-Dunkerque (FR), 27-28 September 2014.

- Haelters, J., Dulière, V., Vigin, L., Degraer, S., 2014. Investigations scientifiques des marsouins dans le cadre de la construction des éoliennes en eaux belges. Oral presentation.

ZOOLOGY 2014 (21st former Benelux Congress of Zoology), Liège (BE), 12-13 November 2014.

- Kerckhof, K., De Mesel, I., Rumes, B., Degraer, S., 2014. Artificial hard substrata favour non-indigenous species in the Southern North Sea. Oral presentation

Marien Ecologisch Centrum- WWF. Oostende (BE), 21 November 2014.

- Rumes, B., 2014. Mariene leven rond de molens op de Thorntonbank. Oral presentation.

First Mares Conference: Marine Ecosystems Health and Conservation, Olhão (PT), 17-21 November 2014.

- Debusschere, E., Vercauteren, M., Botteldooren, D., Hostens, K., Vandendriessche, S., Vincx, M., Degraer, S., 2014. Startled but not traumatized: the effects of pile-driving on fish behavior. Oral presentation. Oral presentation.

DEPONS: 2nd annual meeting, Edinburgh, (UK), 26-27 November 2014.

- Gilles, A., Viquerat, S., van Bemmelen, R., Haelters, J., Scheidat, M., Aarts, G., 2014. Modelling harbour porpoise seasonal distribution in the North Sea, conference paper. Oral presentation.

VLIZ Young Scientists' Day 2015, Bruges (BE), 20 February 2015.

- Alsebai, M., Colson, L., Vincx, M., Vanaverbeke, J., 2015. The effect of the installation of offshore wind farms on soft-sediment macrofauna: a 5-year study from the Thornton Bank (Belgian part of the North Sea). Poster.
- Debusschere, E., Blom, E., Bolle, L., Botteldooren, D., De Boeck, G., De Coensel, B., De Jong, C., Hostens, Sinha AK., Vandendriessche, S., Vincx, M., Wessels, P.W., Degraer, S., 2015. A comprehensive study to assess the impact of impulsive sound on juvenile sea bass. Poster.

Conference on Wind energy and Wildlife impact, Berlin (DE), 10-13 March 2015.

- Debusschere, E., Bolle, L., Blom, E., Botteldooren, D., De Coensel, B., Glaropoulos, A., Hostens, K., Papadakis, V.M., Vercauteren, M., Vandendriessche, S., Vincx, M., Wessels, P.W., Degraer, S., 2015. Offshore pile-driving and young fish, a destructive marriage? Oral presentation.
- Reubens, J., Deneudt, K., Hernandez, F., Moens, T., 2015. Acoustic telemetry for fish – applications for monitoring and management. Oral presentation.

Offshore Survey 2015, Southampton (UK), 15-16 April 2015.

- Coates, D., 2015. Multi-technique surveys to detect ecological changes in offshore wind farms. Oral presentation.

ICES Working Group on Marine Benthal and Renewable Energy Development (WGMBRED), Oban (Scotland, UK), 21-24 April 2015.

- Derweduwen, J., Vandendriessche, S., Debusschere, E. & Hostens, K., 2015. Offshore wind farms in Belgium – effects on soft substrate epibenthos and fish. Oral presentation.

MROG Workshop ‘Seabird Displacement Impacts from Offshore Wind Farms’ , Perth (Scotland), 6-7 May 2015.

- Vanermen, N., Courtens, W., Van de walle, M., Verstraete, H., Stienen, E.W.M., 2015. Seabird displacement evidence at an offshore wind farm in the Belgian part of the North Sea. Oral Presentation.

Oceanoise conference 2015 towards an acoustically sound ocean. Vilanova I la Geltru, Barcelona (ES), 11-15 May 2015.

- Debusschere, E., Blom, E., Bolle, L., Botteldooren, D., De Boeck, G., De Coensel, B., De Jong, C., Hostens, Sinha AK., Vandendriessche, S., Vincx, M., Wessels, PW., Degraer, S., 2015. Pile driving is perceived as an acoustic stressor by juvenile European Sea bass (*Dicentrarchus labrax*). Oral presentation.

ICES Symposium on Marine Ecosystem Acoustics. Nantes (FR), 25-28 May 2015.

- Debusschere, E., Sinha, AK, Botteldooren, D., De Boeck, G., De Coensel, B., Vanaverbeke, J., Vandendriessche, S., Degraer, S., Hostens, K., 2015. *In situ* determination of the impact of offshore pile driving on juvenile sea bass *Dicentrarchus labrax*. Oral presentation.

3. Press

- 18 février 2009: RTL-TVI journal: interview monitoring éoliennes offshore (Vigin, L., Norro, A., Brabant, R.).
- 21 maart 2009: Focus TV: interview over monitoring van de windmolens (Kerckhof, F.).
- 23 maart 2009: Agripress: procedures voor windmolenvergunningen (Di Marcantonio,M., Vigin, L.).
- 16-17 december 2009 : windmolenvergunning, 49 soorten: Focus TV (Kerckhof, K.).
- 12 mai 2010: Radio RTBF: Planète première: éoliennes.
- 13 mai 2010: RTBF JT : éoliennes, monitoring (Norro , A., Brabant, R., Kerckhof, F.).
- Mei 2010: <http://www.argusactueel.be/binnenlands-nieuws/sociolandschappelijk-onderzoek-voor-windmolenvelden>: webnews sociolandschappelijk onderzoek werd overgenomen op website.
- 12 juin 2010: RTBF radio: "Transversales": monitoring éoliennes.
- 15 november 2010: Argus actueel.be: effecten op windmolenpark (Brabant, R.).
- Juli 2012: persnota: Windmolens in de Noordzee. Kraamkamer voor kabeljauw!?
- 22 augustus 2012: De Morgen: Windmolens doen zee herleven (Degraer, S.).
- 7 september 2012: Belga, La Libre Belgique, Le soir, C-Power nieuwsbrief: Winmon rapport 2012.
- Autumn 2012: Energy Insights: Ecological effects of offshore wind farms (pp 10 -11) (Degraer, S.)
- Oktober 2012: Argus actueel: invloed van windmolens.
- Oktober 2012: C-power nieuwsbrief : De zee herleeft op de Thorntonbank: Ecologie en windturbineparken gaan hand in hand (Degraer, S.)
- Novembre 2012: magazine "Imagine demain le monde": éoliennes.
- Maart 2013: Reportage in Wild van Dieren op VTM: over het taggen van kabeljauw aan de windmolens (Reubens, J.). Thema overgenomen door verschillende kranten, Eos, National Geographic
http://www.youtube.com/watch?v=aFB_CfT3h9w&list=PLmWjWCggkojYbNGkBXiJVYLe-CHFT_ece&index=23
- December 2013: EOS.
- December 2013: Knack.
- April 2014: Belgian Research in Europe (magazine): Vliegtuig Courard en windmolens (Brabant, R.).
- 30 april 2014: De Knack: de onderwaterfauna op de paal van een windmolen (Brabant, R.).
- 17 oktober 2014: Deredactie.be: Bouw windmolenvelden op zee niet dodelijk voor vissen.
- December 2014: EOS: Windmolens doden vissen niet.
- 18 april 2015: deredactie.be: Windmolenvelden Noordzee fataal voor 1.000 zeevogels per jaar
- 18 April 2015: HLN.be: Windmolenvelden Noordzee kunnen jaarlijks duizend zeevogels treffen.
- 18 avril 2015: RTL.be : Eolien offshore en mer du nord - Le parc éolien responsable à terme de la mort d'un millier d'oiseaux par an - étude).
- 18 april 2015: DM online: Windmolenvelden Noordzee kunnen jaarlijks duizend zeevogels treffen.

- 18 avril 2015: RTBF Infos : Mer du Nord: le parc éolien causerait la mort d'un millier d'oiseaux par an.
- 18 avril 2015: 7sur7.be: Le parc éolien responsable à terme de la mort d'un millier d'oiseaux par an.
- 19 avril 2015: la Dernière Heure / Dimanche : Le parc éolien responsable de la mort d'un millier d'oiseaux.
- 19 avril 2015: Nord Eclair - Tournai : Eoliennes: 1.000 oiseaux tué par an.
- 20 avril 2015: l'Avenir : Bientôt un millier d'oiseaux morts par an).
- 20 april 2015: HLN: Meeuwensoorten bedreigd door stijgend aantal zeewindmolens).
- 20 avril 2015: Metro FR : Les oiseaux victimes du parc éolien.
- 26 mei 2015 : Kanaal Z : Z-Energy interview: Impacts of offshore windmills (Degraer, S.)

4. Education

4.1. PhD thesis promotorship (Finalised and ongoing)

1. Coates, D.A., 2014. The effects of offshore wind farms on macrobenthic communities in the North Sea. PhD Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vincx, M., Vanaverbeke, J.
2. Debusschere, Elisabeth (2011 – ctd.). Offshore wind farm-induced under water noise effects on young developmental stages of fish. Ghent University. Promotor: Degraer, S., Vincx, M.
3. Kyriazi, Zacharoula (2010 – ctd.). Strategic interactions in the marine spatial planning game: Observation, interpretation and integration. Ghent University. Promotor: Degraer, S., Maes, F.
4. Reubens, J.T., 2013. The ecology of Benthopelagic fish at offshore wind farms. Towards an integrated management approach. PhD Thesis. Marine Biology Research Group, Ghent University, Gent. 237 pp. Promotor: Vincx, M., Degraer, S.

4.2. Master thesis work

1. Alsebai, M., 2014. The effect of the installation of offshore wind farms on soft-sediment macrofauna: a 5-year study from the Thornton Bank. Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vanaverbeke, J.
2. Belay Kassa, W., 2013: Permeable sediments: neglected but important? Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vanaverbeke, J.
3. da Costa, A.M.R., 2014. Do offshore wind farms influence the occurrence of ichthyoplankton and squid larvae? Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vandendriessche, S.
4. Deschutter, Y., 2013. Soft sediment macrobenthos around offshore wind turbines: is there a shift in species composition on a small scale? Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vanaverbeke, J.
5. Gogo, S., 2010. A first evaluation of the biodiversity of a possible marine protected area in the Belgian Part of the North Sea. Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vanaverbeke, J.
6. Mestdagh, S., 2014. Fisheries exclusion in offshore wind farms: effects on macrobenthic communities. Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Vanaverbeke, J.
7. Persoon, K., 2015. Who is the recreational fisherman and what does he catch? An overview of recreational fisheries at sea in Belgium. Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Reubens, J.
8. Vercauteren, M., 2014. Behavioural responses of European sea bass juveniles to pile-driving sound. Master Thesis. Marine Biology Research Group, Ghent University, Ghent. Promotor: Degraer, S.
9. Wubbhareg, B.K., 2013. Permeable sediments: neglected but important? (Academic Year 2012-2013). (Erasmus Mundus EMBC). Promotor Vanaverbeke, J.