

CHAPTER 5

“A WIND OF CHANGE” IN RECREATIONAL FISHERIES?

RECREATIONAL FISHERMEN AND WIND FARMS: CURRENT USE AND PERCEPTION

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ABSTRACT

Offshore wind farms create opportunities for recreational fishermen in Belgium, since the presence of hard substrates and the closure for trawling create a favorable habitat

for fish. After the construction in 2008, a concentration of anglers was observed in the vicinity of the first wind farm during monitoring. In the following years, however,

the interest of anglers for the wind farms seemed to disappear. To elucidate the evolution in the relation between recreational angling intensity and wind farms, this study aimed to assess how Belgian recreational fishermen perceive wind farms, how often they visit them and why, and which fish species they (expect to) catch. Data were derived from the annual DCF survey for recreational fishermen. Less than 2% of the sea anglers reported to go fishing in the larger wind farm area, even when 30 to 40 percent of the respondents either expected more fish, bigger fish or other fish species. The main reasons to stay away from wind farms is because entering the wind farms themselves

is not allowed, because the distance to the wind farms is relatively large, because charter vessels do not offer fish trips to wind farms, and because wind farms are protection zones and nursery areas for fish. 40% of the respondents would consider fishing inside wind farms if it were allowed, mainly because they expect more or other fish. This is a clear indication that the enforcement of wind farm closure for fisheries and shipping is vital when aiming at the creation and/or restoration of nursing grounds in the area. However, the large distance to the wind farms will probably continue to limit fishing pressure, even if wind farms would (partly) be opened for recreational fisheries.

5.1. INTRODUCTION

Wind farms function as artificial reefs, harboring high biomasses and acting as aggregation and/or production sites for different fish species (Pickering & Whitmarch, 1997; Reubens *et al.*, 2013a; Reubens *et al.*, 2013b). This presents opportunities for both commercial and recreational fisheries. At the same time, this reef effect could negatively affect fish stocks, as aggregated fish are easier to catch (Rose & Kulka, 1999), thereby worsening overfishing on stocks already under pressure. Hence, the evolution of fisheries effects should be closely monitored in relation to wind farm development.

In Belgium, offshore wind farms are closed for vessels not involved in wind farm maintenance or scientific research, or associated with the government (KB Veiligheidsafstanden 11/04/2012). This means that fishing is prohibited based on safety concerns. A side effect of this measure is that the Belgian wind farms act like a small

scale MPA (Marine Protected Area). Due to the absence of commercial trawlers and the relatively high abundances of gadoid species such as cod *Gadus morhua* and pouting *Trisopterus luscus*, the immediate vicinity of wind turbine foundations is an ideal location for recreational angling.

During the early years of construction and operation, ship-based monitoring surveys indicated that recreational fishermen aggregated in the vicinity of the first wind turbines (Fig 1, map 2008-2009). Although the intensity of surveys further increased in 2010-2011, observations of anglers decreased and the link with wind farms seemed mostly gone. This might be due to a number of reasons: the wind farms are quite far for angling day trips, less fish is caught than expected, anglers have to respect a safety distance of 500m and, as such, cannot fish as close to the hard substrates and structure as with wrecks, etc. (Vandendriessche *et al.*, 2013).

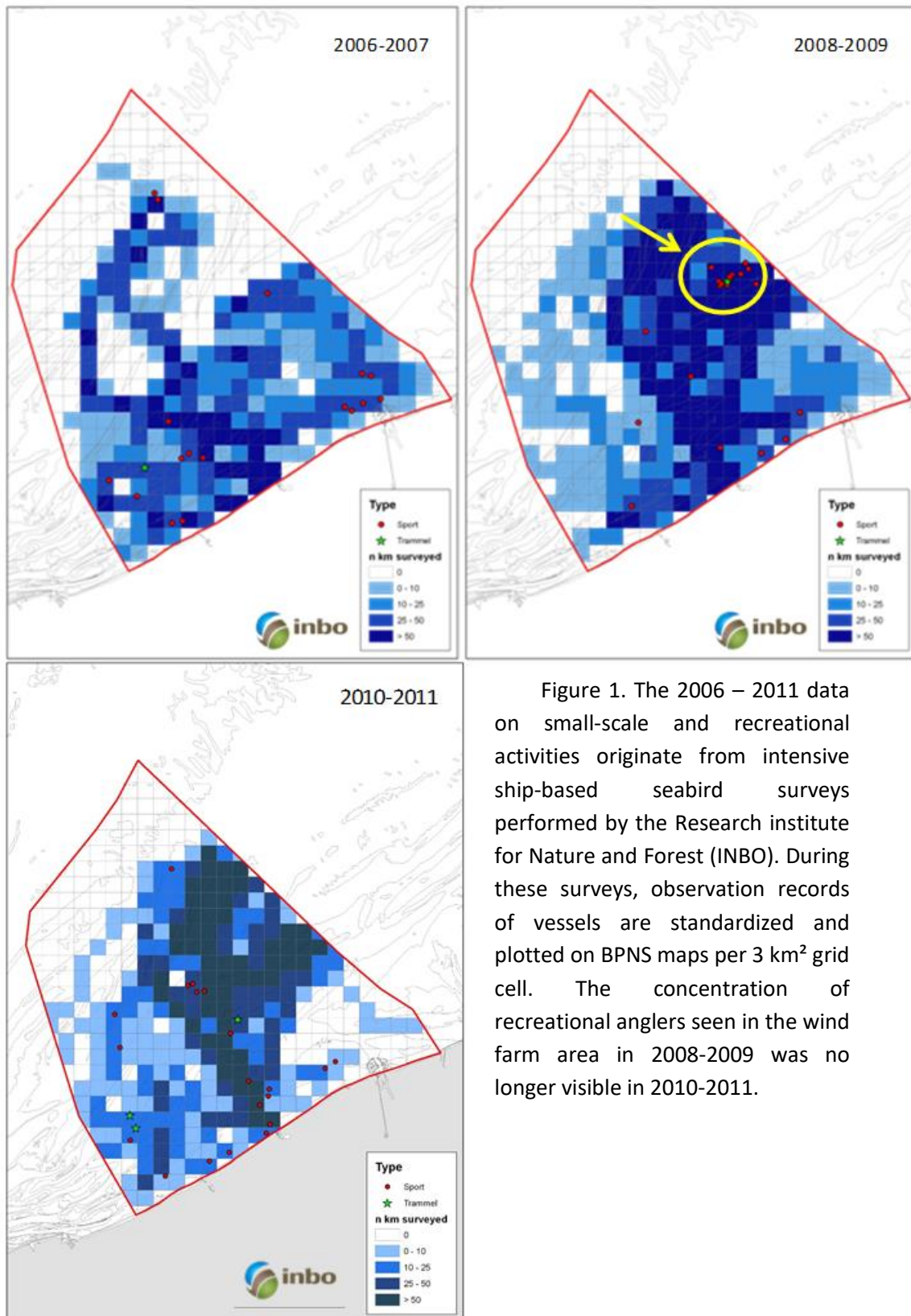


Figure 1. The 2006 – 2011 data on small-scale and recreational activities originate from intensive ship-based seabird surveys performed by the Research institute for Nature and Forest (INBO). During these surveys, observation records of vessels are standardized and plotted on BPNS maps per 3 km² grid cell. The concentration of recreational anglers seen in the wind farm area in 2008-2009 was no longer visible in 2010-2011.

To elucidate the current relation between recreational angling intensity and wind farms, this study aimed to assess how

Belgian recreational fishermen perceive wind farms, how often they visit them and why, and which fish species they (expect to) catch.

5.2. MATERIAL AND METHODS

To gather information on recreational fishing at wind farms, specific questions were included in the 2015 questionnaire for recreational fishermen at sea. This questionnaire is an annual obligation within the Data Collection Framework (DCF, EC 199/2008). Under this framework, European Member States (MS) collect, manage and make available a wide range of fisheries data needed for scientific advice. The DCF distinguishes between commercial and recreational fisheries, with recreational fisheries being defined as ‘non-commercial fishing activities exploiting living aquatic resources for recreation or sport.’ The questionnaire survey was carried out in Belgium for the first time in 2013-2014 (Zenner *et al*, in prep).

The design of the initial survey was adapted in 2015 based on recommendations

from respondents, scientists and an international working group on recreational fisheries (WGRFS). Additional questions were included to address the effect of wind farms on the distribution of recreational fisheries. A full version of the survey is available in the Annex. Both paper versions and an online survey were distributed among recreational fishermen and were promoted by means of flyers distributed from charter vessels, social media and through recreational fisheries organizations (e.g. VZW Sportvisserij Vlaanderen and VZW Zeevisport). The questionnaire was designed and distributed in Dutch. All responses were stored, structured and analyzed using MS Access. Only the questions and responses that are relevant with regard to wind farms are discussed in this report¹.

5.3. RESULTS

GENERAL (RESULTS OF Q1)

A total of 224 completed questionnaires was received and analyzed. The majority of the respondents were men (98.7%). The age of the respondents ranged between 15 and 79, but almost half of the respondents (47%) were older than 55. Most respondents

originated from the provinces West-Vlaanderen (91), Oost-Vlaanderen (59), Antwerpen (42) and Vlaams-Brabant (20). Fishing is mainly done by angling from the shore or at sea, or by recreational shrimp fishing.

¹A full report on the results of the questionnaire survey is available on request, contact co-author Els Torrelee

ANGLERS AT SEA (RESULTS OF Q4.1)

Our observations show that in the vicinity of Belgian wind farms, recreational fishing is only done by angling. 119 respondents (53%) indicated to go angling at sea, mostly over soft sediments (sandbanks) or ship wrecks. The main target species for angling are cod (*Gadus morhua*), dab (*Limanda limanda*), sea bass (*Dicentrarchus labrax*), sole (*Solea solea*), whiting (*Merlangius merlangus*), mackerel (*Scomber scombrus*), flounder (*Platichthys flesus*) and plaice (*Pleuronectes platessa*). Only 2 of the

sea anglers (1.7%) indicated to go fishing in the larger wind farm area (at safety distance from the nearest turbine). Their reasons to fish in this area are (1) there is abundance of fish and (2) there is little competition. One of these fishermen reported that he caught the following species in the larger wind farm area: sea bass, pouting (*Trisopterus luscus*), whiting, saithe (*Pollachius virens*), dab, sole, plaice, flounder and other species. One respondent indicated to fish at a UK wind farm for rays and sharks.

PERCEPTION ON WIND FARMS (RESULTS OF Q7)

Question 7 was not limited to sea anglers, and was answered at least partly by 116 respondents (52%). Most fishermen indicated not to go fishing in the vicinity of the wind farms, or to stay well away from the turbines. Based on the answers to the open question, following reasons can be listed:

- Entering the wind farms is not allowed for safety reasons (33 respondents)
- The Belgian wind farms are too far away from harbors (24 respondents)
- Charter vessel do not go there (11 respondents)
- Wind farms are protection zones and nursery areas for fish and should be respected as such (5 respondents)
- There is a lot of noise (1 respondent)

Answers to the question Q7.2, whether respondents perceived or expected changes

in fish in the vicinity of wind farms, were often positive: 30 to 40 percent of the respondents either expected more fish, bigger fish or other fish species (Figure 2).

To the question whether respondents would consider fishing inside wind farms if it were allowed and why (not), 40% of the respondents answered positively, mainly because they expect more or other fish. A few respondents indicated that they would consider fishing in wind farms because of “the challenge of fishing there”, “the peace and quiet at the wind farms” or “to check whether it is true what scientists say about the wind farms”. 32% indicated not to consider fishing at wind farms even if it were allowed, mainly to protect fish stocks. Other reasons are because the wind farms are too far away and fuel is expensive, and due to safety considerations.

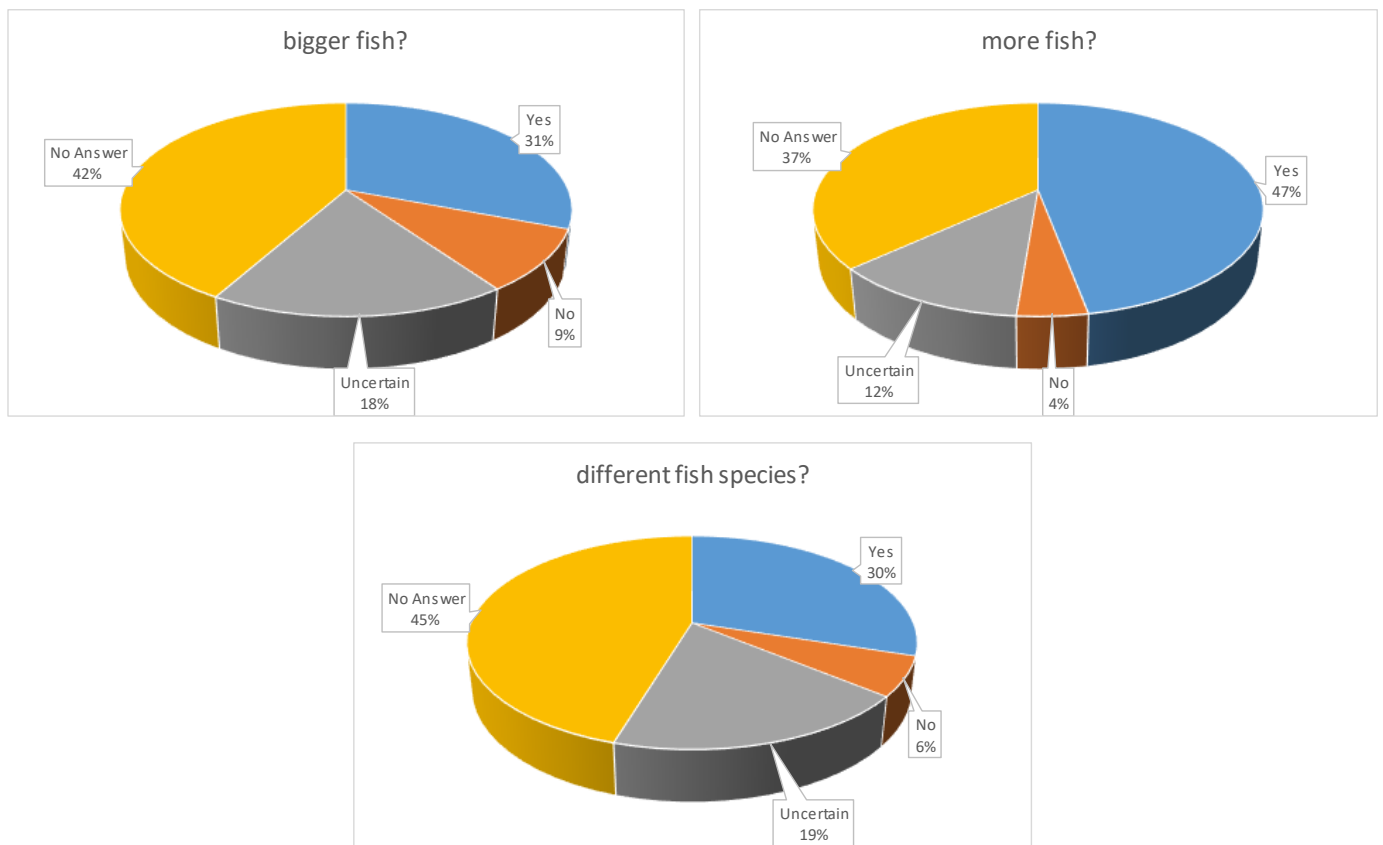


Figure 2. Pie charts representing answers of respondents to Q7.2 of the questionnaire: “Do you perceive or expect an effect of wind farms on fish? Do you expect (1) bigger fish, (2) more fish, (3) other fish species?”

5.4. DISCUSSION

SAMPLE SIZE

Survey-based studies ideally result in a representative sample of the population under study. In the present study, the representativeness of the analyzed survey results is uncertain since

1. information about the size and configuration of Belgian recreational fisheries is largely lacking since recreational fishermen have no registration obligation (Van Winsen *et al*, 2016)
2. the survey was distributed in Dutch only, so a number of French-speaking

recreational fishermen probably did not respond to the questionnaire

3. the survey was mainly promoted as an online questionnaire (a paper version was available on request)

Still, the response rate was considered to be quite high. The majority of the respondents was not sampled in the previous DCF-surveys: 79% of the respondents had never filled out a survey concerning their fishing activities before, indicating that the targeted public is increasingly aware of the

annual survey. Still, taking into account that the factor for upscaling to the whole population is unknown, some careful

conclusions can be made based on the survey results (Van Winsen *et al*, 2016).

CURRENT USE OF THE BELGIAN WIND FARM AREA BY RECREATIONAL FISHERMEN

Whether it is due to the safety measures around wind farms, the relatively large distance from the coast in relation to fuel costs, or another reason, recreational fisheries are currently almost non-existing in the larger vicinity of wind farms according to the survey results. Remarks of several respondents suggest that the reserve status of wind farms is respected by recreational fishermen. Since wind farms are closed for commercial trawling as well, the fishing pressure within the wind farms and their safety buffer can be considered extremely low compared to fishing grounds within the Belgian part of the North Sea (see also Vandendriessche *et al*, 2013). Fishing effort just outside the safety buffer is mainly limited to commercial fisheries, since only two recreational fishermen report to fish in the vicinity of wind farms. Unfortunately, a question on how close these fishermen go to the turbines was not included. Such a question should be considered for future questionnaires, especially since biological research (Degraer *et al*, 2013) indicates that the reef effect takes place in the immediate vicinity of the foundations and that effects further away from the turbines are limited. Hence, anglers respecting the 500m safety buffer will probably not notice an effect and will not return.

Low fishing pressures are not universal for European wind farms. They can be expected in Germany and in the Netherlands², where wind farms are closed for fisheries as well. In Denmark, on the other hand, passive fisheries such as angling is allowed in some of the wind farms, and in the UK, fisheries are allowed, including trawling (Verhaeghe *et al*, 2011). Nevertheless, little information is available on the extent of the use of these wind farms by recreational fisheries, mainly because only larger vessels are usually included in monitoring surveys and effects analyses (e.g. Mackinson *et al*, 2006).

²Starting in 2017, vessel transit and multiple usage (including recreational fisheries and professional fisheries that do not affect seafloor integrity) will be allowed in operational wind farms in the Netherlands. For details and restrictions see Ministerie van Infrastructuur en Milieu, 2015.

PERCEPTION ON WIND FARMS AND CONSIDERATIONS ABOUT FUTURE USE

The survey results indicated that there is an enthusiasm among recreational fishermen to fish within the wind farms (if it was allowed), mainly due to the expected positive effect of wind farms on fish populations (more fish, bigger fish, other species). Almost 40% of the respondents indicate that they would go fishing within a wind farm if it was allowed. This is a clear indication that the enforcement of wind farm closure for fisheries and shipping is vital when aiming at the creation and/or restoration of nursing grounds in the area. With regard to species like cod *Gadus morhua*, which is recovering but still has not achieved sustainable levels in the North Sea, Reubens *et al.* (2013b) already suggested that the wind farms should remain closed to all types of fishing.

On the other hand, wind farms create opportunities for multiple stakeholder use. Based on a case study with an offshore wind power facility in the Adriatic, Fayram and de Risi (2007) stated that creating a limited entry for recreational fishery and excluding commercial fishing from the area surrounding offshore wind turbines, may aid in controlling total harvest and may benefit several important stakeholder groups: (1) recreational and commercial fishermen in terms of higher recreational catch rates and potentially higher overall yield, (2) fisheries managers in terms of more precise control of recreational fisheries harvest, and (3) owners

of offshore wind power facilities in terms of reduced risk of damage to infrastructure due to fishing activity. Similarly, Verhaeghe *et al.* (2011) suggested that angling for seabass could be compatible with wind farms. For this species, but also for species such as cod and pouting, which appear to be attracted to the Belgian wind farms (Reubens *et al.*, 2013a) and have been reported to be caught by anglers in the vicinity of the wind farms, high yields could be expected for recreational anglers.

In the Netherlands, motivations for opening operational wind farms for vessel transit and multiple use (e.g. recreational shipping and aquaculture) are mainly a more efficient use of marine space and opportunities for biodiversity and a sustainable use of the North Sea (Ministerie van Infrastructuur en Milieu, 2015). In Belgium however, the questionnaire survey results indicate that the large distance between the wind farms and the Belgian harbors (e.g. ± 27 km between the Thorntonbank wind farm and the harbor of Zeebrugge) is an important reason not to go fishing there. Consequently, the distance to the existing wind farms will probably continue to limit fishing pressure, even if wind farms would (partly) be opened for recreational fisheries. If new wind farms would be constructed closer to shore, however, the relation between recreational fishing intensity and wind farms could change substantially.

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