An Ecological Description of a Tidal Freshwater Wetland ‘The Notelaer’ in the Scheldt River Estuary

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SUMMARY

The Scheldt River estuary is ecologically important in Europe since tidal habitats are still present over the full gradients. There is a horizontal salinity gradient and a vertical inundation gradient which, combined, create a large diversity of habitat types. Especially the tidal freshwater wetlands are rare in Europe. These habitats may be threatened due to anthropogenic activities such as canalization, the building of sluices, increasing amounts of silt from domestic and industrial waste discharge or agricultural erosions. ‘The Notelaer’, an important freshwater wetland was chosen as study area for the presented study. Water quality in this part of the Scheldt used to be poor; all the domestic waste water from the capital of Brussels was discharged untreated in a tributary, the Senne, and passed the Notelaer on its way to the North Sea. The installation of a water treatment plant in Brussels in 2006 resulted in an amelioration of the water quality. The effect of improved water quality on the number and diversity of benthos, fish and water birds was investigated in this study. Benthos samples from intertidal and subtidal zones were taken at different locations and timepoints at 10 cm depth. Species in each sample were counted and determined according to the guidelines of Brinkhurst (1971; 1982), Kathman and Brinkhurst (1999) and Timm (1999). To count the presence and number of fish species, samples were taken in April, June and September 2008 using different standardized sampling methods, depending on the habitat. Wintering water birds were counted by observation at a specific observation point. Observations took place from October 2008 until March 2009. Bird location and activities at resting and foraging were scored.

9 Oligochaeta species were observed. Densities varied with ecotope characteristics, with largest numbers at the deepest parts. Compared to similar observations in 2005, the benthos density decreased substantially. Observed density decrease was especially large in the foraging ecotope of diving waterbirds. 17 different fish species were observed during the 3 sampling periods. Species and numbers are presented in Fig. 1. Compared to previous observations, a general increase in fish diversity could be observed. Water bird species in declining order of observed maxima (n) were: Anas crecca (263), Anas platyrynchos (194), Branta canadensis (139), Calidris alpina (133), Larus ridibundus (25), Tadorna tadorna (21), Larus canus (14), Anas strepera (9), Larus argentatus (8), Vanellus vanellus (6), Phalacrocorax carbo (4), Anas acuta (3), Aythya fuligula (3), Podiceps cristatus (2), Ardea cinerea (2), Aelopochen aegyptica (2), Aythya ferina (1).
A general decline of water bird numbers was observed when the data of this study were compared to similar data of the winter in 2005/2006. A tremendous decline of the diving duck *Aythya ferina* (from 1320 to 1 specimen) was most remarkable.

![Graph showing seasonal pattern of fish species](image)

**Fig. 1.** Seasonal pattern of fish species occurring in the freshwater wetlands of ‘The Notelaer’

REFERENCES – can be obtained from the first author.