



Hässleholms
Vatten

MAGLE WETLAND

SEWAGE TREATMENT
AND BIRDS PARADISE
IN HÄSSLEHOLM



THE CONSTRUCTED WETLAND IN MAGLE

was constructed as the last step of the Hässleholm sewage treatment plant in 1995 to improve reduction of phosphorus and nitrogen.

The goal was to meet the demand of 50% nitrogen reduction. The treated sewage water passes through Lake Finjasjön, Almaån and Helge å to Hanöbukten, a part of the Baltic Sea especially sensitive for eutrophication.

At the same time we were eager to further reduce the amount of phosphorus reaching the Lake Finjasjön, as we also were working with a local restoration project here aiming to stop eutrophication in this lake.

We estimated that a constructed wetland was the most cost-efficient solution to these demands. It was built by ourselves at a total cost of 7 million SEK and with a calculated maintenance cost of 200 000 SEK/year and has been in operation since then with good results.

The principles we rely on are partly that the wetland works as a denitrification step (fertilizing nitrate is converted by bacteria to harmless air nitrogen) and partly that plants assimilate nitrogen and phosphorus. By harvesting these plants P and N is removed from the system. Both these processes have during the years of operation shown to be effective.

By its construction where special care to the birds has been taken this wetland also has become a good place for birds. Therefore it also has become a popular goal for strollers and bird-watchers. The walking trail Skåneleden also passes through the area. For visitors we have also built a outlook platform, a hide-out for bird-watching and some benches.

Wetland data

<u>Load</u> : Treated sewage from	30 000 persons
Flow:	13 000 m ³ /d
Nitrogen:	5300 kg/ha·y
Phosphorus:	28 kg/ha·y
Area:	30 ha (with 20 ha open water surface)
Volume:	90 000 m ³
Mean depth:	0,45 m
Max depth:	2,5 m
Residence time:	7 d

Function

Treated sewage water is pumped from the sewage plant 1,5 km in a pipe (ø 600) to the inlet in the distribution pond A. (See map at the backside)

From A it passes in pipes under the way to the four parallel pond series B, C, D and E. The flow to each can be manually regulated, though changing the flow distribution between the series. Normally the water should get the same residence time in the wetland regardless of its path.

The water from every pond series ends in the small collecting pond F, passes a flow measurement and a sampling point, runs out in the small Maglekärr stream for further passage to L. Finjasjön.

Hässleholms Vatten AB also have been working with other ecological projects.

Emmaljunga sewage plant for 200 persons shows various ecological treatment methods.
Vittsjö sewage plant for 1800 persons just has mechanical treatment followed by treatment in biological ponds.

Restoration of L. Finjasjöns - bio manipulation of a lake, with area 11 km², resulted in substantial reduction of blue-green algae.

RESULTS

Since the start of operation 1995 until 2006 the following treatment results have been reached:

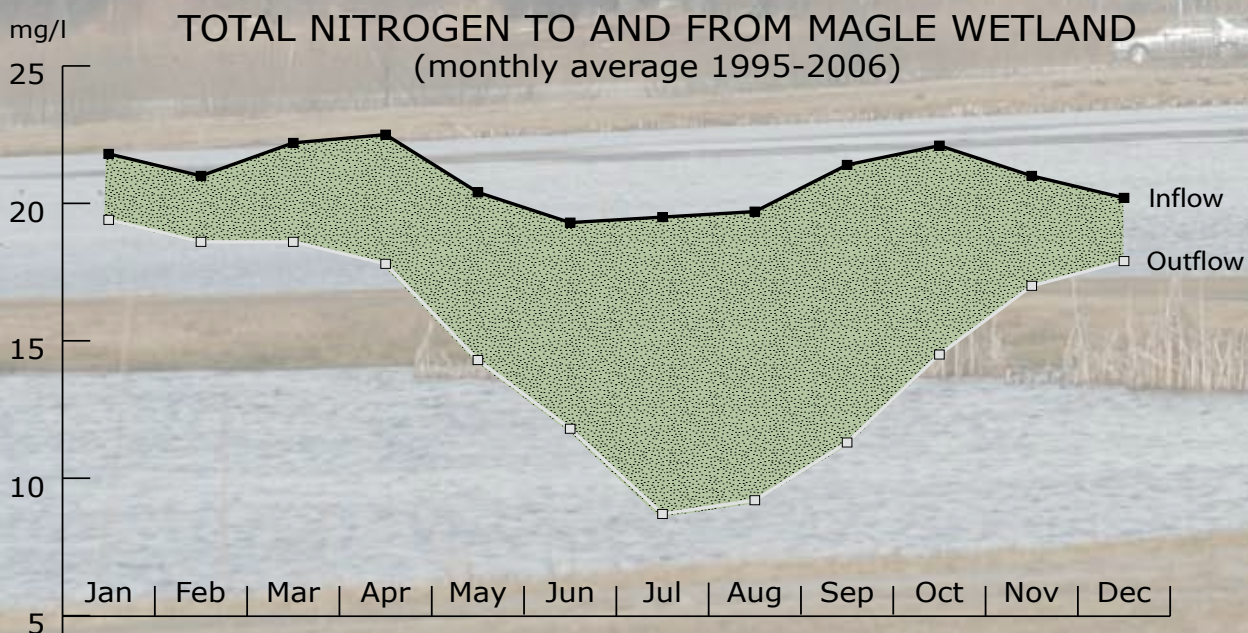
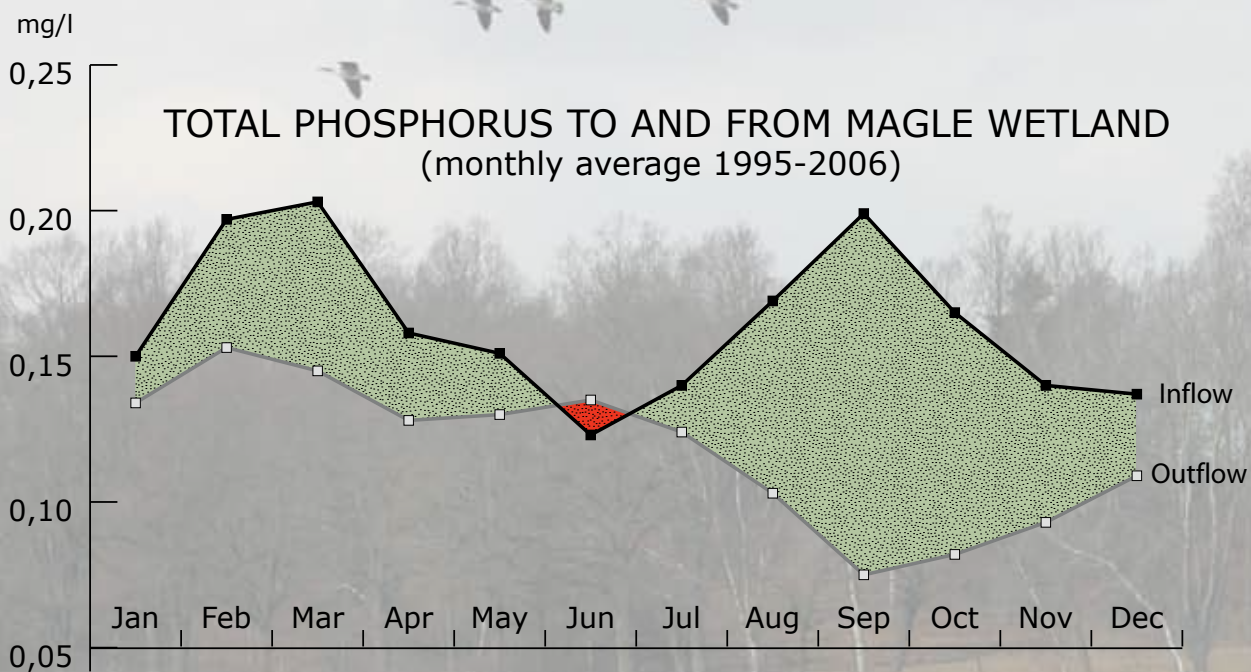
Nitrogen concentration is reduced by 29% and total phosphorus with 24%. Phosphate is reduced by 58%.

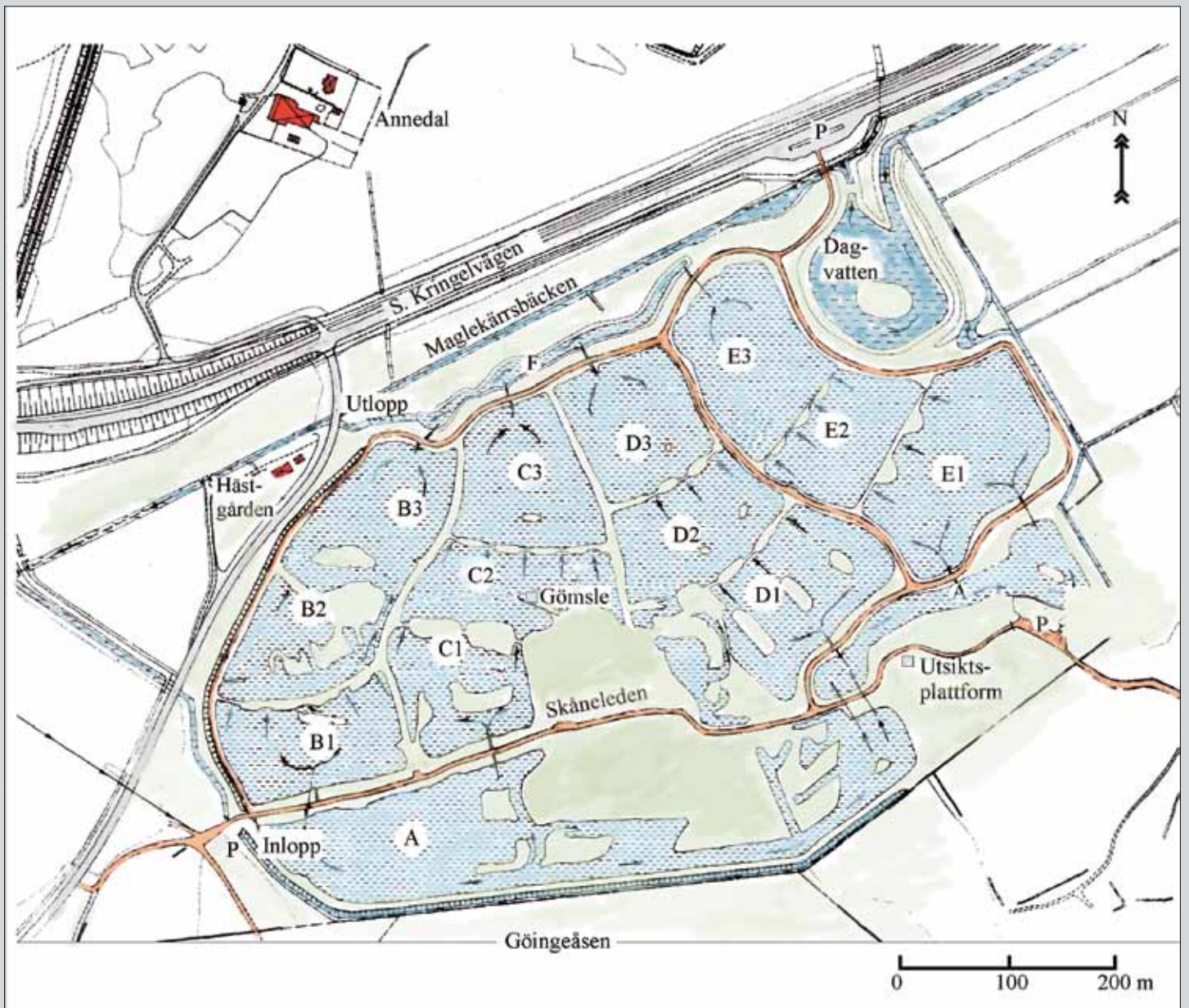
By the large amount of biological processes in the wetland the contents of organic matter and solid particles increases during the passage and the eutrophic situation also affects the pH level.

The level of intestinal bacteria is substantially reduced and the amount of the already low concentrations of heavy metals is somewhat lowered.

The yearly variations of nitrogen and phosphorus are shown in the graph below.

	To Magle	From Magle
Total phosphorus µg/l	161	122
Phosphate phosphorus µg/l	111	47
Total nitrogen mg/l	20,8	14,8
Nitrate nitrogen mg/l	13,5	8
Ammonium nitrogen mg/l	6,4	5,8
BOD ₇ mg/l	2,9	5,4
COD _{Cr} mg/l	33	46
Susp. solids mg/l	2,4	7,7
pH	7,5	7,6





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More information about the wetland can be found on our web site www.hassleholmsvatten.se

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