Indicative solution of the Oostvaardersplassen case (EN)

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The Oostvaardersplassen case is a relatively small, but quite technical System Dynamics case about natural reserve management. The Dutch natural reserve –the Oostvaardersplassen– in which hunting was prohibited for over 27 years, was kept clear of willows and bushes by large herbivores which do not have natural predators in the Netherlands. After the carrying capacity of the area had been reached, the Dutch population was shocked by movies and pictures of massive starvation of these large herbivores at the end of winter.

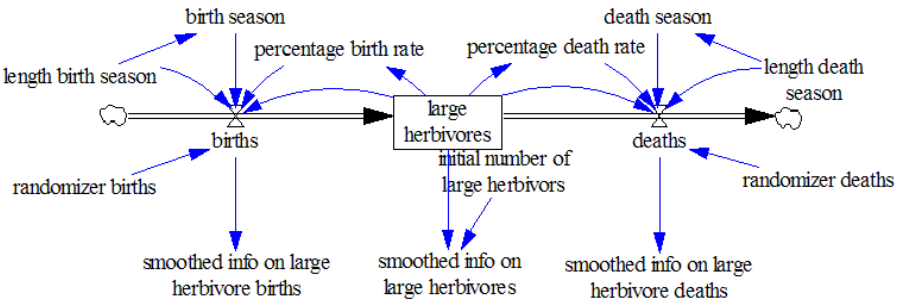

Figure 1: SFD of the small –but technical– OVP simulation model

Students need to make a SD simulation model (see Figure 1) based on the description provided. Doing so, they need to use several special functions (pulse train, random, lookup, and smooth3I functions), test the model, simulate it and draw the dynamics of several variables with a particular seed for the random functions (see Figure 2).

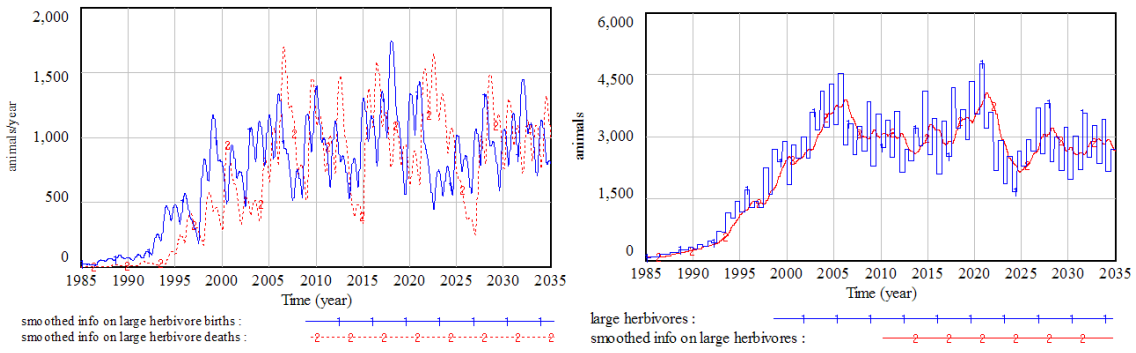

Figure 2: Behaviour of the smoothed flow variables (left) and crude and smoothed stock variable (right)

Then they need to simulate the model again with a different 'seed', and again, and again,

and again – after which they are asked to generalize the results/conclusions. Not having been instructed about random functions during the course, students need to find out about them during the exam. They also need to test the model for behavioral sensitivity. They need to make a complete and an aggregated CLD of the model and explain the link between structure and behavior. Finally, they need to come up with a policy, test it, and conclude.