

# *Natura insilico* Goubet & Decocq 2001: when vegetation ecologists meet mathematicians

Guillaume DECOCQ

*Université de Picardie Jules Verne*

guillaume.decocq@u-picardie.fr

In 1992, the American writer John Gray was claiming that “Men are from Mars, Women are from Venus”. But surprisingly, he said nothing about ecologists and mathematicians. Yet essentialism may also at play between these two “species” rub each other. This is the aim of my talk: shedding light on differences and convergences between two disciplines that have a lot to do together, but often ignore it. As a case study, I will relate the story of my collaboration with Olivier Goubet, which started twenty-four years ago, in 2021. As a vegetation ecologist, I came from the wild, more precisely from woodlands where I was studying an invasive plant species named American black cherry or, as botanists say, *Prunus serotina* Ehrh. (botanists love insulting plants in Latin). As a mathematician, Olivier was living in silico, speaking an unknown language. The first challenge was thus to communicate, to try to found a common language. We succeeded. Then came the vocabulary, with new words such as canopy or ergodicity, prior to the concepts themselves. After one year, the experiment could start. For this, we recruited a Guinea pig called Emmanuelle, which rapidly became a hybrid species capable of transforming in natura data into in silico data. She built one population model, then one landscape model and finally an all-in-one model called PRUNUS, which reproduced the spatial spread of the invasive black cherry over the Compiègne forest in north France. The experiment was so successful that the vegetation ecologist and the mathematician never stopped collaborating. Still, colleagues from both civilizations joined them and now the hybrid population has well established in Amiens and is still growing. Long-distance dispersal sometimes happened, with diaspores that have recruited in Lille and Lyon... like a plant invasion dynamics!