The two meanings of "prediction" and their consequences in ecological science

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Abstract

Session: Predictive ecology in a changing world: from data to practice (J. Justus, S. Calba, A. Coreau, V. Devictor)

In this presentation, I will critically investigate the notion of prediction in science, especially in ecology and the consequences of its meanings and usages. I will focus on three complementary main axes: (i) the general definition of the notion of prediction in science; (ii) the epistemological singularity of ecology as a science with respect to predictability; (iii) the consequences of the interplay between ecology and human society on the problem of prediction. I will show that the term "prediction" hides two meanings. Traditionally, prediction is regarded as being central to science because it represents a key step to explanation. Scientists make predictions about observable phenomenon in order to corroborate or to "test" a theory. In this case, the concept of prediction corresponds to an epistemic problem. However, the concept of prediction has recently gained a different meaning. It also refers to an anticipation of the future in the view of action. Prediction is therefore often considered as a practical tool synonymous of forecast, projection, or scenario. In this case, the prediction in itself is important and does not necessarily relate to a theory testing. I will show with concrete examples how these two meanings (epistemic and practical) have in turn different consequences in ecological science. Indeed, the most pressing environmental problems require scientists to "predict" the effects of global changes. But their models and results will have different implications according to the meaning of prediction they adopt.

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