Abstract: The European Society for Mathematical and Theoretical Biology celebrates 2018 as the year of Biomathematics, since one hundred years ago, in 1917, D'Arcy Thompson published his "On Growth and Form" where biological morphology was approached, based on physical analogy and mathematical transformations.

One century after we have to register such various and widespread developments concerning the interplay of Mathematics and Biology, that it is hard to say what Mathematical Biology is today.

In fact, the recent decades have seen an explosion in the use of mathematical methods in all areas of biology, from the use of advanced statistical methods in the analysis of medical trials, or in the alignment of DNA segments, to sophisticated pattern recognition methods in the analysis the signals from electroencephalogram data or the inference of vegetation structure from remote-sensing data. This explosion may correspond to the joint high developments of specific mathematical methodologies and powerful implementation on computers, that contribute to make the field full of aspects difficult to follow and to understand in a unified view. Thus this talk follows a preferred path, namely the trail started by Vito Volterra and Alfred Lotka in the field of Population Dynamics, trying to show how rich were their initial intuitions and how Mathematics and Biology have positively interacted gaining reciprocal advantage.

During a century, Mathematical Population Dynamics, initially restricted to Demography, has shaped fields such as Ecology, Epidemiology, cell growth, Immunology. Today, mathematical modeling is the common ground where the joint effort of mathematicians and biologists has produced a new perspective.