

# Influence of temperature on protists demographic parameters

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Contrary to bacteria, little is known about protist species traits. To tackle how temperature might influence their demographic parameters is fundamental both for theoretical and empirical questions. To define their ecological niche of temperature, we experimentally expose 6 species of protozoa monocultures coming from the microcosm contained inside the leaves of the *Sarracenia purpurea* to 15 different and fixed temperatures.

We estimated the species demographic parameters such as per capita growth rate  $r$ , intraspecific competition  $\alpha$  and carrying capacity  $K$  with a Verhulst based model. Our experimental findings were not conclusive with the theoretical predictions, likely due to the lack of control on the resource (bacteria) and to the in-between position of protozoa trophic level.

We found that the per capita growth rate  $r$  seemed to increase with higher temperatures and follow a thermal performance curve. The intraspecific interaction  $\alpha$  showed no clear pattern with our 6 species of protozoa although theoretically, we should obtain a monotical curve with a peak at the optimal value for reproduction. The carrying capacity  $k$  exhibited a slight decrease with an increase of temperature in line with previous papers. Understanding the effect of temperature on upper trophic levels, such as the protozoa level, together with their prey may lead to a better approach to top-down and bottom-up effects in natural systems under global change.

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