



Figure 6: Proposed N-shaped response of the $TER_{C:P}$ to temperature. Light blue, green, and orange areas, until the vertical dashed line represent temperatures within the ecological environment of the species, the red area represents temperatures beyond the thermal optimum (Pörtner & Farrell 2008; Pörtner 2012) that might be experienced by the species only in rare conditions. In this proposed concept, the increasing demands of C relative to P when temperatures increase from cold (light blue) to intermediate (middle green) are the result of increasing respiration rates and P use efficiency, until the $MaxTER_{C:P}$ is reached. When temperatures increase above the normal thermal environment of the organism (from green to orange area), the increasing demands of P relative to C are the result of the decrease in P use efficiency, and might prevent an excessive increase in metabolism that can result from the combination of low P diets (Ruiz et al. 2018; Ruiz et al. 2020) and increased temperatures. The increase in C demands relative to P when temperature is excessive may reflect the physiological stress that amplifies C-demands for respiratory and catabolic processes (Schmitz 2013).