# Abstract

Extinction is, in essence, a demographic process: when mortality outweighs fertility over a sustained period, populations dwindle. Given the current biodiversity crisis, species demographic trait data are thus becoming a commodity for conservation decision-making. For instance, species data on survival and fecundity are required in the assessment of species vulnerability to climate change and to forecast extinction risk in population viability analyses. Unfortunately, effective conservation management is challenged by the lack of data: high-quality demographic data can only be obtained by long-term monitoring studies. This dissertation identifies current data gaps and explores methods to leverage sparse demographic data to guide conservation decisions. In manuscript I we answer the question "How much do we know?" regarding demographic information. Specifically, we developed the Demographic Index of Species Knowledge (DISKo) that scores available information to map the landscape of demographic knowledge across tetrapods. We show that this landscape is desolate: only 1.3% of species have high-quality demographic data and 64% lack even the simplest measures. Therefore, the further collection of field data is urgently required. Alternatively, when the resources necessary for data collection are unavailable, researchers should consider leveraging existing data from published or zoo records, using data from closely related species, or approximating relevant metrics using only partial demographic information. In these latter cases, it is critical to have a clear notion of the uncertainty in the measures that are available. We further explore this in manuscript II, where we analyze biases introduced in the estimation of generation time when age-specific vital rates are lacking. The biases we found have significant implications for IUCN extinction risk assessment, for which generation time is a key variable to estimate population decline. Finally, in manuscript III we explore how to make efficient use of limited resources when data is limited. We propose a decision framework that can aid in prioritizing conservation actions for threatened species in the European Union. Here we go beyond demography and, to align our framework with current EU biodiversity policies, include data on habitat availability, climate change, and evolutionary distinctiveness.