

In the present work we study problems that are connected to measures of biodiversity. Our approach to these problems is based on theory of information, namely on so called generalized entropies, also known as f -entropies. If we add a restriction on these f -entropies, we receive a set of functions that we call f -diversities, which satisfy usual requirements for functions that are intended to measure biodiversity. Moreover, we show that many measures of diversity that are used in practice are either f -diversities or continuous functions of some f -diversity. We study various measures of diversity and we investigate whether they can or can not be included in this framework. We introduce a concept that can be used to evaluate sensitivity to changes of various measures of diversity. This concept might be useful to study behavior of different measures of biodiversity. We also study issues connected to estimates of biodiversity measures and we investigate some types of estimates. For one type we present a slightly modified approach that can result in better estimates for some measures. We focus on theoretical investigation of measures of diversity, however most of our results are practically applicable.