

# Beta distribution

Bruno Melati

2025-08-20

To set the costs and benefits parameters we chosed a **beta distribution**. This distribution was chosed for some reasons:

- The values are all positive. As do not exist negative cost or negative benefit, it fit to our data;
- The values are defined on the interval  $[0,1]$ . It could be used as the percentage of costs and benefits;
- As the values are bounded between 0 and 1, we know the maximum value of benefits for one species, that is  $B \leq k_i$ , where  $k$  is the degree of  $i$ ;
- The shape of the curve assume diffent forms as a function of the paramters. In nature we really do not know the shape of the distributions of costs and benefits;
- It have a solution for ou case, which the other option of distribution (lognormal) do not.