Identifying birds of various species is important for monitoring their population in the wild. Conservationists often rely on crowdsourced data collected by enthusiasts which can be unreliable, or painstaking observations taken by a small team, both of which can introduce biases to the data. By creating a model to identify species visually, it would be possible to set up cameras in varied locations and take large samples easily.

A successful model would be one that is able to identify the species in any given picture with enough accuracy to get a general idea of the population of each species. The exact number to this requirement will vary depending on the method of data collection, but for the purposes of this exercise we will aim for the standard 95% accuracy.

The data we will use for training features relatively ideal pictures of birds. This model may then require more training or a second, simpler model to track and capture the images of birds to be counted. We are also constrained to the bird species that we have data for. This model will not be able to identify if a picture shows a bird not in our data, it will simply be miscategorized. Additionally, neural network training is extremely resource intensive, and we will most likely have to employ transfer learning to reach our desired accuracy.

The dataset in question is specifically:
https://www.kaggle.com/datasets/gpiosenka/100-bird-species