The main goal of the current proposal is to find a pattern how large-bodied animals living in human-changed environment solve the problems of food requirements, food availability, physical and immunological development and weather conditions. We are also going to assess the role of life-time experience of adults in breeding abilities.
On the long-term study area of agricultural landscape in Western Poland we are going to conduct detailed study on the development biology of white stork nestlings in relation to variable environmental factors. As the one out the main factors we consider weather conditions and quality of the feeding grounds (abundance and availability of potential prey). The weather conditions will be monitored by locally distributed meteorological stations. In 50 nests (mostly where marked storks bred in previous season) we are going to install camera traps with MMS module to record arrival dates of both pair members, accurate first egg laying date, hatching date for each nestling and time where they die with probable cause (infanticide, weather influence etc.), kind of food which parents deliver to chicks. Adults will be trapped and equipped with transmitters. As the first we are going to catch previously marked adults with known age and sex. In each of 50 monitored nests we are going to measure clutch size, eggs dimensions, hatching success and regularly nestlings' biometric parameters until their growth curve rise the inflection. For each nestling and adult we will take blood samples for mean stress level assessment, immunological system efficiency tests and molecular sex determination. In each territory we will record the potential prey abundance in randomly chosen plots in 2 km radius from the nest. Moreover, the land cover will be measured based on the Corine Land Cover grid database and by mapping, classification and calculation of images taken from drones (to obtain recent state and availability of foraging grounds). To test the relationships between nestlings' development and explanatory variables we will incorporate generalized linear and non-linear mixed models, survival probability analysis. All statistical analyses will be proceeded in R statistics.

We are going to undertake this issue because majority of similar studies were focused usually on relationships between breeding biology and weather-food conditions or breeding biology and anthropogenic sources of food. One of the missed factor is the parental experience and its role in covering nestlings' requirements for immunity development, and finally fitness value. There are numerous studies treating about nestling development and factors responsible how the development is realised in a wild. However, there is a lack of studies gathering in one scheme several key factors. Therefore, to the best of our knowledge, proposed study will be the first which connect majority of the factors affecting individual development of large-bodied bird species closely related to human. It will bring a lot in our understanding of animal development in changing environment. Moreover, similar aspects of white storks ecology are currently being studied in Spain, where the second biggest stork population lives. Therefore, we will be able to compare our results with other researchers and to explain particular phenomenon in broad perspective.

The study is also important from societal point of view. White Stork is a kind of charismatic species, closely related to human settlements and agricultural management and, what is worth to highlight, social effort is very strong. Therefore, the current as well as our former studies will meet with strong societal interests.