**Sequence 1.10 - Animal ecology concepts to identify key ecological attributes**

The ecological characteristics of animal species to monitor influence the notion of ecological monitoring: in particular, regarding the choice of key ecological attributes, the surveying method or the monitoring plan to implement. As we've seen already, monitoring key ecological attributes shows the condition of the monitored species. There are 3 types of attributes: the size and distribution of the species, its composition and population dynamics, and the quality of its habitat. Obviously it is not about monitoring all these parameters, but to choose the ones that will give the best information on the species' condition and at the lowest cost. The choice depends essentially on the ecology of the species: the chosen ecological attributes reflect the abnormal modifications of the population so that quick action can be taken if needed.

The ecological attribute "size of the population" can vary abnormally. For example, it can decrease due to poaching which would require an intervention. It can also vary abnormally due to some natural phenomenon. Elephants for instance tend to travel seasonally far beyond the limits of the PA to find food. During the dry season, they stay where there is water, and during the rainy season, they can spread over vast areas. For this reason, the number of elephants in the PA can fluctuate but it doesn't necessarily mean the population is in bad condition.   
The distribution of the species on the other hand, depends on the quality of the suitable habitat within the PA, but also on the species’ tolerance of other species or potential threats. For instance, if the distribution map of a park shows concentrations of a species in areas that are far from the park's boundaries, in areas that are difficult to access and while the grazing lands and water are elsewhere, you know that there is a poaching threat coming from the surrounding areas. The distribution of the animal species is therefore a good indicator of the condition of the species in the park and of the location of possible threats.

The second type of ecological attribute is the structure of the animal population. It is characterised namely by the size of the groups or the number of families it consists of. This size depends on the social system of the species in question. For example, zebra herds gather several families. The size of the groups depends on the difficulty to find water and food in the considered area. The more food there is, the larger the group will be, if the conditions of the habitat get bad, the group splits up to form smaller units. Thus, monitoring examines the size of groups and detects if the population "suffers", and has to adapt to difficult conditions, like to an environment that lacks food for instance. Some species form large flocks, like the buffaloes, while others stick to family units with few individuals, like the Duikers. So you need to have rather good knowledge of the normal social structure of the different species to detect any form of anomaly during the monitoring.

Finally, the thirds type of ecological attribute to take into account is the species' habitat. To survive, animals need a suitable habitat, in other words one in which they can get food, water, and find the right conditions for their reproduction. Species can be dependent on a particular habitat like some waterbirds for instance are dependent on permanent wetlands within the park. So monitoring the quality of this habitat and especially the evolution of invasive plants is key to monitoring the survival of the species within the PA.

You need to know the ecological characteristics of the monitored species to be able to identify what key ecological attribute would be most relevant to monitor, in order to differentiate natural variations of its population's condition from abnormal ones within the PA.