**Formulae & Data Sheet**

= Population size at a given time

= Population-based carrying capacity per specie

= Starting point of population

e 2.718

r = rate of growth

t = Given time (2014 to 2017 is 3 for t)

**Note:** All data used is from 2000 to 2014

|  |  |  |
| --- | --- | --- |
| *r (using moving averages) = b - d* | | |
| **Heck cattle** | **Konik horses** | **Red deer** |
| -0.178033794 | -0.09 | -0.17377 |
|  |  |  |
|  |  |  |
| **Heck cattle** | **Konik horses** | **Red deer** |
| 510 | 1000 | 2300 |
|  |  |  |
|  |  |  |
| **Heck cattle** | **Konik horses** | **Red deer** |
| 200 | 990 | 2500 |
|  |  |  |
| *Random Encounter with wolves* |  |  |
| **Heck cattle** | **Konik horses** | **Red deer** |
| 0.054 | 0.27 | 0.68 |
|  |  |  |
| *Kill Rate of Wolf* |  |  |
| **Heck cattle** | **Konik horses** | **Red deer** |
| 3 | 6 | 15 |
|  |  |  |
| *Capture efficiency* |  |  |
| **Heck cattle** | **Konik horses** | **Red deer** |
| 0.015 | 0.005 | 0,006 |
|  |  |  |
| = 1.25 | = 0.8 | = 0.625 |
| = 0.45 | = 10 |  |

Logistic Growth Rate for Deer

Population growth considering competition between cattle and horses

and = competition coefficient that measures relative importance per individual of interspecific competition

Deer Population Growth with Predator presence

= rate of growth of Deer

= refers to the prey population, thus deer

= measures capture efficiency, the effect of a predator on the per capita growth rate of N

Cattle and Horse Population Growth with Predator presence

= defines the cattle population

= defines the horse population

Predator Population Growth for Grey Wolves

= the value of this is assumed to be the measure of birth rate of predator.

= death rate of Predator

= defines the number of wolves