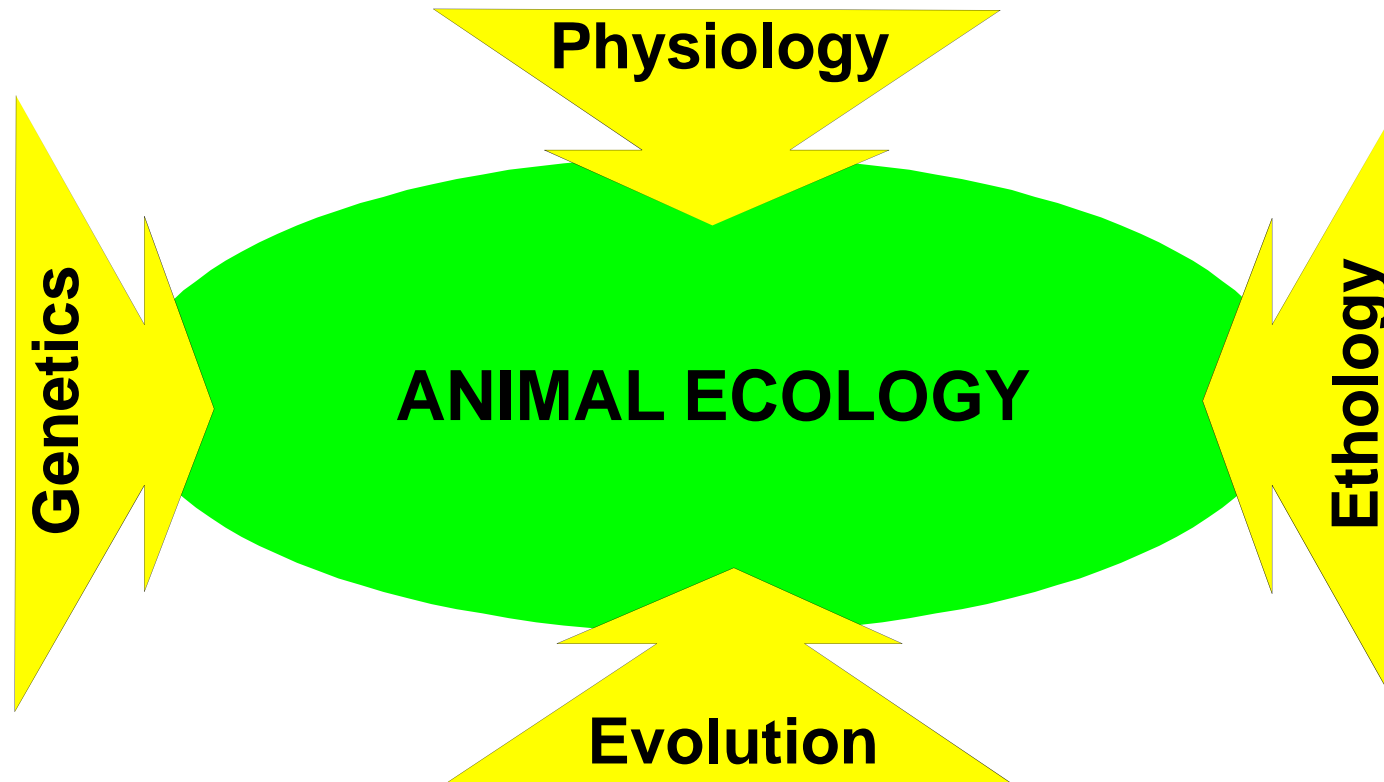


Eco-systems of agricultural landscapes and sustainable land use: Livestock systems

01 – Introduction - 1 Livestock Ecology: A Definition



Animal ecology as a central discipline of biology overlaps principally with four other areas of study



Ecology is the scientific study of the interactions of organisms with the environment that determine their distribution and abundance.

(Charles Krebs, 1988)

The environment of an organism consists of all those factors and phenomena that can influence it, whether those factors be physical and chemical (abiotic) or other organisms (biotic).

(Begon, Harper & Townsend, 1990)



Definitions of an animal's environment

The **psychological or sensory** environment contains all the elements of an animal's surroundings which it recognises through sensory organs.

The **minimal** environment is the system consisting of all the environmental elements which are essential for the animal's survival or for the maintenance of its bodily functions.

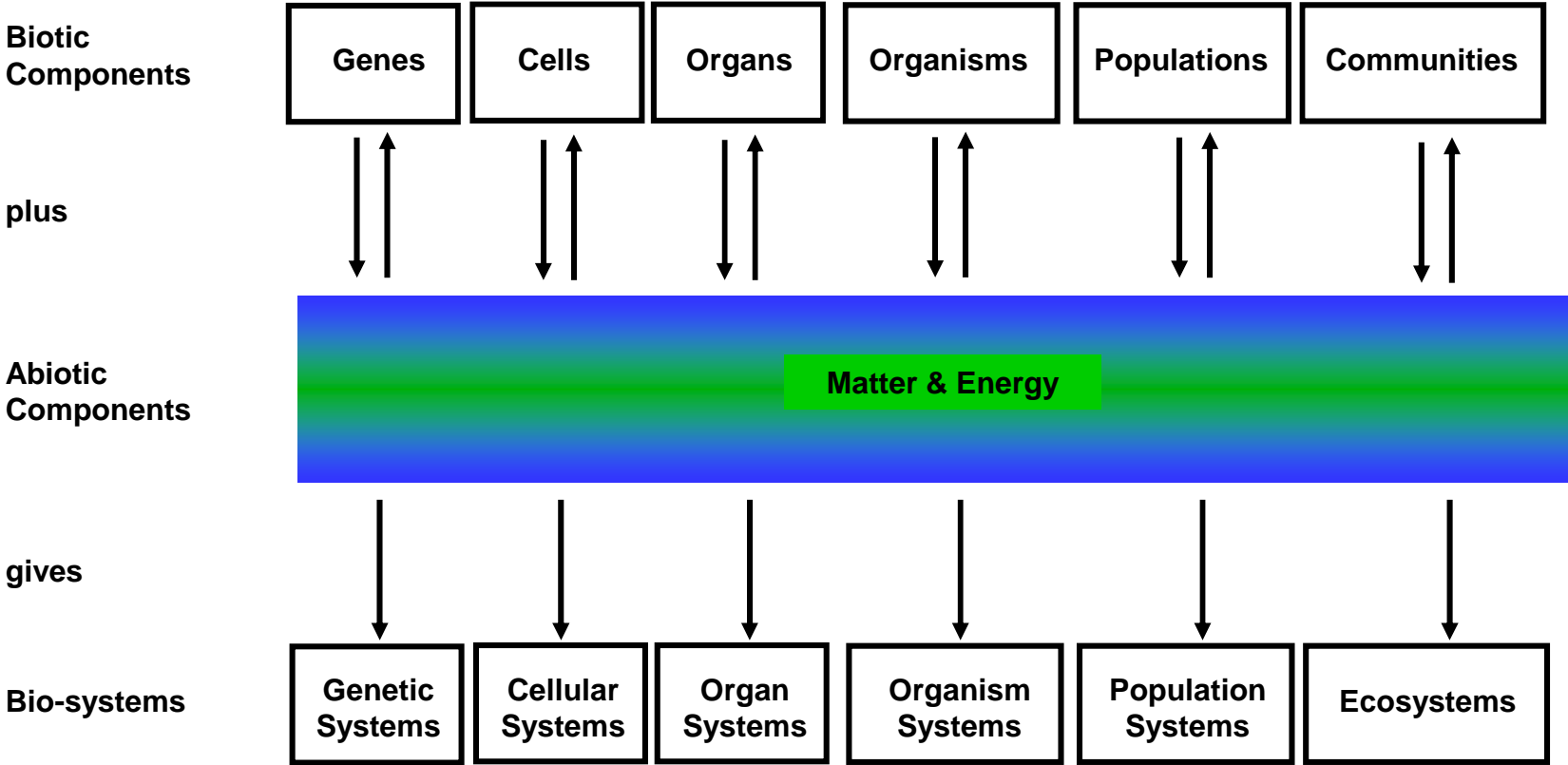
The **physiological** environment is the system consisting of all the environmental factors which directly affect the animal. It includes all essential components and many components that, although not essential, are also influential. This also includes all of the animal's interactions with the environment.

The **ecological** environment includes all direct and indirect influences which affect the animal in any given surroundings.

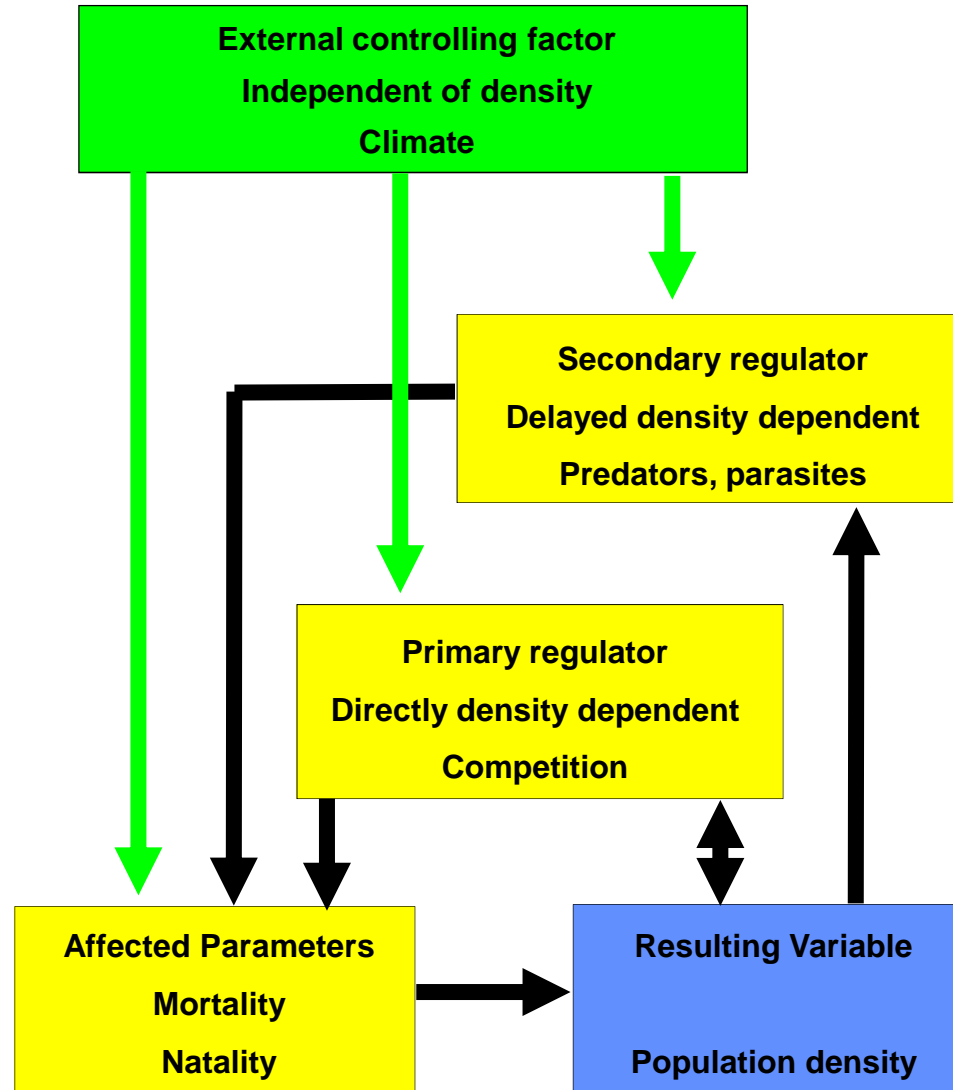
The **cosmic or atmospheric** environment is part of the ecological environment but is occasionally treated as a separate system. It includes all environmental elements relating to weather and climate.



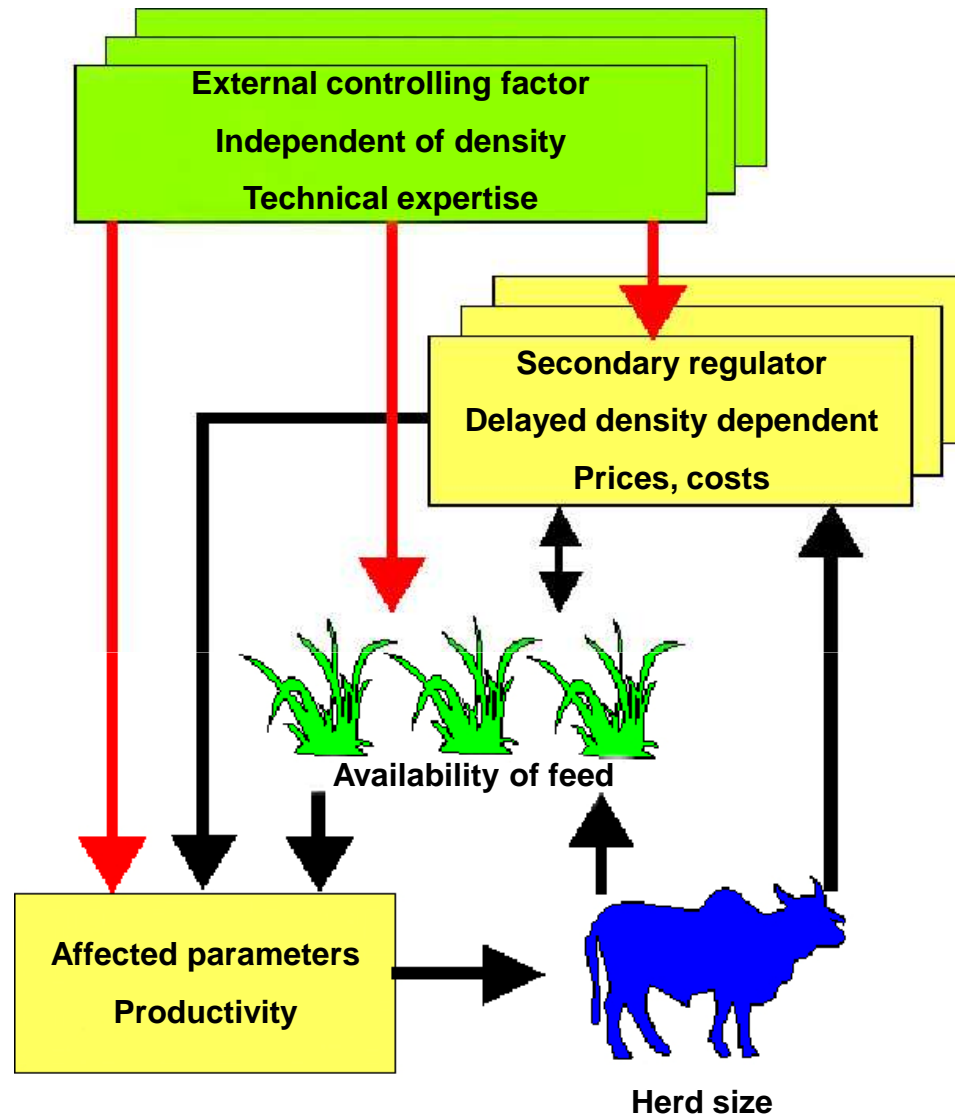
The hierarchy of biological systems



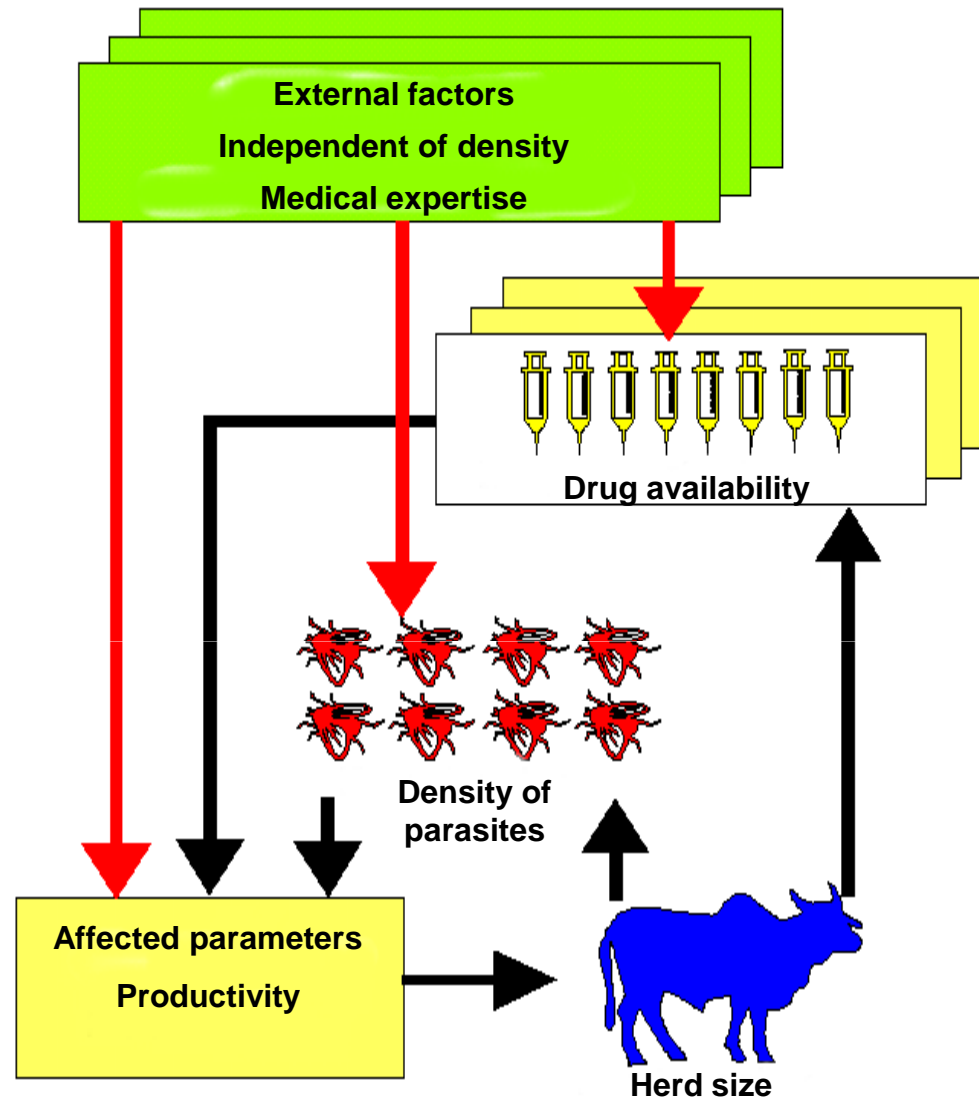
Regulation of population density



Regulation of herd size in a grazing system



Regulation of herd size by exposure to parasites



Livestock Ecology is the scientific study of the interactions of domestic animals with their production environment and their effects on numbers, density and distribution of livestock.

(H. J. Schwartz 1994)

The **Production Environment** includes all external factors and phenomena that affect the behaviour of livestock system. These can be of an abiotic, biotic, economic or socio-cultural nature.

(H. J. Schwartz 1994)



Non-environmental elements that influence the production environment

Society demands

- Animal welfare
- Protection of biodiversity
- Maintenance of soil and water quality
- Carbon retention and storage
- Impacts on rural economy
- Greenhouse gas emissions (GHG)
- Landscape and nature conservation

Consumer demands

- Product quality, chemical and organoleptic
- Product quality, hygienic
- Product quality, ethical

