



# *Population Dynamics*

*a brief introduction*

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*<http://correio.fc.ul.pt/~mcg/aulas/bioinfo/index.html>*



# *Population Dynamics*

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*Is concerned with the variation of population size over time and space.*

*Size:            number of individuals  
                  density (e.g.: number per unit area)  
                  biomass  
                  indirect indices of abundance*

*Symbol:         $N_t$     population size at time  $t$*



# *Population*

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*Individuals of the same species that:*

- share a geographical area of distribution*
- depend upon the same resources*
- are influenced by the same environmental factors*
- have a high likelihood of interaction among them*



## *Population as a subject of study*

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- *Conservation concerns – the population is at risk*
- *The population is commercially exploited*
- *The population is growing out of control (pest outbreak)*
- *It's a pathogenic agent (microorganisms, macroparasites)*
- *Plays a key ecological role*



# *Questions in Population Dynamics*

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1) *How many individuals are there ?*

*Techniques to estimate population size (sampling / statistics)*

2) *How many will there be ?*

- if everything influencing  $N_t$  does not change*
- if there are pre-specified changes*

*More complicated. Depends upon:*

*How many there are now*

*Population demographic traits*

*Environmental factors (biotic and non-biotic)*

# *Applied Population Dynamics*

