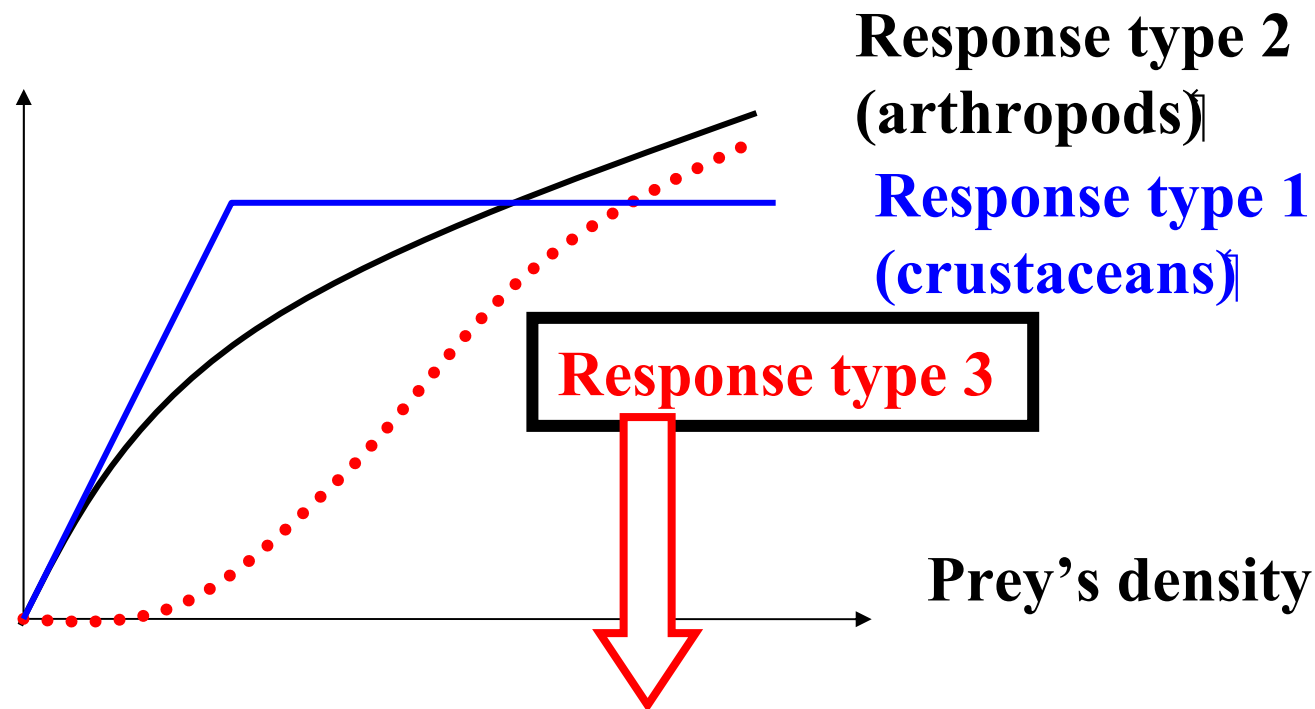


# •E.4 Functional responses of prey-predator population

-> Functional responses of a predator, by Holling...

Number of preys captured per day



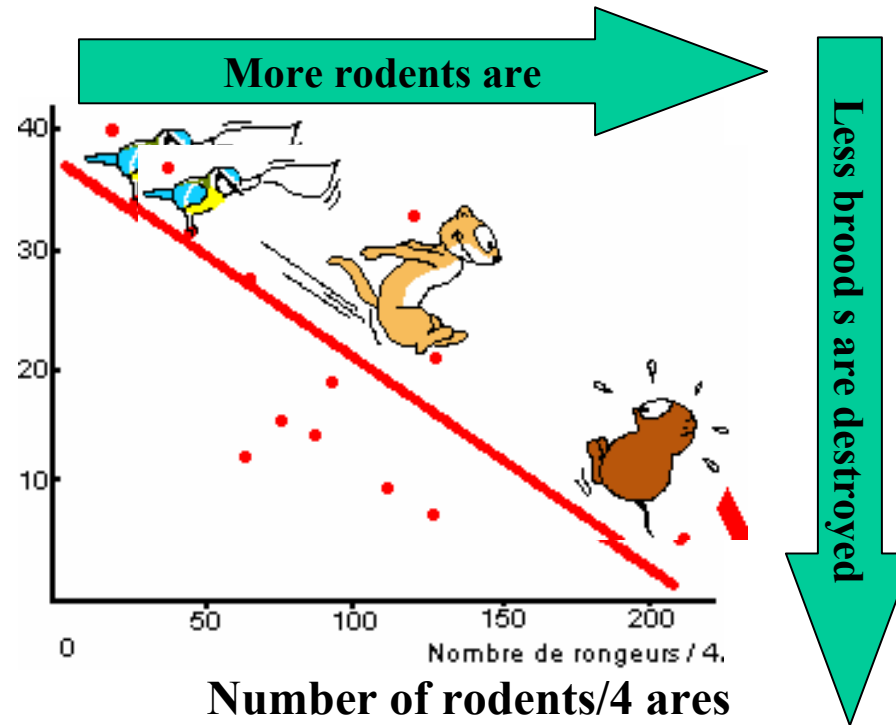
« Scale » effect :Regulation of the prey population  
Relatively abundance of preys



# Scale effect in nature...

Predator : *Mustela nivalis*

% of brood destroyed



# Scale effect : change of prey

Simple system, Terre neuve



Introduction  
in 1864

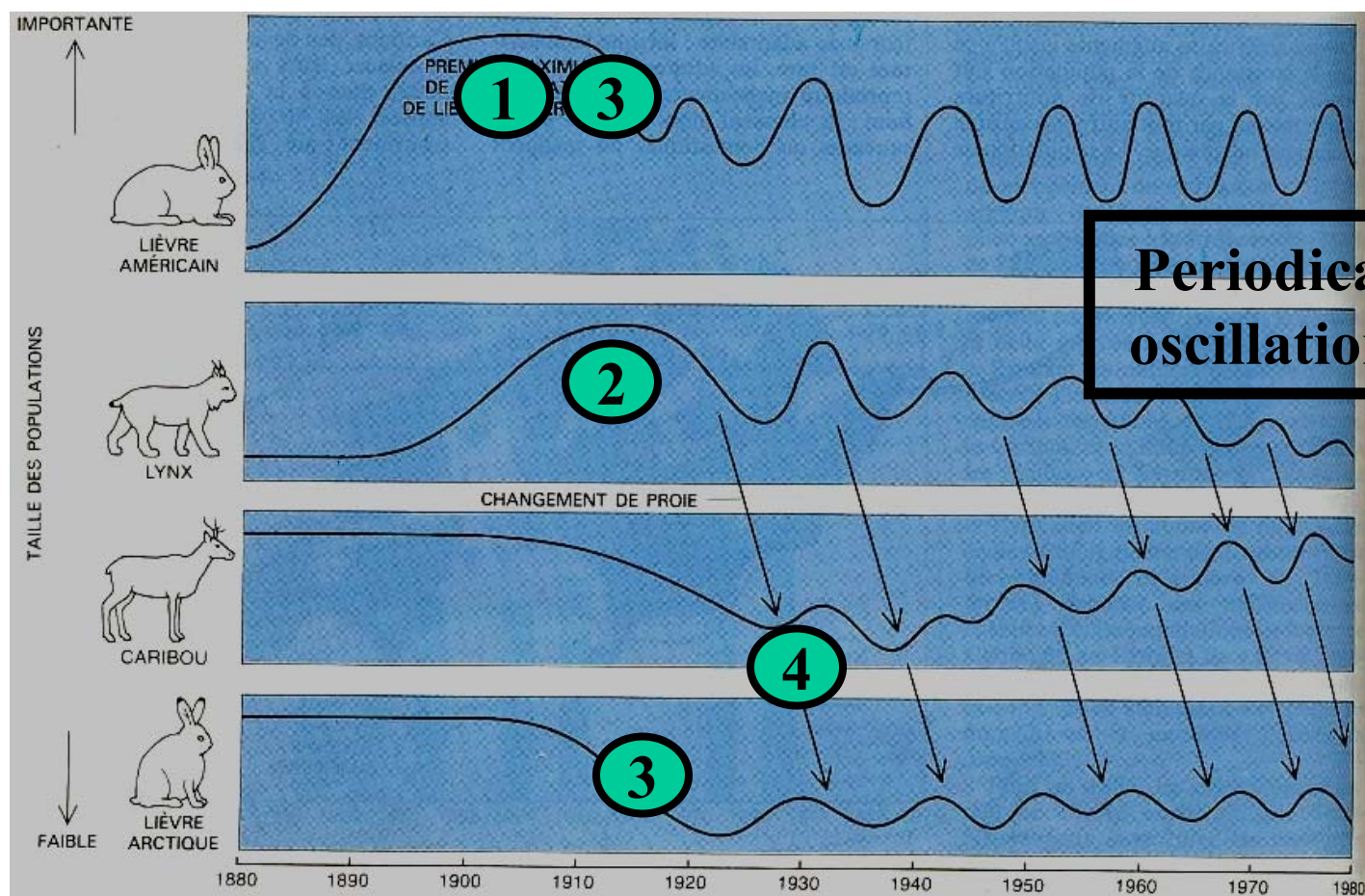


Extinction in 1911



# Scale effect : change of prey

Simple system: 1 predator pop, 3 prey pop



Predators :

limiting activity on the the number of preys?

•« optimal foraging » : ? Theory ...

**Maximization of energetic benefit/« fitness »**

**1. Size of the prey....**

**2. Diet choice of prey**

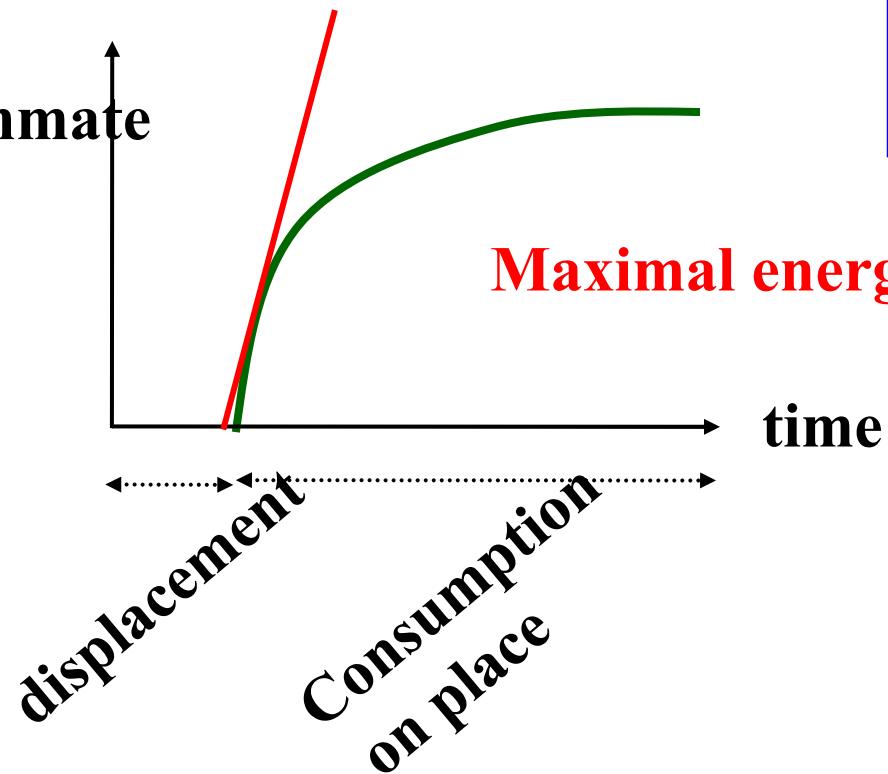
**function of its profitability  
= energy benefit/time**



# « Optimal foraging » , example

**Choice the foraging area and the duration of exploitation**

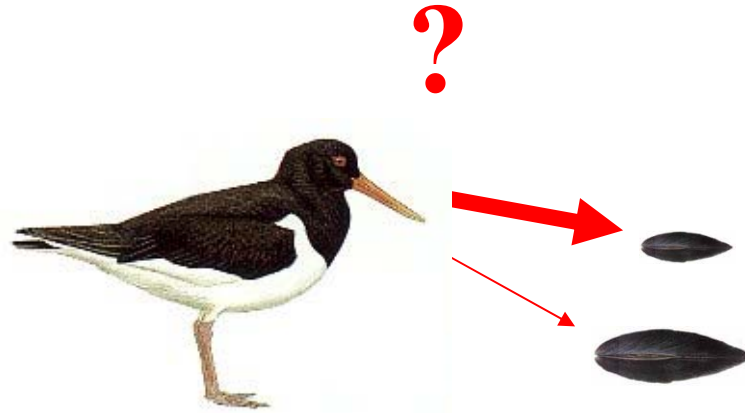
**Energy benefit  
or  
Consummate  
food**



**Choice and time of  
exploitation  
= f(profitability)**



## « Optimal foraging » , example



**Eurasian oystercatcher**  
*Haematopus palliatus*

**Preservation of the capital : -> Individus affaiblis :**

- Physiologically weakened (sick, injured, old...)
- supernumerary, deprived of shelter...

**Consequences and limits of Optimal foraging...**

