RAPID ASSESSMENT OF FRESH WATER INVERTEBRATES IN EASTERN PART OF MADAGASCAR

Background :

Freshwater is rich in biodivesity such as invertebrates wich is often neglected by researchers although they play an important role for the environment.

Statistical question :

What are the factors that change the diversity of freshwater invertebrates in Tamatave ?

Mechanistic question :

How does water quality influence the diversity of freshwater invertebrates species?

Aknowledgements : Lazampirenena, Sylviane MIHARISOA

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Study site

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Statistical question: what are the factors that change the diversity of freshwater invertebrates in Tamatave ?

- **Predictor variables :** Water parameters (pH, Temperature, Turbidity, Disolved Oxygen, Water flow and Conductivity).
- **Response variables :** Number of invertebrates species.

  Family : Poisson

  Link = « log »
- **Hypothesis :**

We predict that there is a positive correlation between the diversity of freshwater Invertebrates and water quality.

- **R function :**

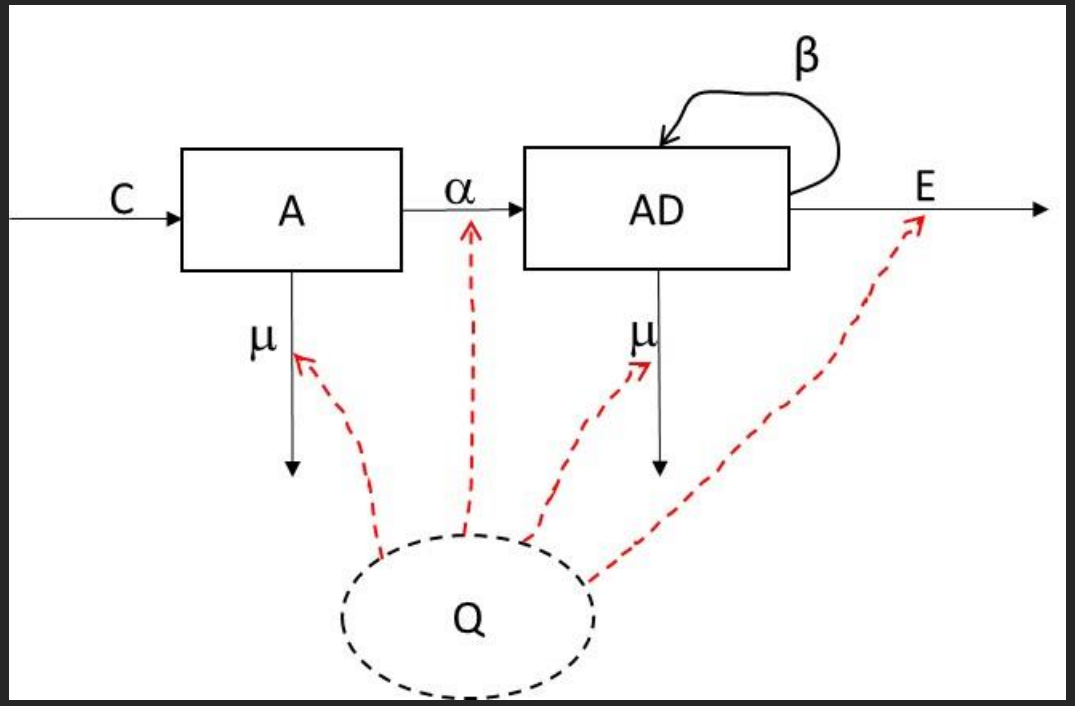
glmer (Species~pH+ Temperature+ Turbidity+ Disolved Oxygen+ Water flow+ Conductivity+(1| site), family= “poisson”, data=Invert).

- **Data sheet :**

the expected data will be saved as presented in the table beside.

Date	Site	Species	pH	Temperature	Turbidity	Disolved Oxygen	Water flow	Conductivity
14/03/2020	site A	Lymnea peregra	6	24,5	6	8	0,9	92
14/03/2020	site A	Lymnea stagnalis	6	24,5	6	8	0,9	92
14/03/2020	site A	Gyraulus albus	6	24,5	6	8	0,9	92
14/03/2020	site A	Ancylus fluviatulis	6	24,5	6	8	0,9	92
20/03/2020	site B	Lymnea peregra	5,6	25	5	8	10	80
20/03/2020	site B	Lymnea stagnalis	5,6	25	5	8	10	80

Mechanistic question : how does water quality influence the diversity of freshwater invertebrates species?



Dynamical model diagram

States :

A : Arrival

AD : Adapted

Q : Water quality

Processes :

C : Colonisation

E : Extinction

β : Birth rate

α : Survival rate

μ : Mortality rate

NEXT STEPS:

- Field work and data collection in the three sites

- Data exploration and analysis
  - Testing the distribution of the number of freshwater invertebrates species (histogram)
  - Understanding the relationship between number of freshwater invertebrates species and each water parameter

- Construct a model framework and select a relevant mechanistic models for the colonisation of a specific habitat by the freshwater invertebrates.

Thank you for your attention !