Habitat management of critically endangered species *Aythya innotata* in lake Bemanevika Protected Area

- **Background:** Madagascar Pochard (*Aythya innotata*) :
  - Extremely rare and medium-sized diving duck ,
  - Endemic to Madagascar ,
  - Rate of flight success chicks decrease but the factors unclear.

- **Statistical model:** What factors influence the flight success of chicks Madagascar Pochard?

- **Dynamical model :** How does predation abundance change the population survival dynamics of chicks Madagascar Pochard?

Acknowledgments: Christian, Tanjona, Cara ,Estelle, Rollande, Haja

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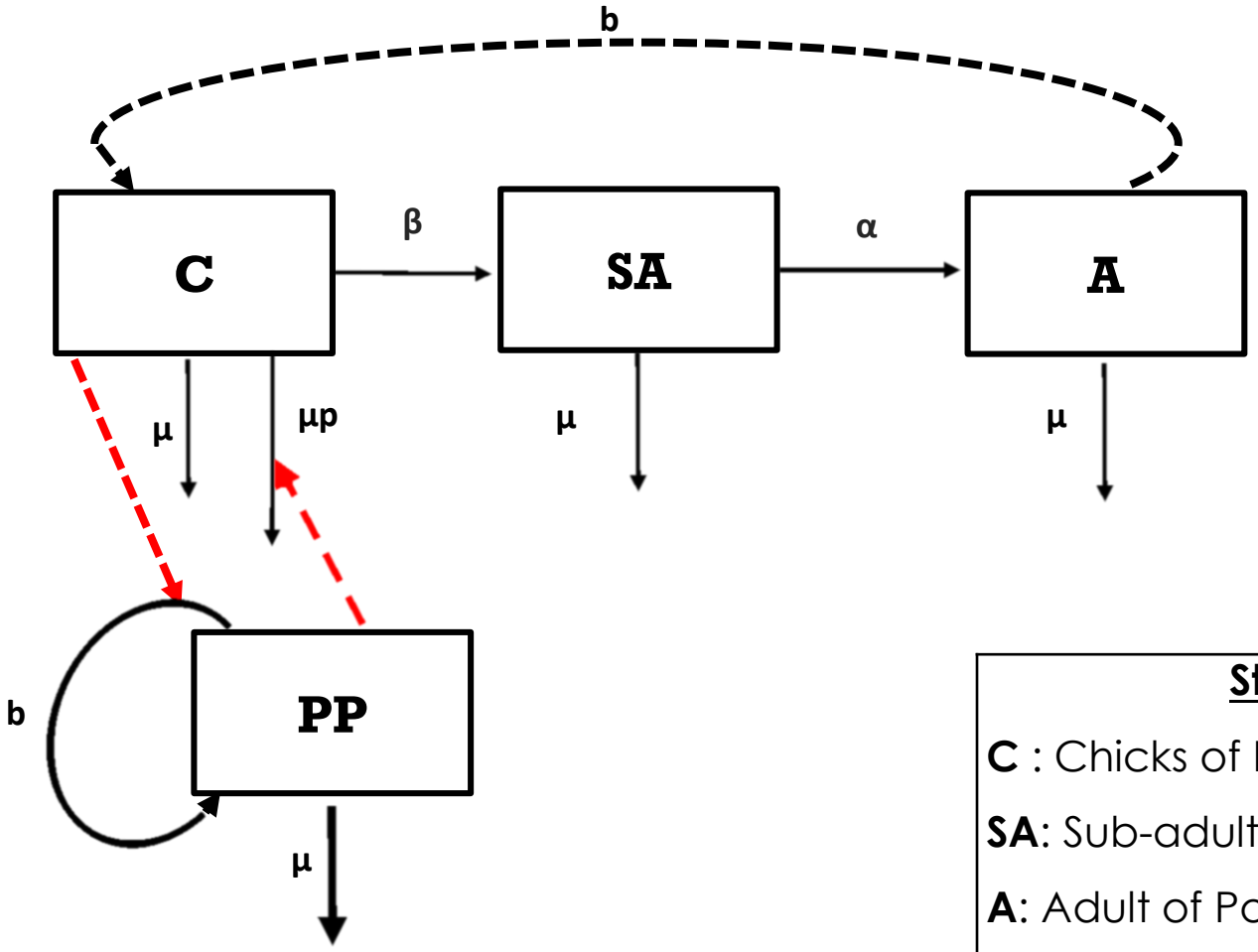
Figure 1 : *Aythya innotata* adult mal and female in Matsaborimena lake (Rasoamihaingo , 2019)

Statistical question: What factors influence the flight success of chicks Madagascar Pochard?

- **Response variables**: **y**= flight success
- **Predictor variables: x:** predator, water depth, water temperature, abundance invertebrate, date, number of chicks /1 group
- **Family:** poisson
- **Link:** log
- **R code**: Glm (flight successful~predation+ water depth+ water temperature+ abundance invertebrate + date + (number of chicks /group , family= "poisson", data.scan)
- **Hypothesis :** Abundance of predation decrease the rate of flight success chicks Pochard
- **Brief summary of the data:**
  - **Physico-chemical parameters of water** (Turbidity, depth, Ph, nitrite , phosphate and ammonium)
  - **Study of the wild population and their habitat** (abundance invertebrate, activity diurnal , number of attack predator)

Dynamical model : How does predation abundance change the population survival dynamics of chicks Madagascar pochard?



$$\frac{dC}{dt} = bA - \mu C - \beta C - \mu pPP$$

$$\frac{dSA}{dt} = \beta C - \mu SA - \alpha SA$$

$$\frac{dA}{dt} = \alpha SA - \mu A$$

$$\frac{dpp}{dt} = bpPPC - \mu pPP$$

States	Process
C : Chicks of Pochard	**b**=birth
SA: Sub-adult of Pochard	**μ**= death
A: Adult of Pochard	**μp**= death causing of predator
PP : Predator population	**β**:growth
	α:maturity

Next steps

- Determine the factors causing the high mortality of ducklings and observe the flight success of Chicks.
- Evaluate nesting habitat and feeding ecology of ducklings.
- Collect the physico-chemical parameters of the water in the lake