Autumn migration monitoring and stop over in France

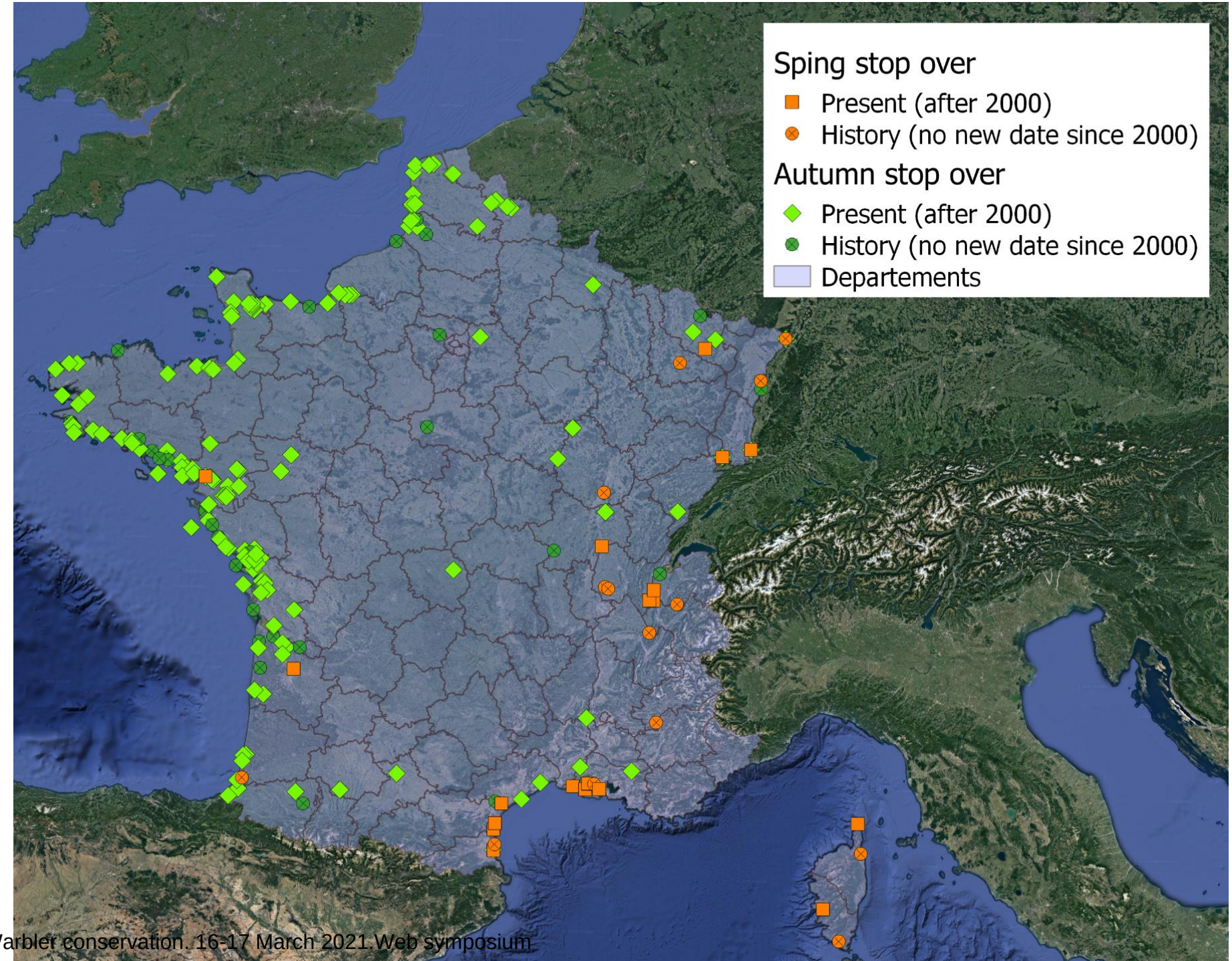
Christine Blaize, Bretagne Vivante
Christian Kerbiriou, CESCO
Frédéric Jiguet, CRBPO
Valentin Paillette, DREAL de Bretagne

Source areas and stepping stones in Aquatic Warbler conservation. 16-17 March 2021.Web symposium

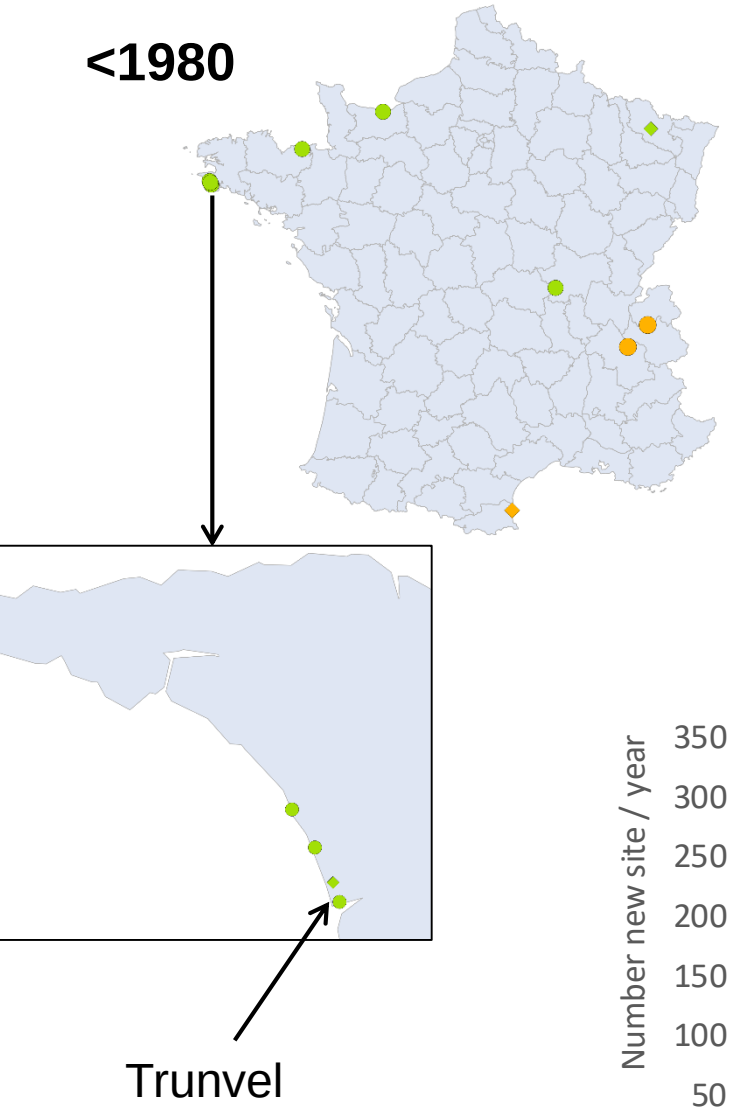
Stop over in France

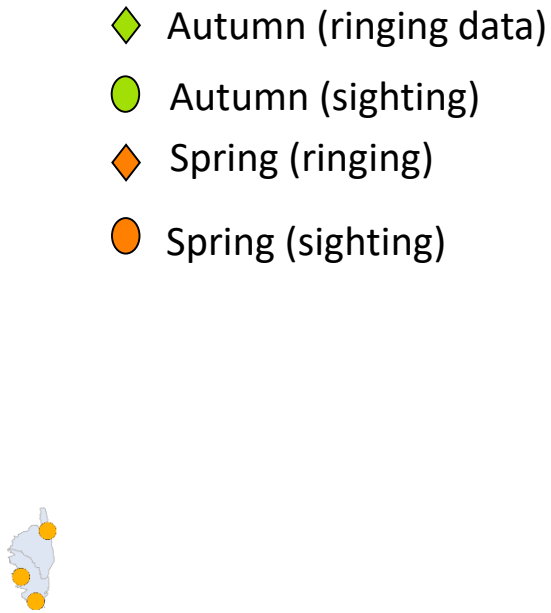
Good knowledge on the Channel-Atlantic coast
Autumn and spring

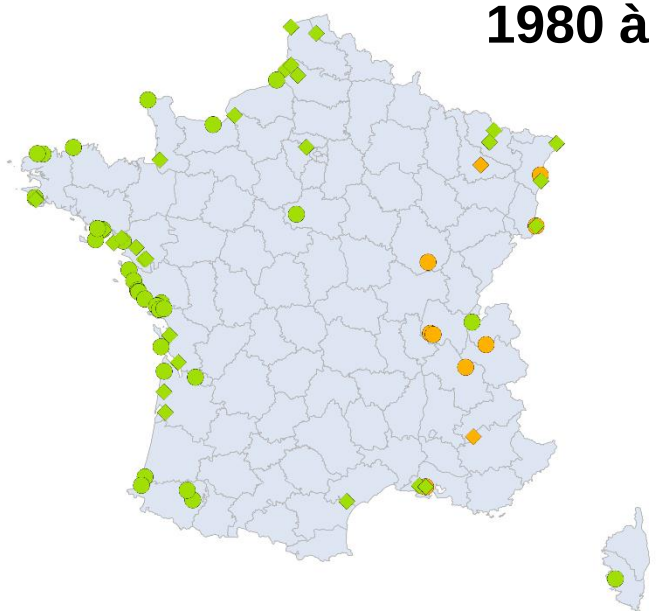
Missing on pre-breeding migration
Missing in more continental areas

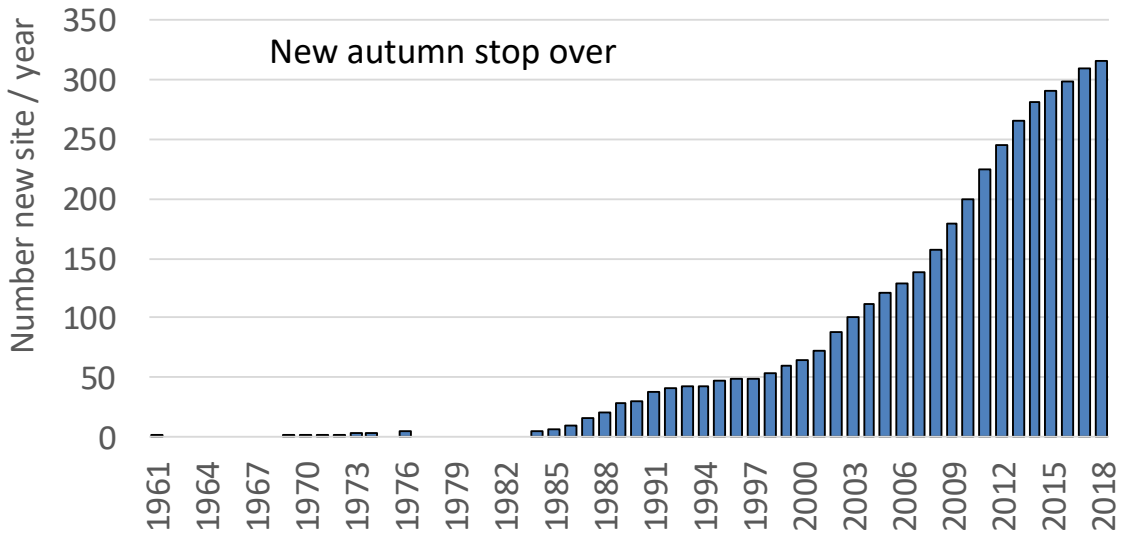


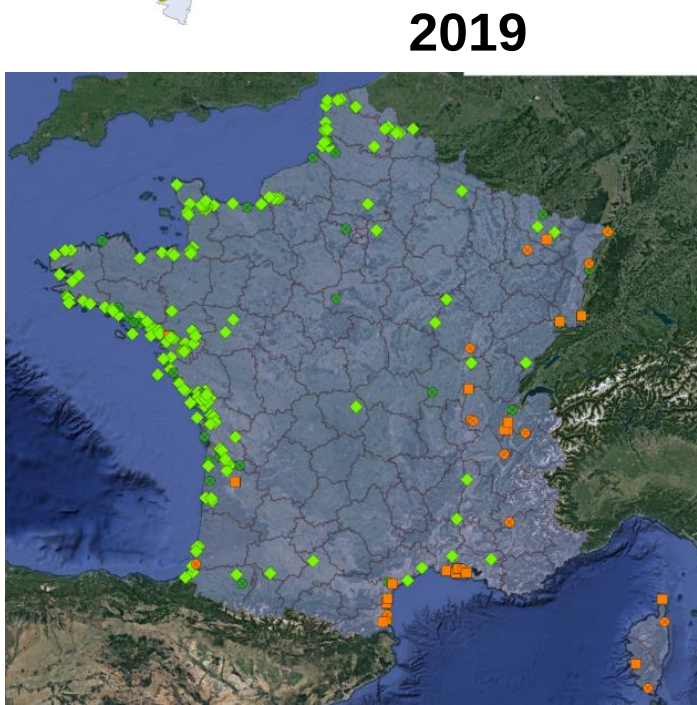
Stop over in France











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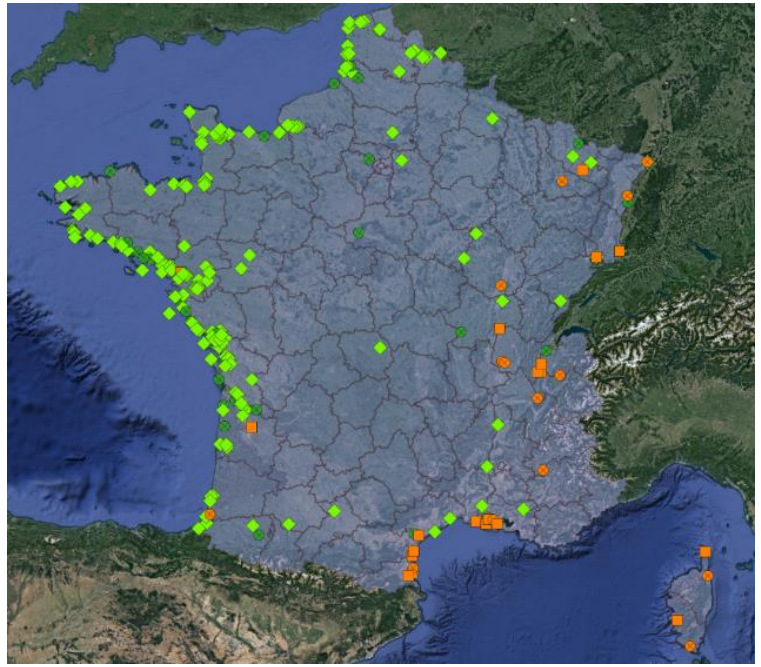


Many stop over, but….

* What functionnality : fattening area or only laying area (incidentally) ?
* All part of a wetlands don't have equal interest for the Aquatic Warbler…
* Ringing station sometimes very close, in same wetland,

Proction and managment

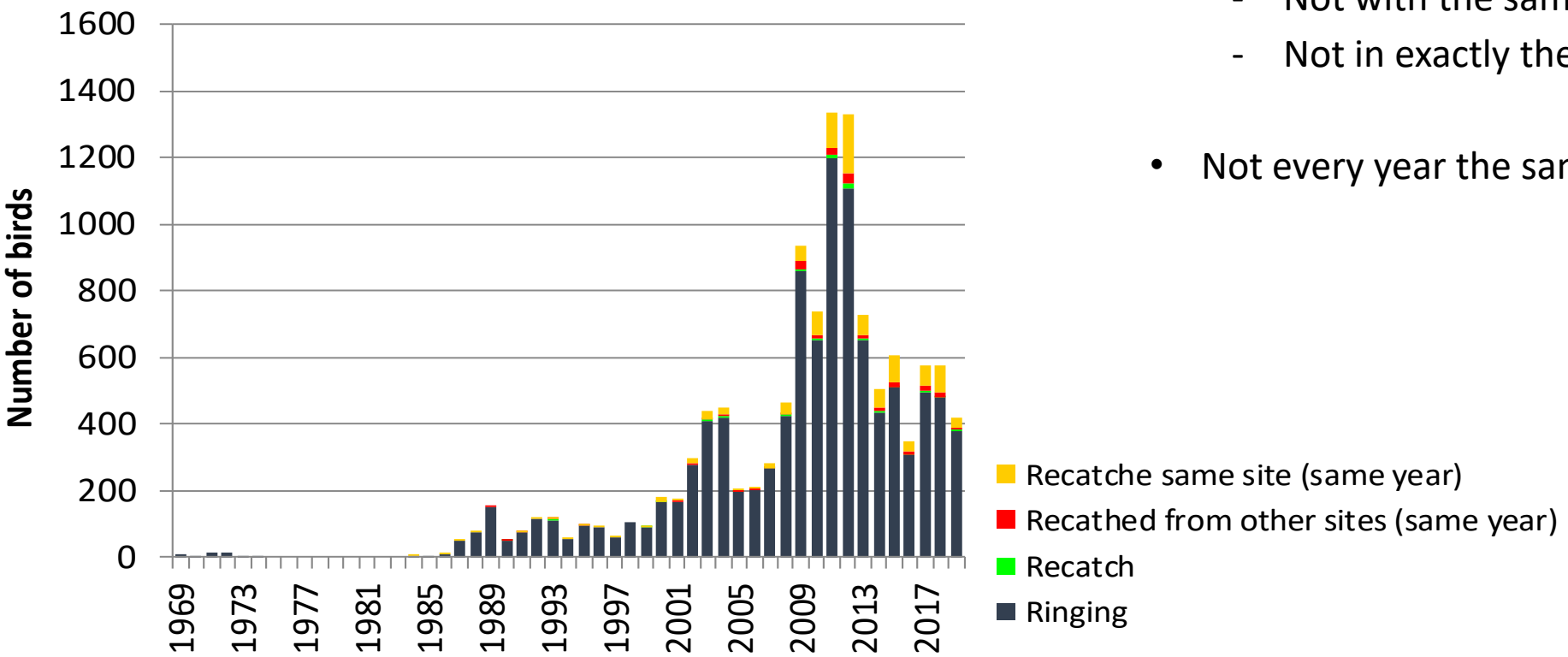
* Important stop over in NNR like Seine estuary or Aiguillon bay ; Audierne bay regulary measure (arrêté protection biotiop). But only in Birds Directives for important stop over like Loire estuary or Gironde estuary
* Lack of consideration of Aquatic Warbler needs in wetland management: mowing date, water level,…
* Loss of habitats due to global changes without substitute areas. Example of the Gironde estuary (Musseau *et al.* 2018), retreat of coastline, 15m in 6 years = loss of 50h intertidal wetlands

These aspects are part of the objectives of the second Species Actions Plan in France
(in the process of being finalized)

Musseau *et al.* 2018. Rapid losses of intertidal salt marshes due to global change in the Gironde estuary (France) and conservation implications for marshland passerines

Ringing data, ringing station

This network of autumn migration monitoring provides an important data set: in quantity and in quality

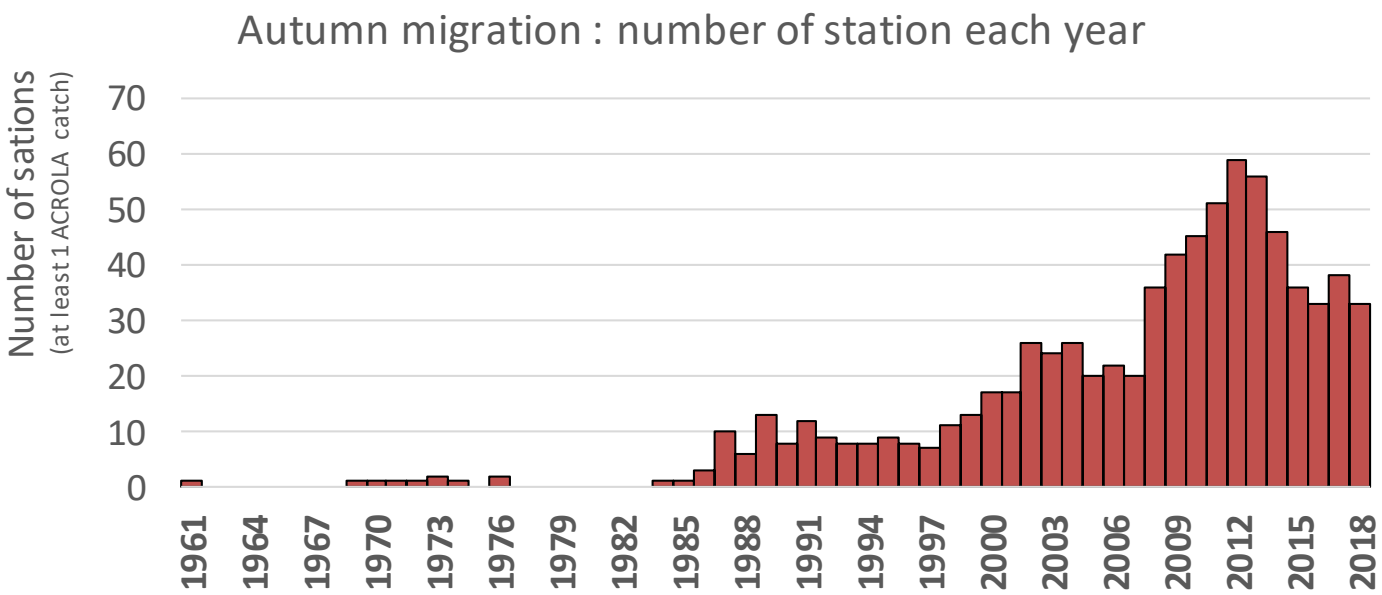


But this network is heterogeneous

- All stations work
  - Not on the same dates,
  - Not for the same duration,
  - Not with the same length of net,
  - Not in exactly the same way (acoustic lure)

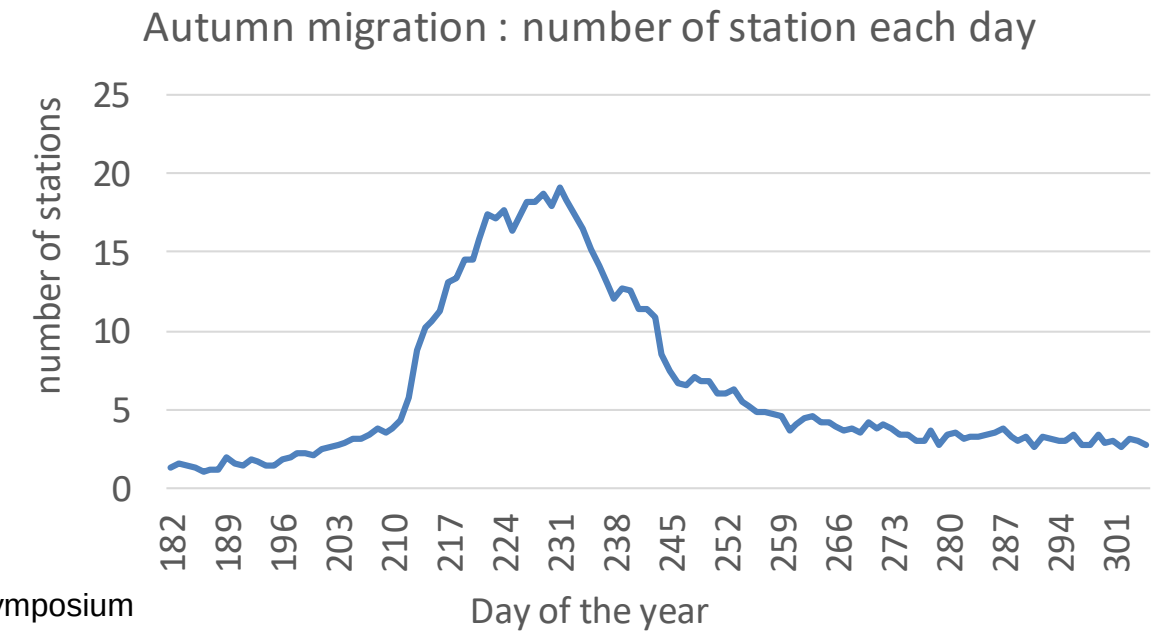
- Not every year the same stations

Ringing data, ringing station



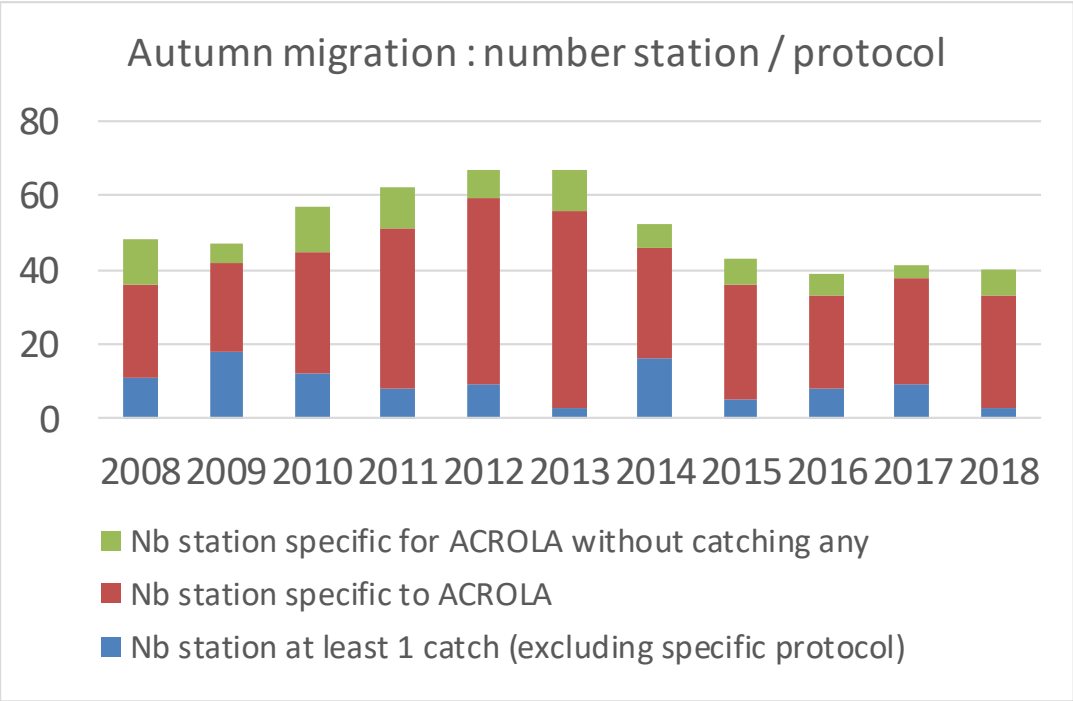
Not the same number of station
(colloray not same length of nets)

Not on the same date and for the same duration

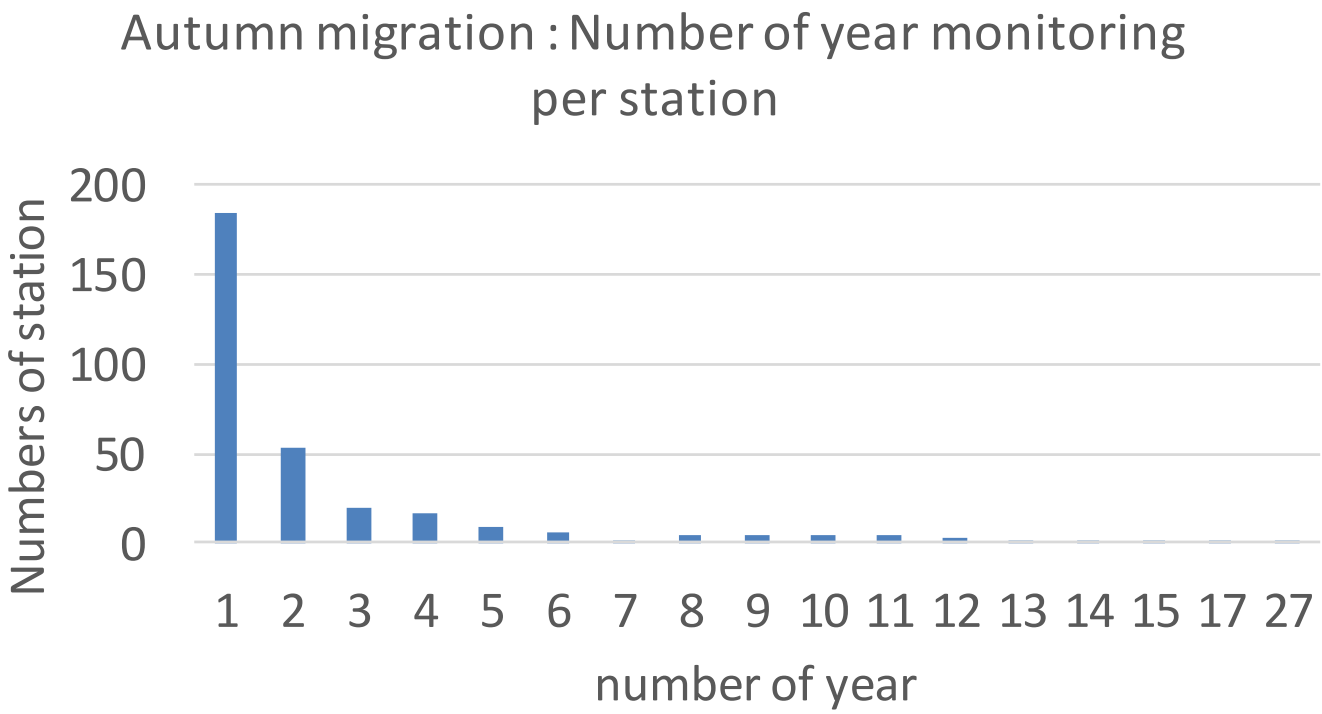


Ringing data, ringing station

Method could change



Not always the same stations between years

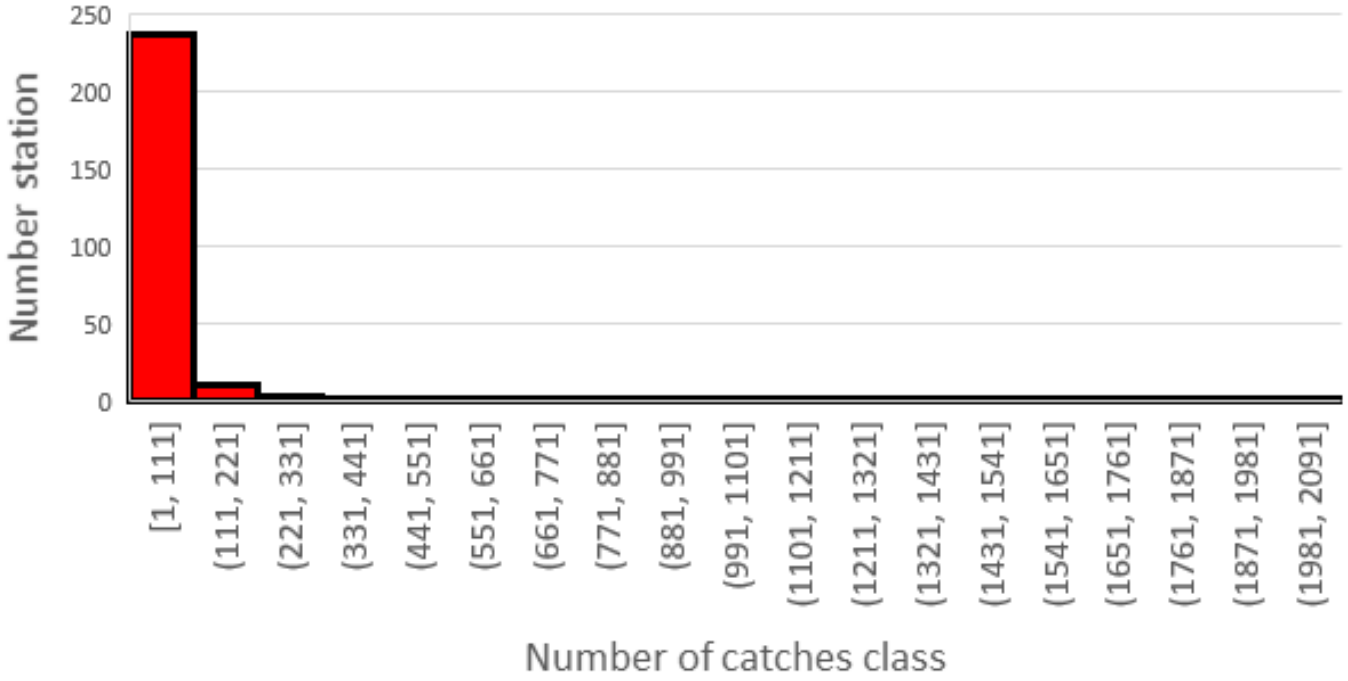


Network of migration monitoring not not based on professional stations, but on a network of volunteers (principally)

Strength: many sites, diversity of data (habitats, …), new finding

Weaknesses: stability of the dataset which requires testing several things to be able to analyze the data

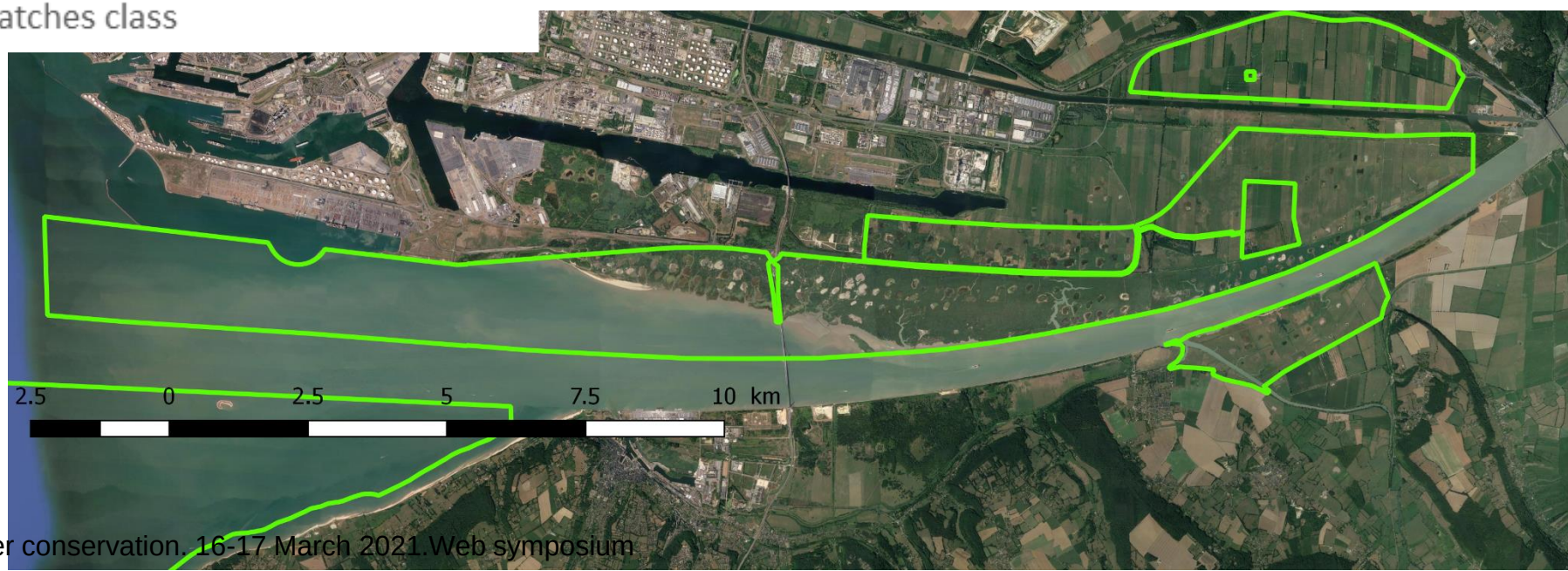
Inter-annual variation of the age ratio



Lot of station with few data

But what is the definition of a station ….

Exemple with NNR Seine estuary



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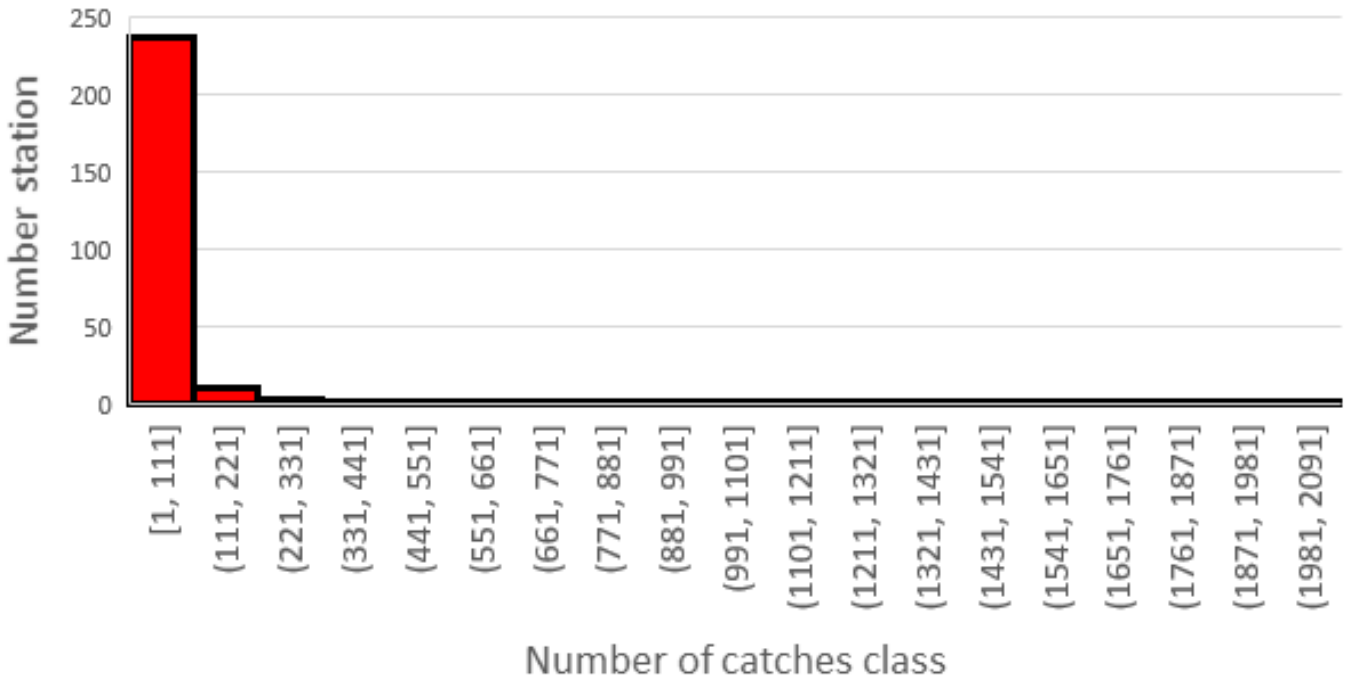

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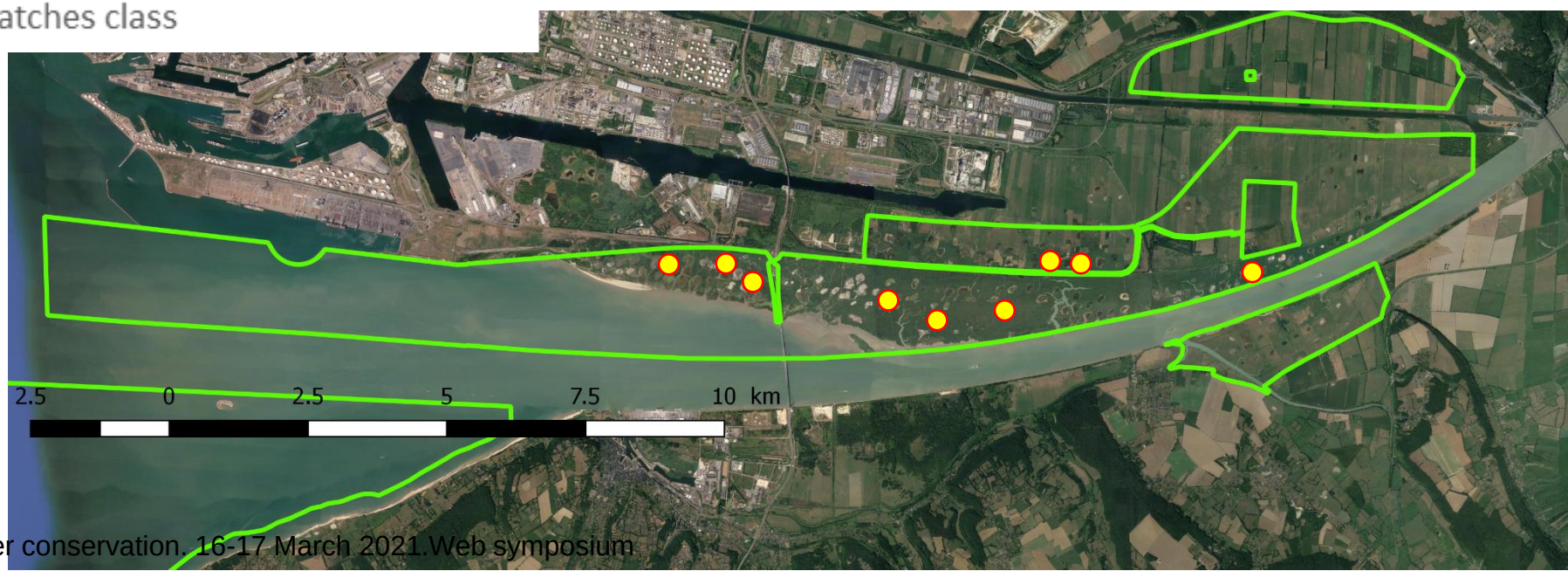
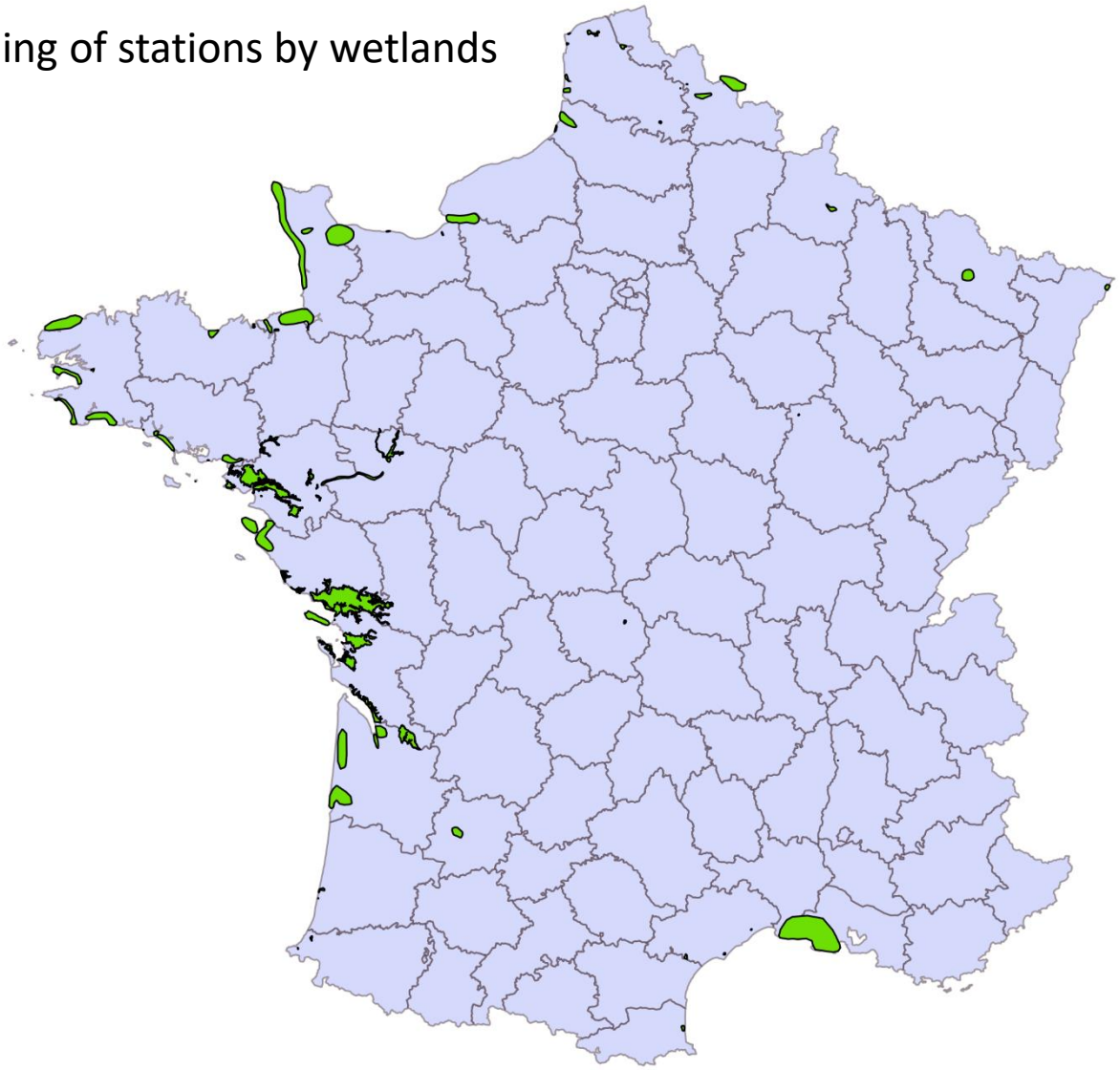


Inter-annual variation of the age ratio

Polling of stations by wetlands



Sites selection for the model

- Since 1998
- Surveyed at least 2 years
- Total capture >15 aquatic warbler

36 sites, 10805 captures

Variables tested

Year : 1998 - 2018

Time : 5 A.M – 13 P.M.

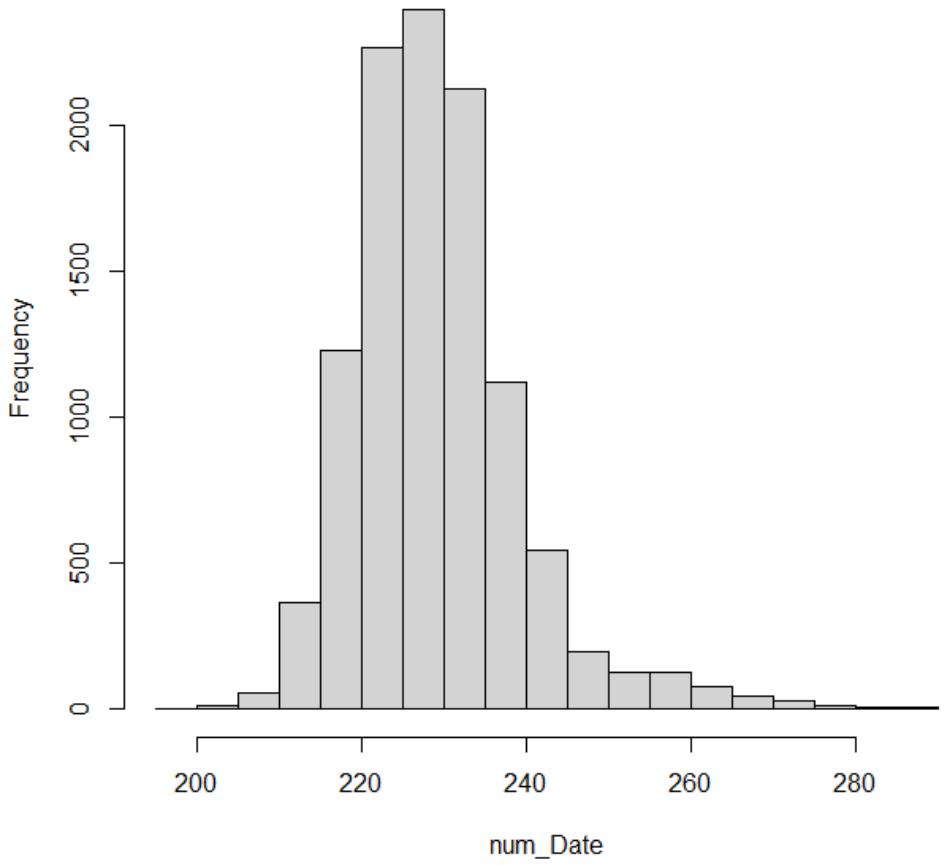
Date : 15 July – 15 October

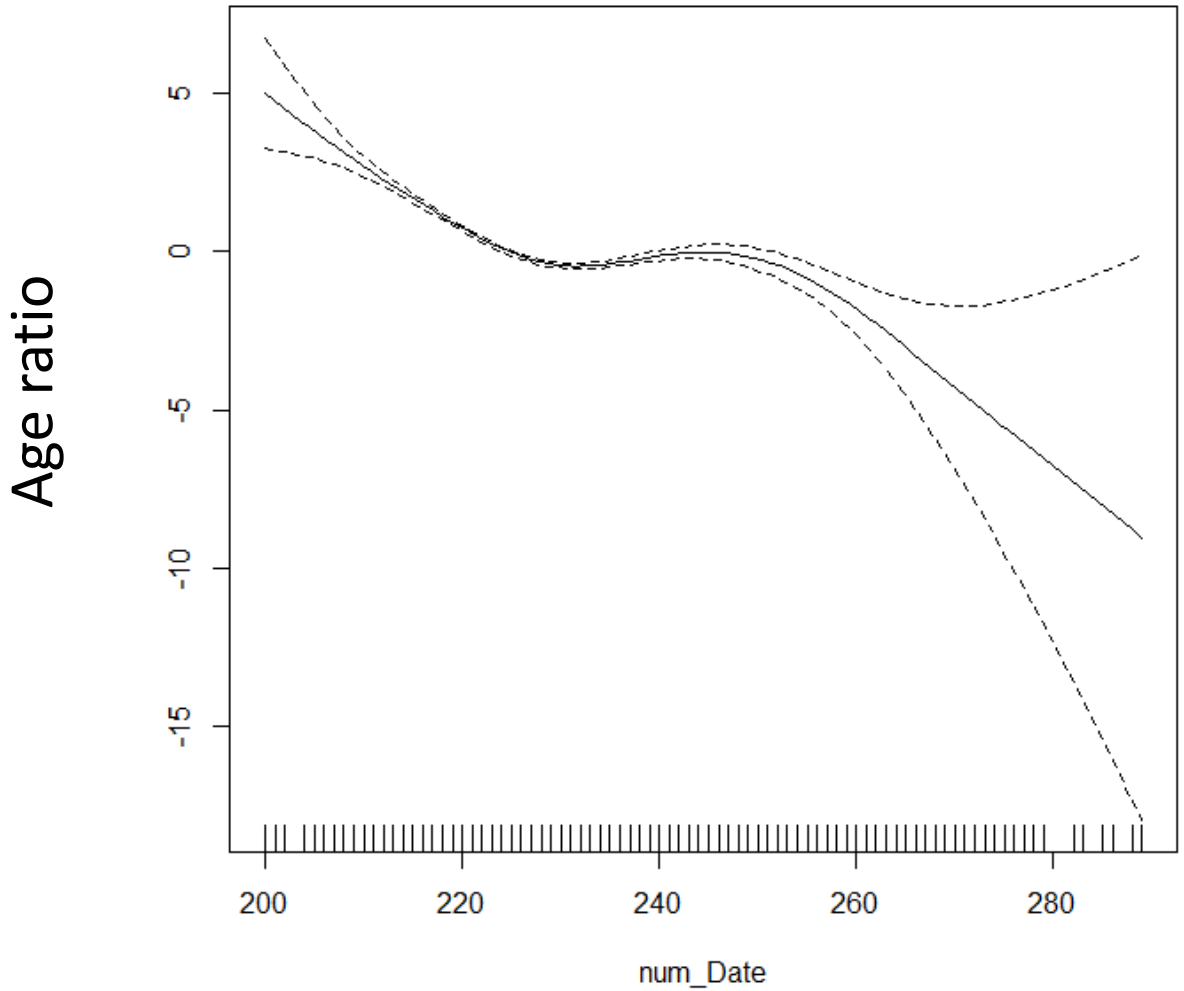
Protocol : Specific aquatic warbler protocol vs unspecific protocol

Sampling Effort : Number of march specialized birds captured per day (Sedge warbler, Reed warbler…)

Date effect on age-ratio (15 july au 15 October)

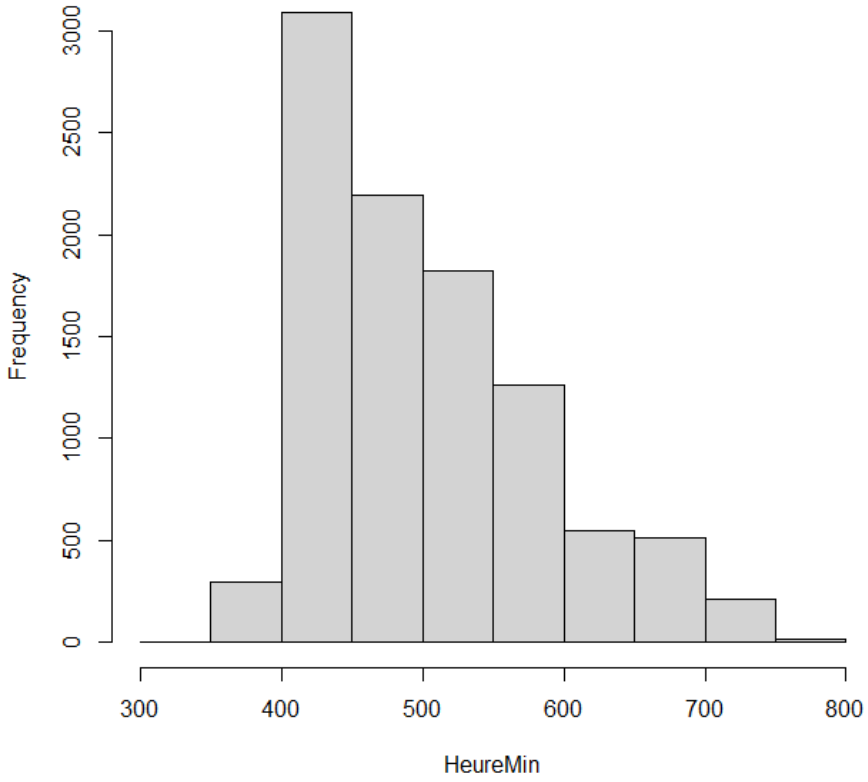
More adulte are captured early in the season (july)

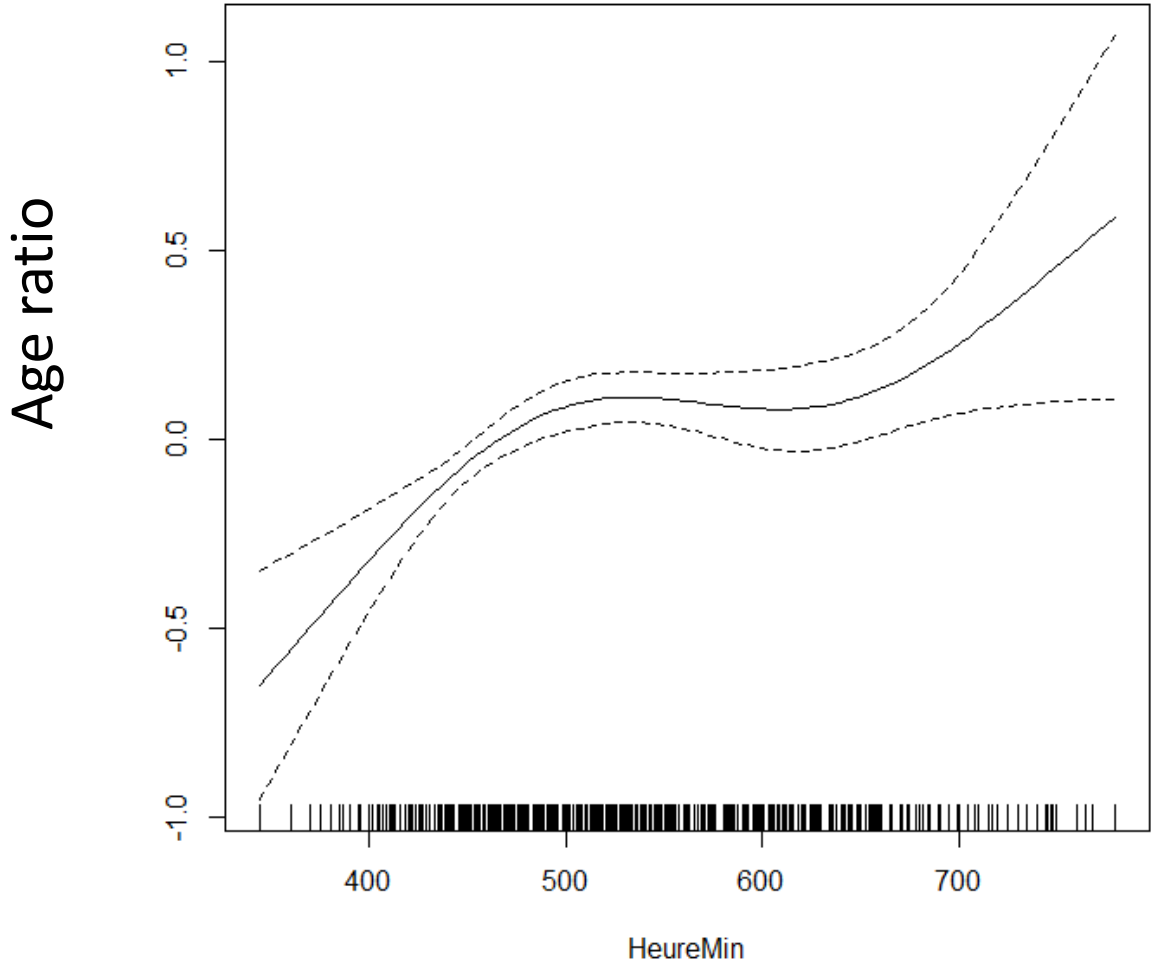




Time of the capture (minutes, i.g. 420 = 7 A.M.)

Slightly more adulte are captured at the end of the morning





Generalized Linear Mixed modelling (GLMM, package glmmTMB)
Multi-Model Inference (package MuMIn)

Age-ratio ~ Year + Time + Date + Protocol + Sampling Effort + 1|Site, *family='binomial'*

response variable

fixed effect

random effect

Component models:

	df	logLik	AICc	deltaAICc	weight
Year + Time + Date	22	-3342.42	6728.95	0.00	0.41
Year + Time+ Date + Sampling_effort	23	-3341.73	6729.58	0.63	0.30
Year + Time + Date + Protocol	23	-3342.29	6730.71	1.76	0.17
Year + Time + Date + Sampling_effort + Protocol	24	-3341.54	6731.22	2.27	0.13
…..					
(Null)	2	-3584.84	7173.69	444.74	0.00

Effects

Year : P-value < 0.0001 ; Sum of Weigts : 1.00

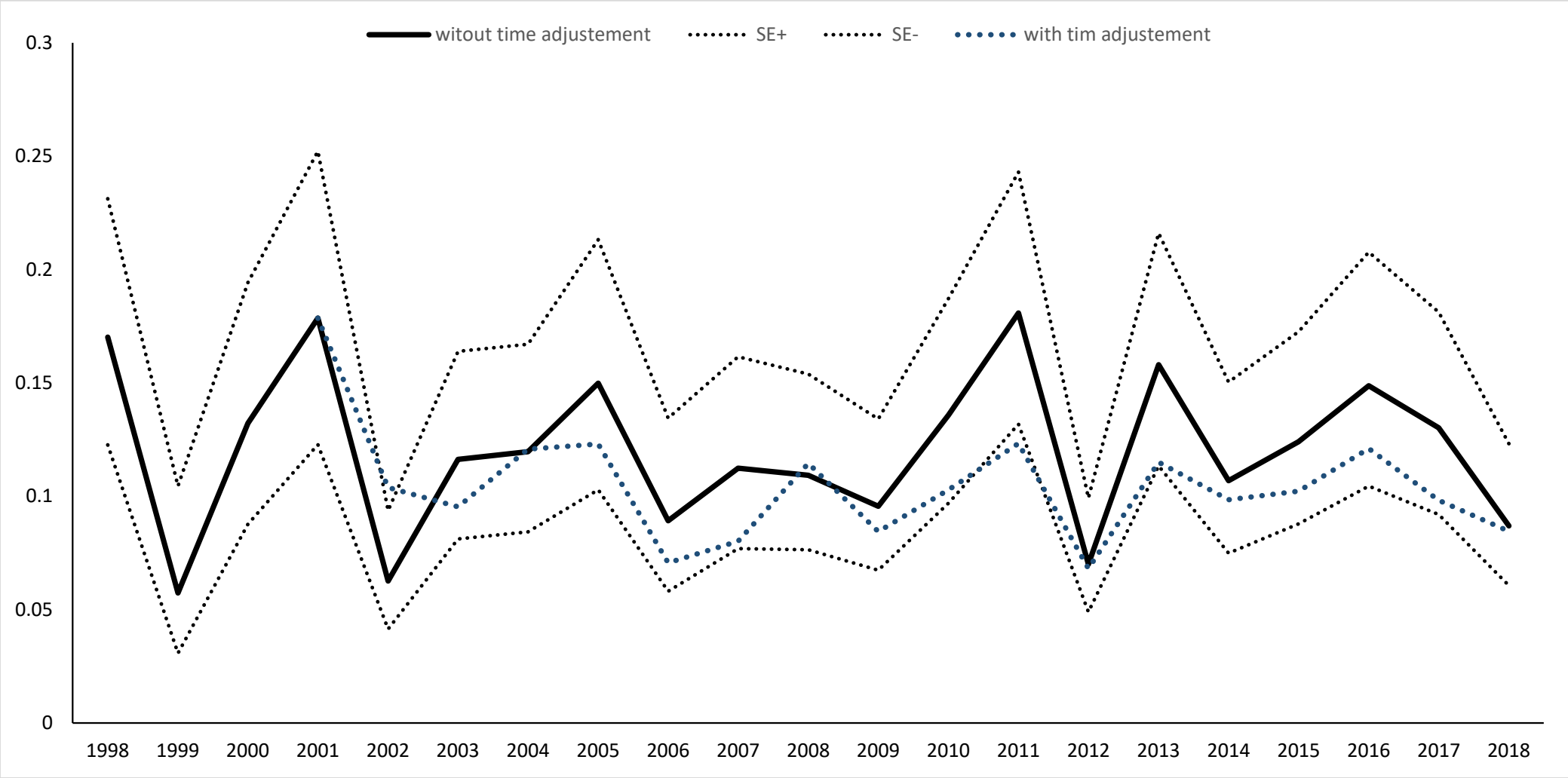
Time : P-value < 0.0001 ; Sum of Weigts : 1.00

Date : P-value < 0.0001 ; Sum of Weigts : 1.00

Protocol : P-value =0.23 ; Sum of Weigts : 0.30

Sampling Effort : P-value = 0.58 ; Sum of Weigts : 0.43

Between years age-ratio variation



Next step….

Relation with productivity ?

Large scale effect of weather on breeding site ?

What is your opinion?...

Thank you for your attention ! ☺

Thank you to all ringers who provide data about Aquatic Warbler migration