

# Irish flood meadows flooding, farming, flowers and flies

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# The River Shannon:

- >380km long
- designated SAC & SPA

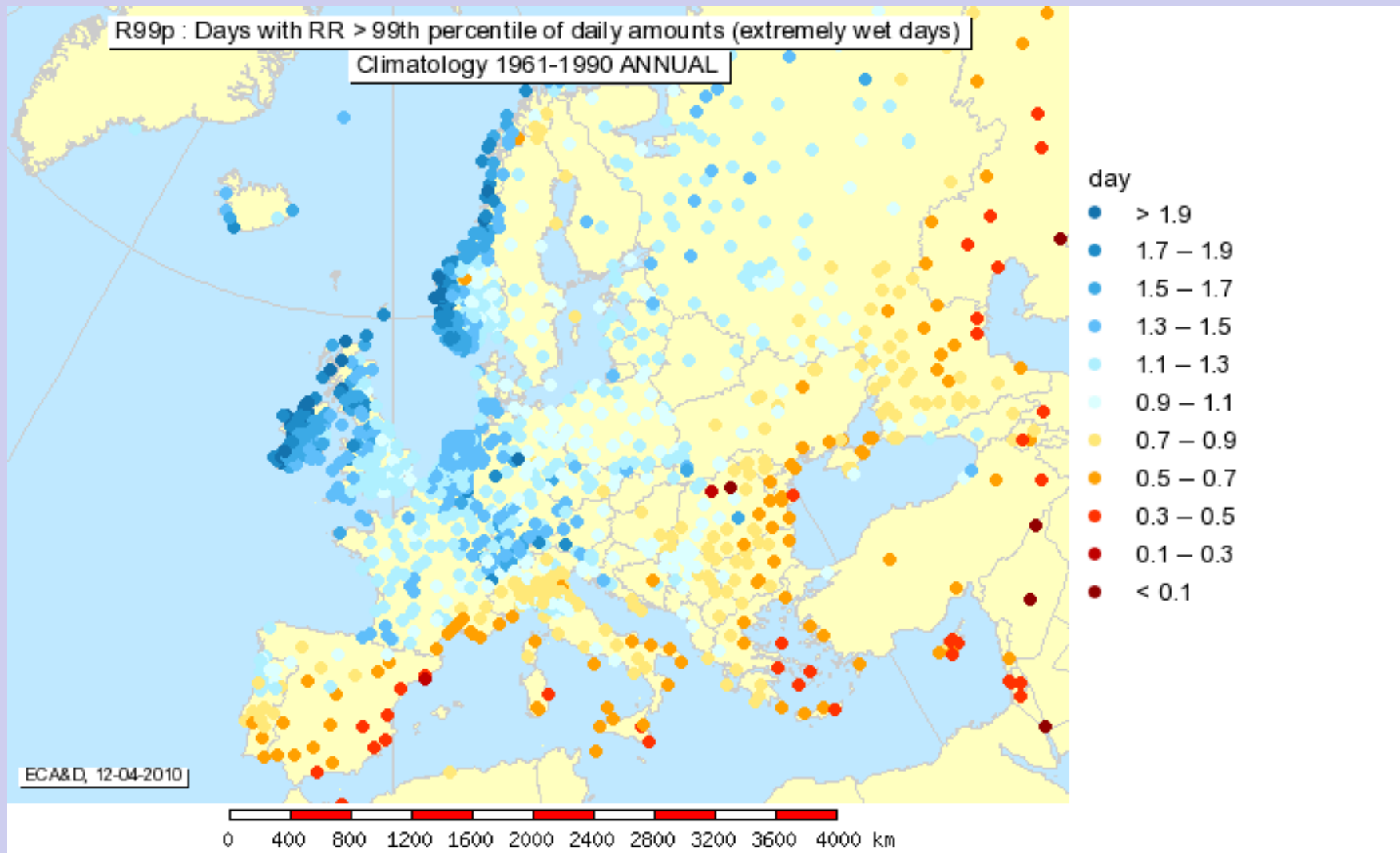
Most flooding occurs along the Middle Shannon

# Callow

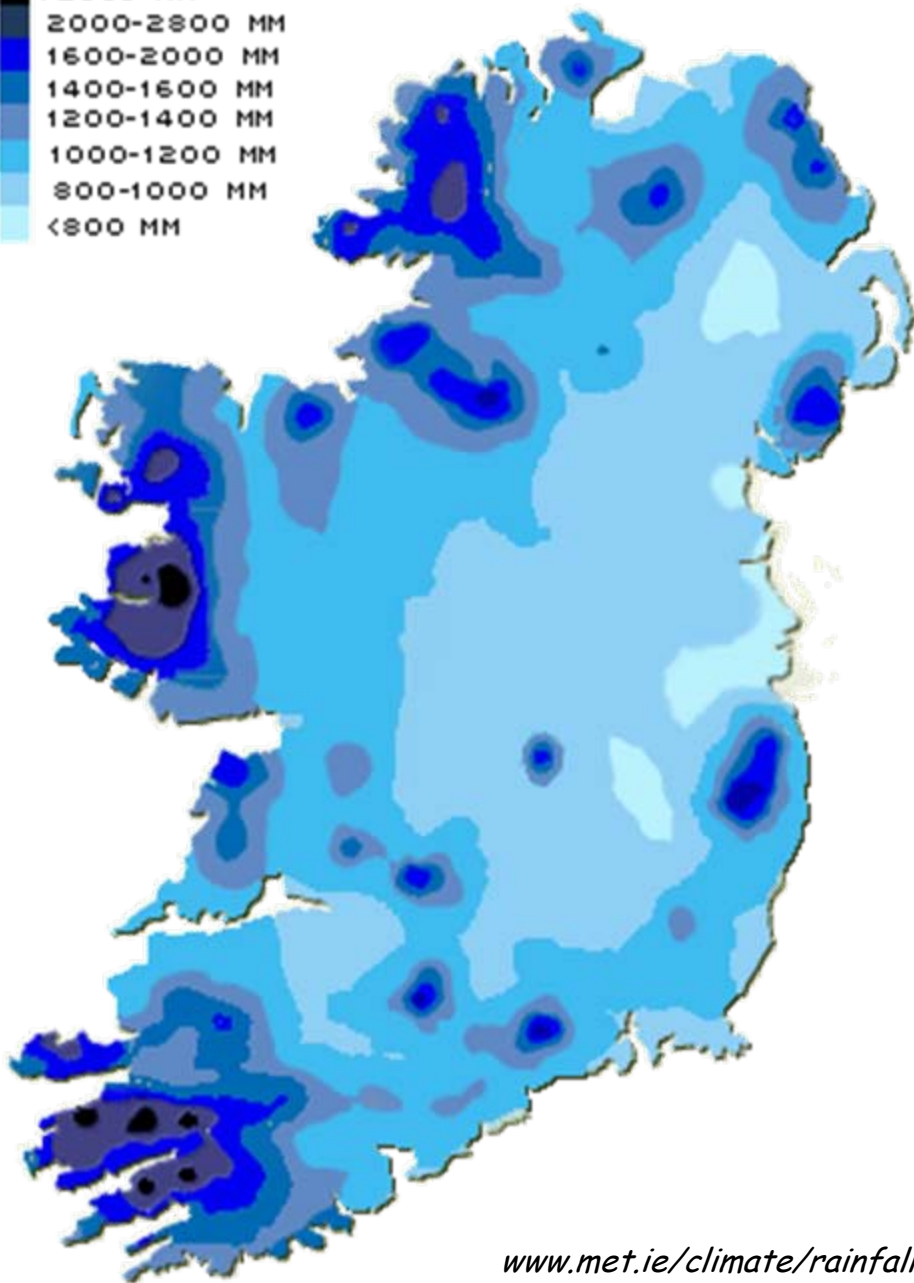


- the word originates from the Irish word "caladh" meaning river meadow
- seasonally flooded usually from October to April, rainfall dependent!
- drier fields are grazed in Summer months
- wetter areas need longer to dry >> cut for hay in late Summer

# Rainfall



>2800 MM  
 2000-2800 MM  
 1600-2000 MM  
 1400-1600 MM  
 1200-1400 MM  
 1000-1200 MM  
 800-1000 MM  
 <800 MM

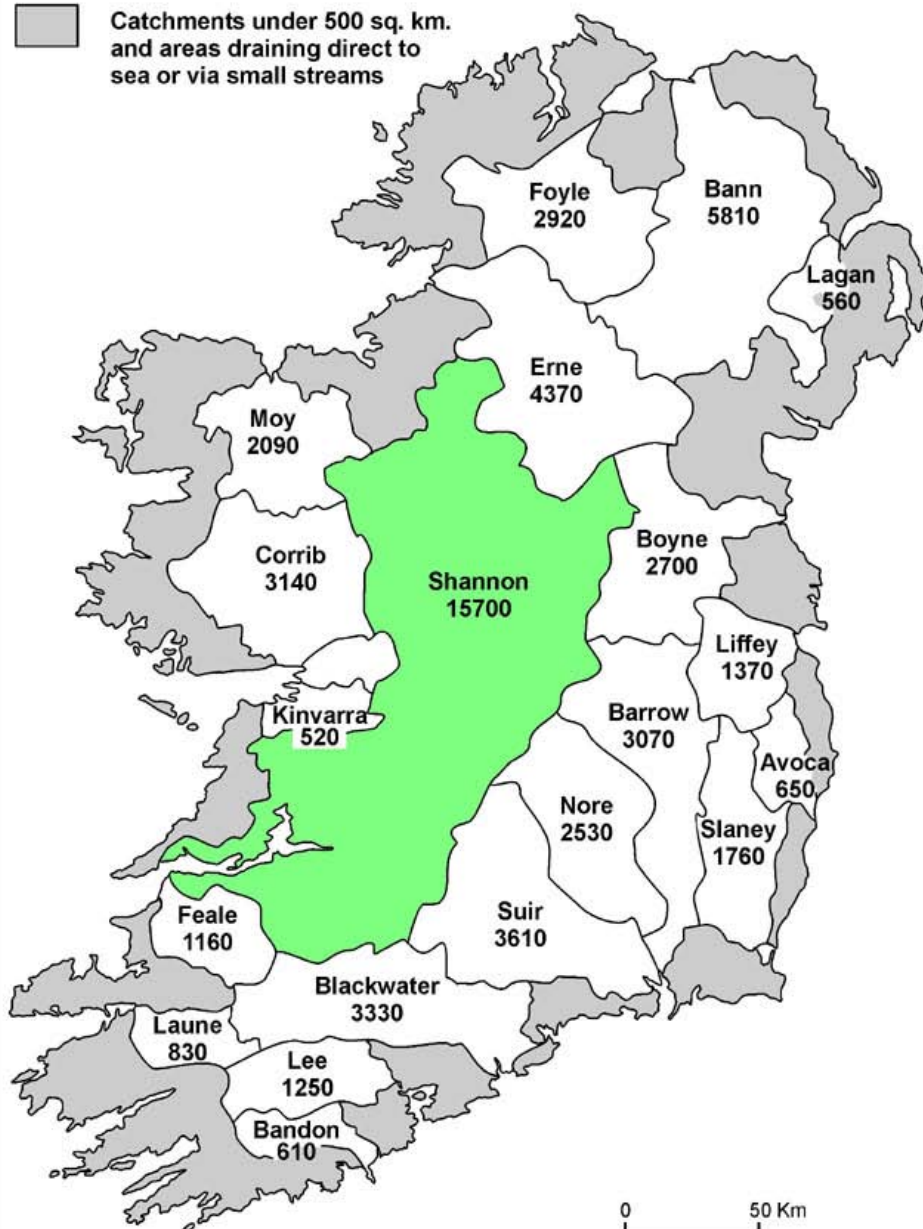


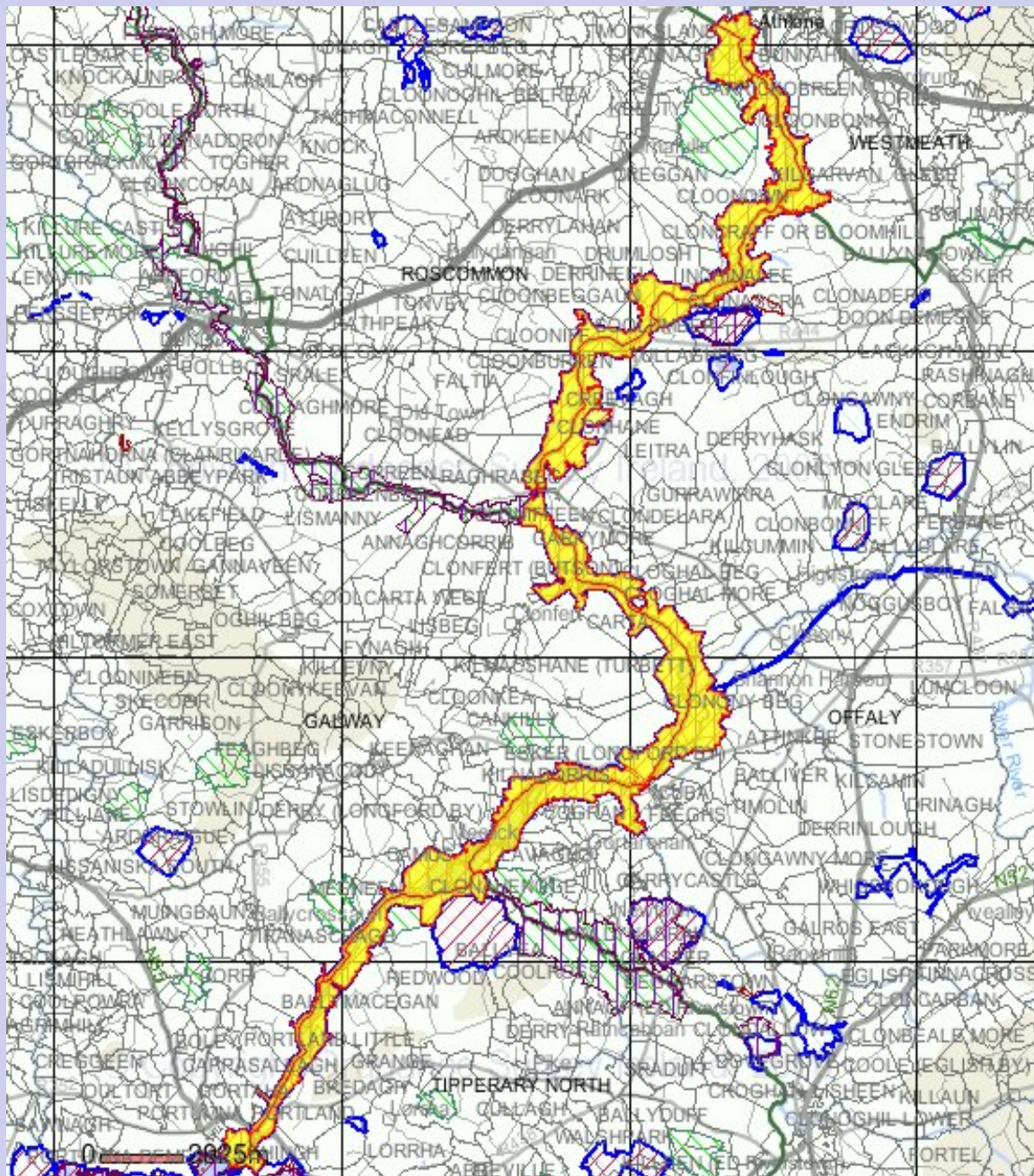
[www.met.ie/climate/rainfall](http://www.met.ie/climate/rainfall)

196 1-90 Mean Annual Rainfall (mm)

## IRELAND - MAJOR RIVER CATCHMENTS

with areas in square kilometres





## *National Parks and Wildlife Service designations:*

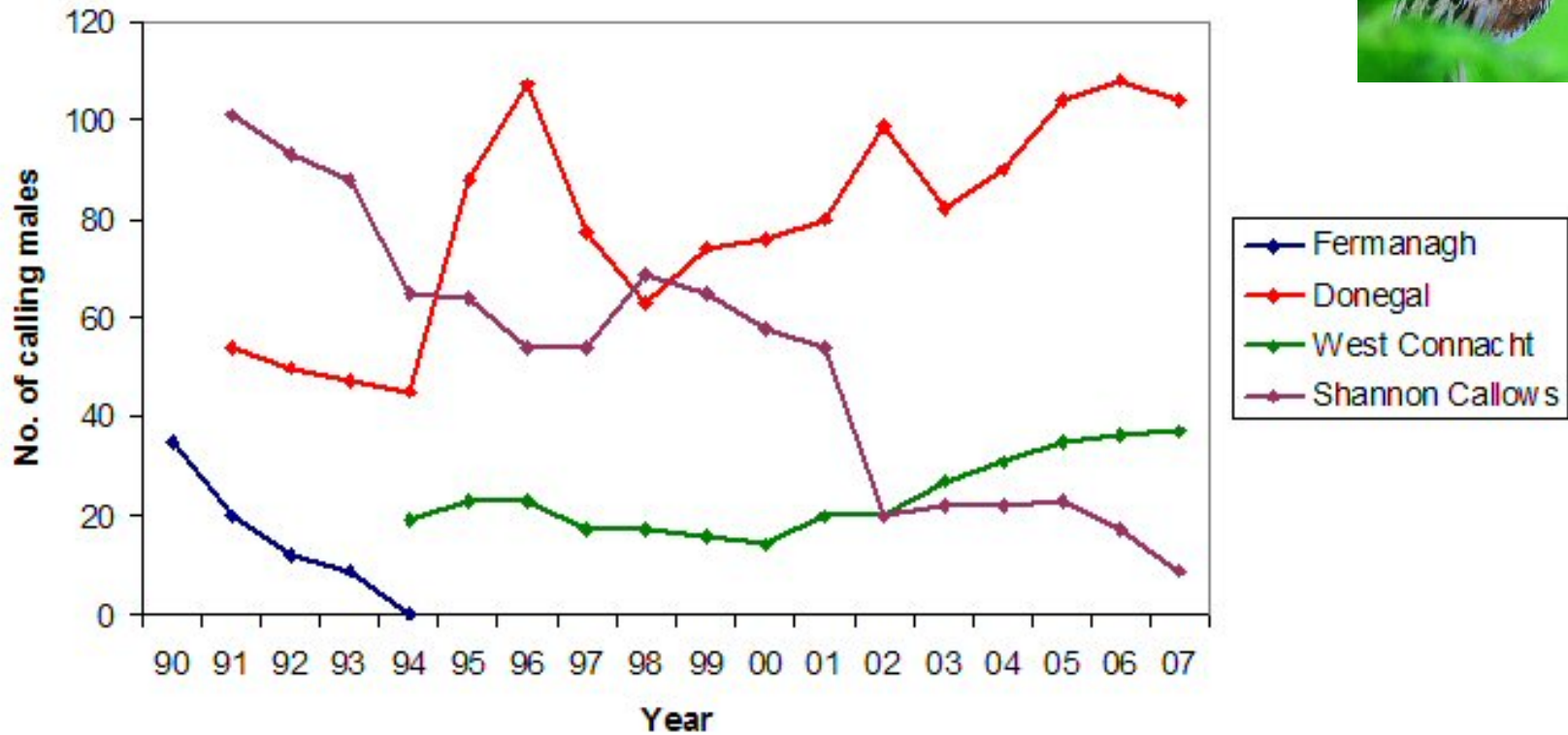
- SPA
- SAC
- NHA

*Area: 5,788 ha*

# Corncrake



Corncrake population change in core areas 1990-2007



*Corncrake Project: Grants are paid to those who delay mowing of hay or silage until early August, by which time most Corncrakes should have hatched two broods.*

# Management practices

- hay meadows:
  - private
  - co-meadows

- pastures:
  - private
  - commonage





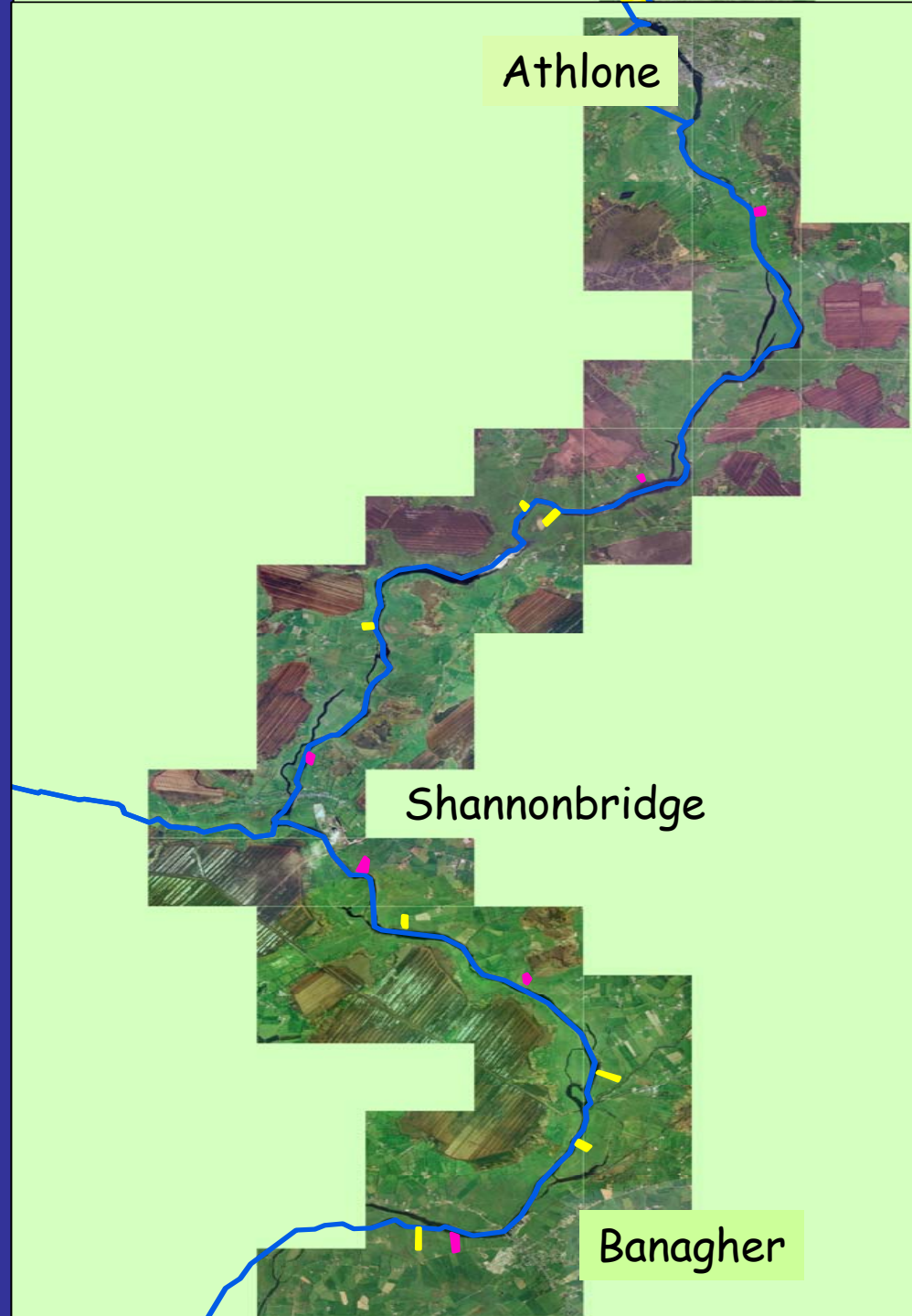
An aerial photograph showing a meadow system with a winding river. The meadows are divided into numerous small, irregularly shaped parcels, some of which are highlighted with black outlines. A prominent feature is a large, light-colored, irregularly shaped area in the center, which appears to be a different type of land or a specific meadow section. The river flows through the meadows, creating a natural boundary. The overall scene is a mix of green meadows and brownish patches, with a network of thin lines representing land parcels.

BWI Corncrake meadows include individually owned unfenced strips of land (co-meadows)

# Corncrake meadows

- stratified random selection

>> max. spread of sites



# Project aims:

Establish how plant and dipteran communities are affected by:

- different management practices
- different hydrological conditions



# Ultimate aim

Provide recommendations for future management of the callows



*Heliophilus pendulus* on *Cardamine pratensis*

# Plant communities:

- 4 relevés (species list) taken in each sample plot
- 2 x 2 m quadrat



Elevation  
readings:

receiver

data logger

- Survey grade differential GPS unit
  - At least 2cm accuracy
  - Measurements combined with river level data

# Dipteran assemblages



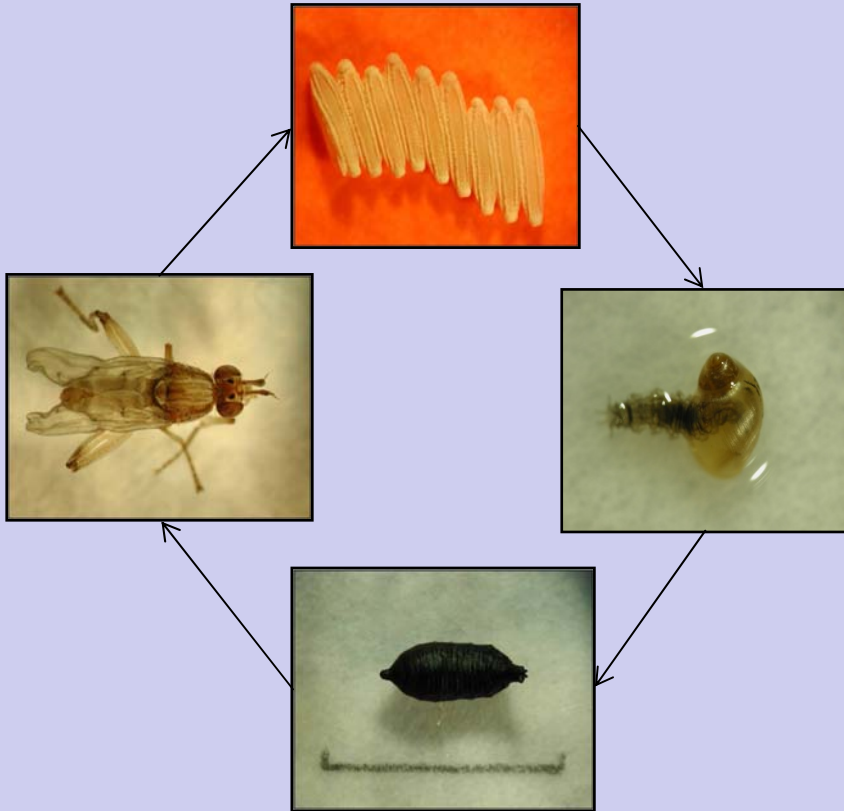
## Sciomyzidae (Marsh Flies)

- feed on snails
- sensitive indicator of hydrological conditions

## Syrphidae (Hover Flies)

- feed on pollen
- good indicator of flowering plant species diversity

# Sciomyzidae



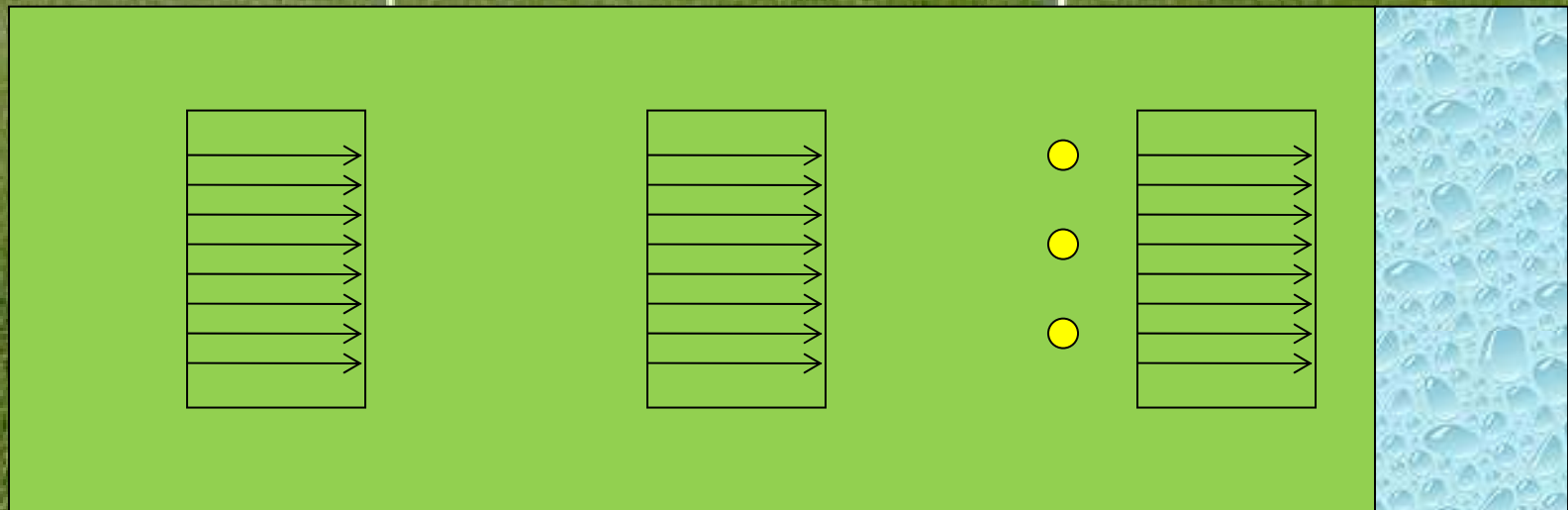
*Pherbina coryleti*

*Life cycle of *Sepedon spinipes spinipes*  
(Scopoli).*

*Photos: Rory McDonnell.*



More topographically variable sites were examined to detect any correlations between hydroperiod, plant community & dipteran community



*Distal*

*Middle*

*Proximal*

*RIVER*

# Questionnaires

- assess management practices at each site

- past

- present

- long-term meadow?
- after-grazing?
- use of fertilizer?
- size of machinery?

# Lower elevation zone



- *Caltha palustris*
- *Mentha aquatica*
- *Equisetum fluviatile*
- *Carex nigra*



# Intermediate elevation zone



- *Angelica sylvestris*
- *Panassia palustris*
- *Rhinanthus minor*
- *Achillea ptarmica*



# Higher elevation zones

- *Euphrasia* sp.
- *Lotus corniculatus*
- *Potentilla erecta*
- *Prunella vulgaris*
- *Succisa pratensis*
- *Galium verum*





Elevation, m

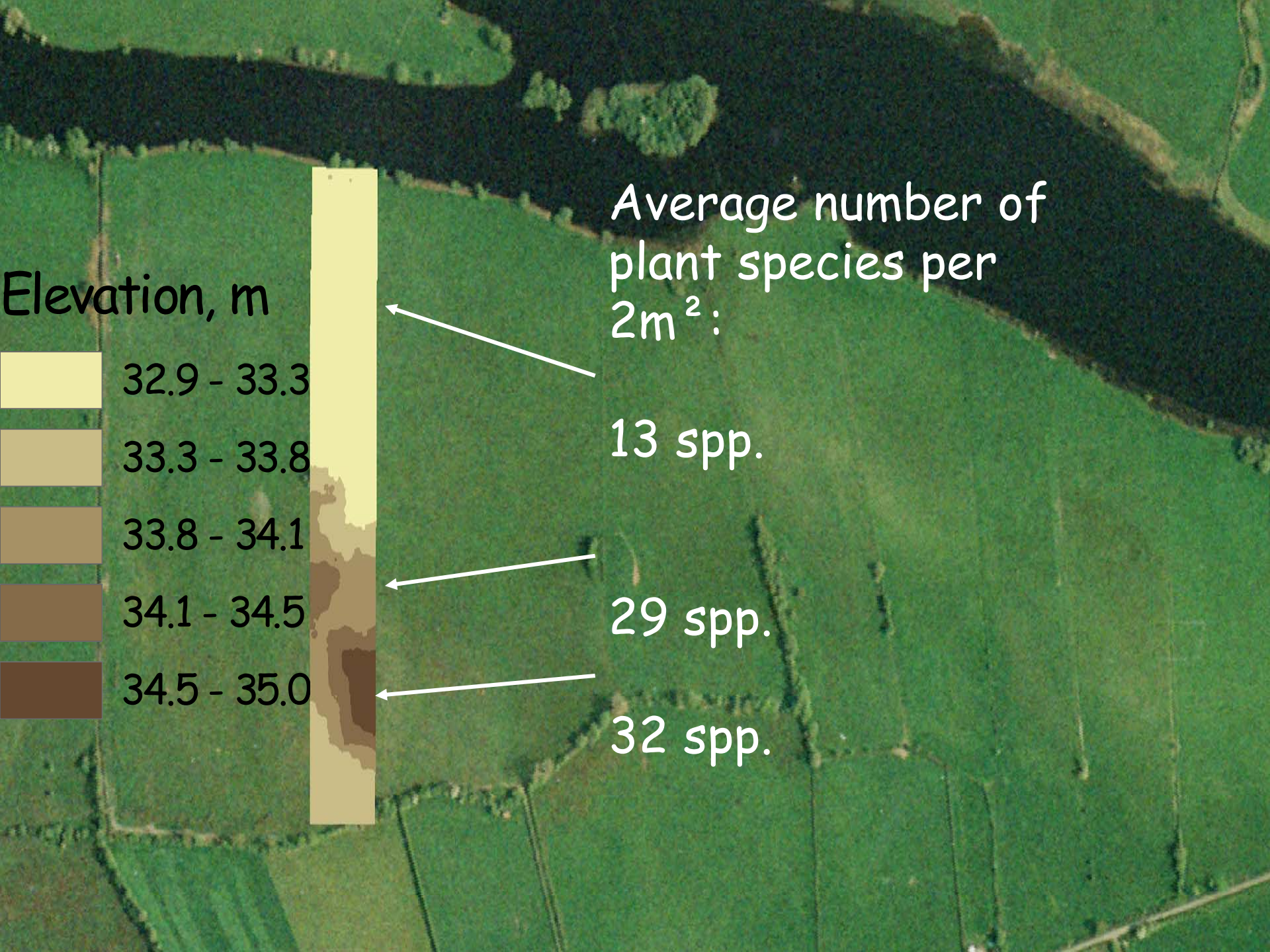


Average number of  
plant species per  
 $2\text{m}^2$ :

13 spp.

29 spp.

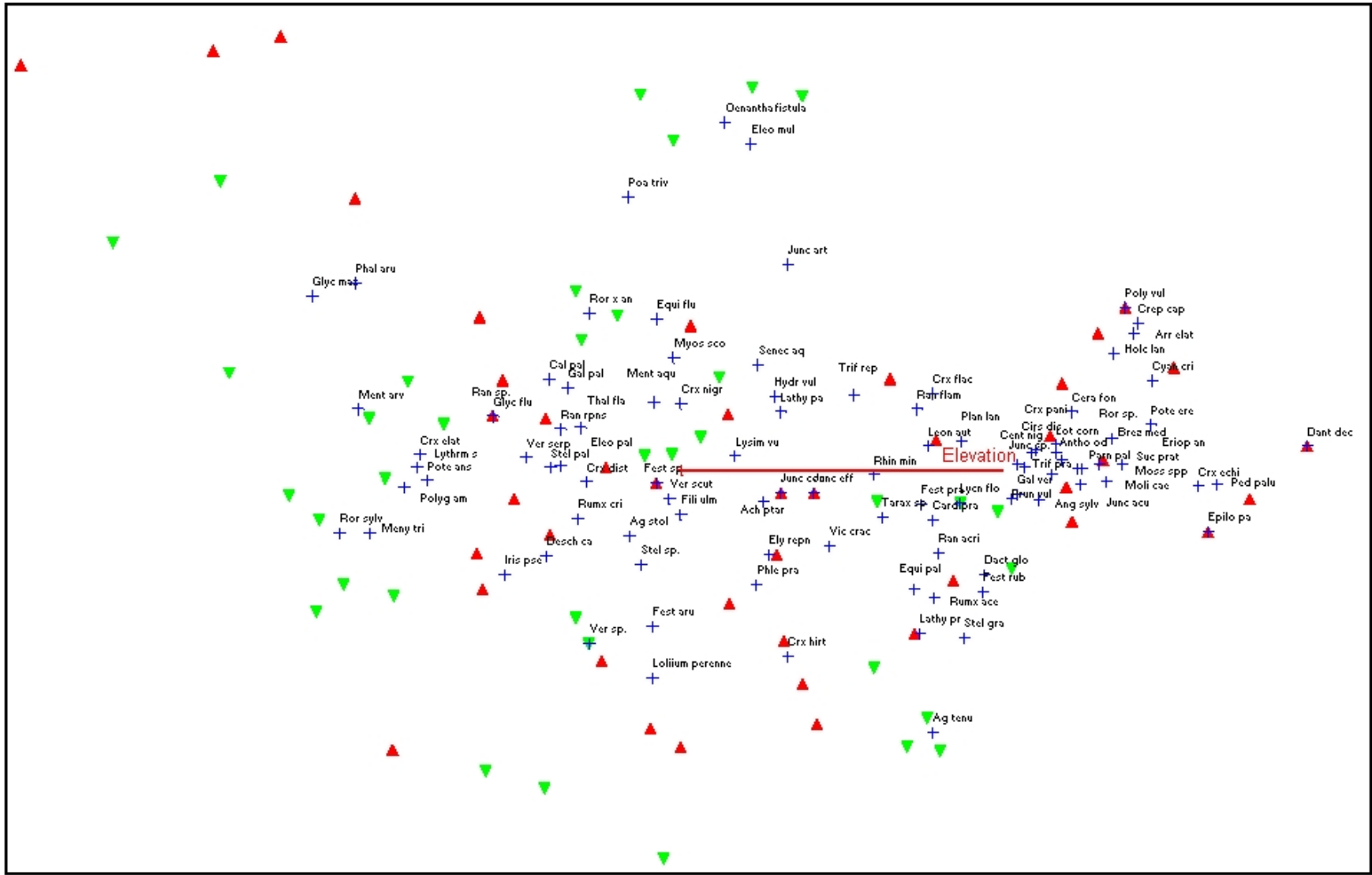
32 spp.



# NMS Ordination

Private

- ▲ 0
- ▼ 1



Axis 2

Axis 1



# Lusmagh CoMeadow Sciomyzids

*Ilione albiseta*

*Pherbellia ventralis*

## UPPER- 6 individuals



- *Limnia unguicornis*
- *Pherbellia ventralis*
- *Ilione albiseta*
- *Pteromicra angustipennis*
- *Pherbellia schoenherri*

## LOW- 40 individuals



- *Ilione albiseta*
- *Pherbina coryli*
- *Pherbellia ven*
- *Hydromya dor*
- *Tetanocera fe*
- *Pherbellia nan*
- *Pteromicra pe*
- *Pherbellia gris*

## MED- 22 individuals



- *Pherbina coryleti*
- *Ilione albiseta*
- *Tetanocera hyalipennis*
- *Pherbellia ventralis*
- *Tetanocera arrogans*



## Number of species per hydrological zone

Plants

Sciomyzids

13 spp

11 spp

27 spp

5 spp

32 spp

5 spp

	LOW	MIDDLE	UPPER
<i>Pherbellia argyra</i>	7	.	.
<i>Tetanocera ferruginea</i>	6	.	.
<i>Ilione lineata</i>	2	.	.
<i>Pteromicra pectorosa</i>	5	3	.
<i>Hydromya dorsalis</i>	4	3	.
<i>Pteromicra leucopeza</i>	1	1	.
<i>Pherbina coryleti</i>	26	32	.
<i>Pherbellia nana</i>	51	63	46
<i>Pherbellia ventralis</i>	37	38	20
<i>Ilione albiseta</i>	62	84	4
<i>Pteromicra angustipennis</i>	5	2	5
<i>Pherbellia griseola</i>	2	.	1
<i>Tetanocera arrogans</i>	1	3	.
<i>Tetanocera hyalipennis</i>	.	5	.
<i>Psacadina verbekei</i>	.	1	.
<i>Pherbellia schoenherri</i>	.	2	1
<i>Limnia unguicornis</i>	.	.	5
<b><u>ABUNDANCE</u></b>	<b><u>209</u></b>	<b><u>237</u></b>	<b><u>82</u></b>
<b><u>Species Richness</u></b>	<b><u>13 spp</u></b>	<b><u>12 spp</u></b>	<b><u>7 spp</u></b>

# Sciomyzidae v Syrphidae

## ABUNDANCES



	Proximal	
	Median	
	Distal	

# Conclusions

- Each zone has a different plant and invertebrate community
- Lower zones support greater numbers of sciomyzids both in terms of numbers of individuals and species richness
- Each zone supports its own suite of sciomyzid species including species unique to each zone



*Thank you!*