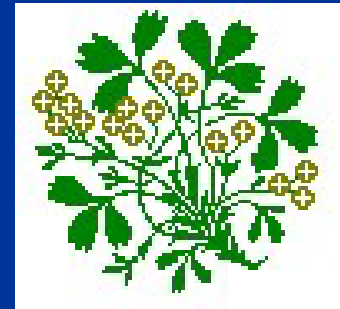
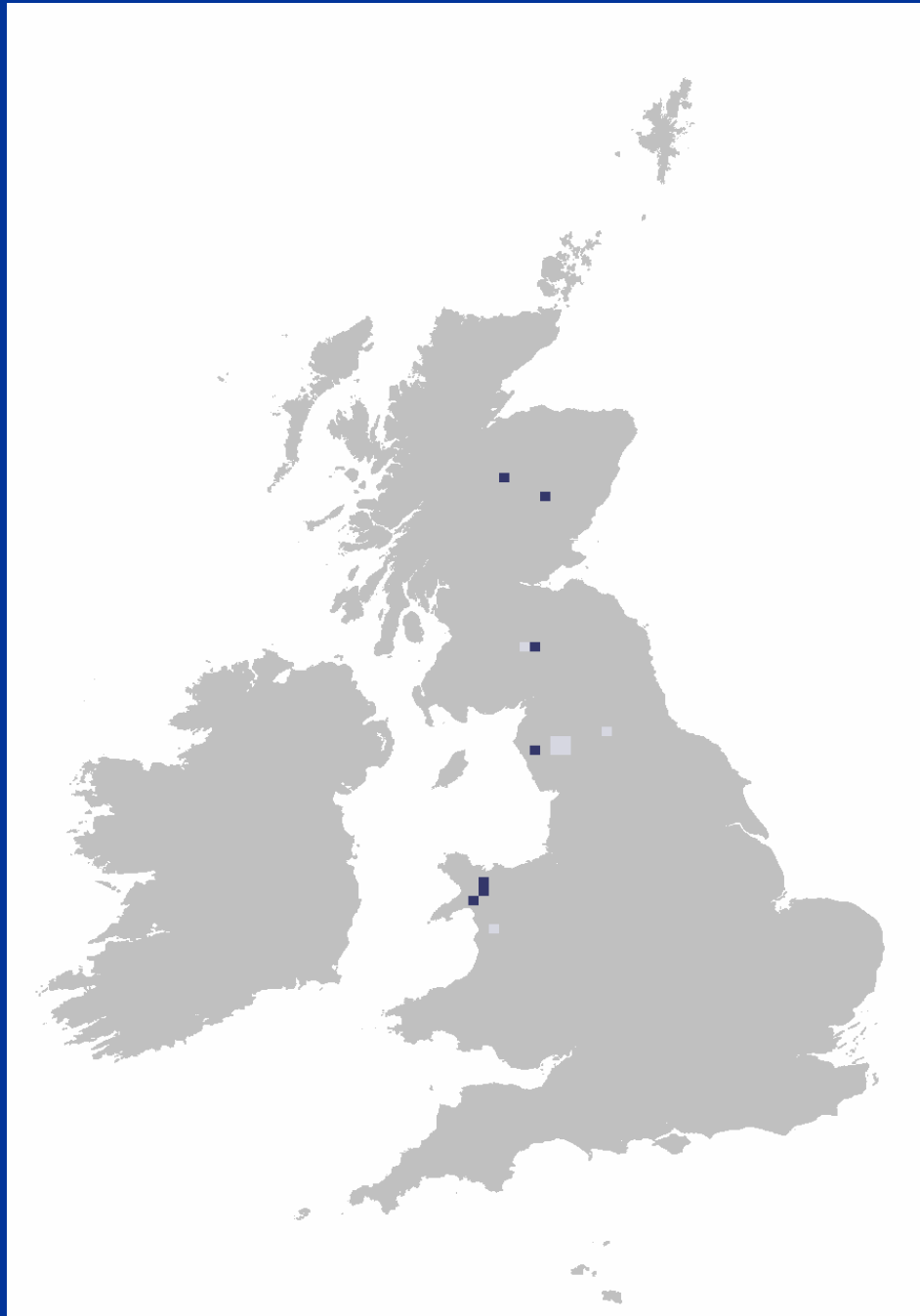


Conservation challenges of *Woodsia ilvensis*

Heather McHaffie

RBGE





Distribution of *Woodsia ilvensis* in Britain.

Records:

Dark squares 1987 -1999

Light squares pre-1970

From **The New Atlas of The British
and Irish Flora** Preston *et al.* 2002

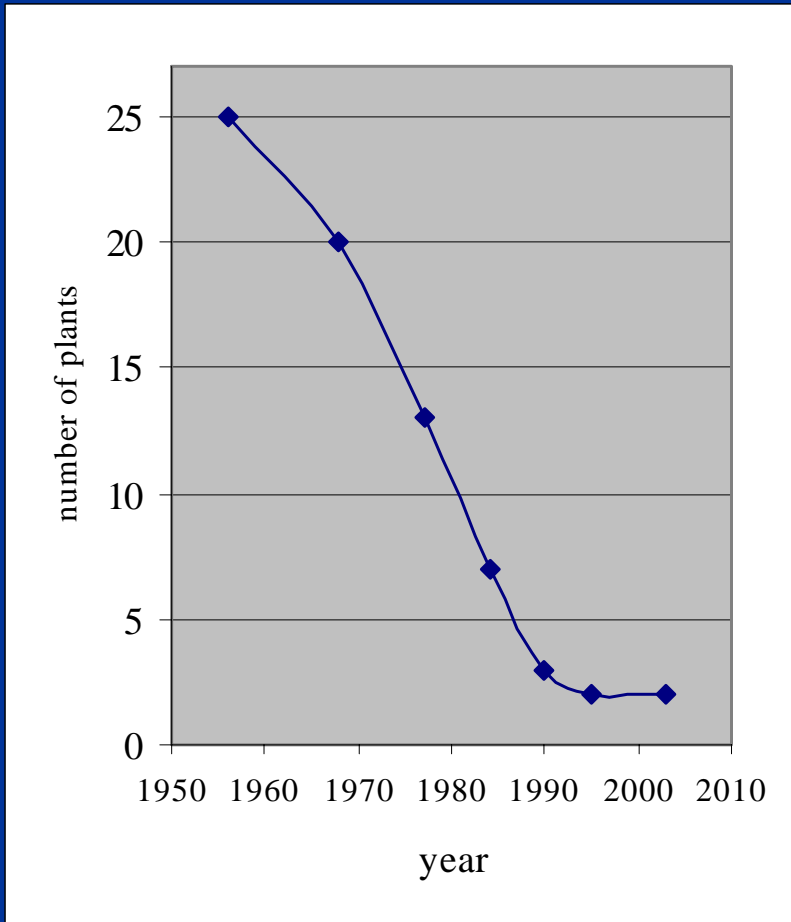
Woodsia ilvensis plants in Britain

Wales – 14 clumps

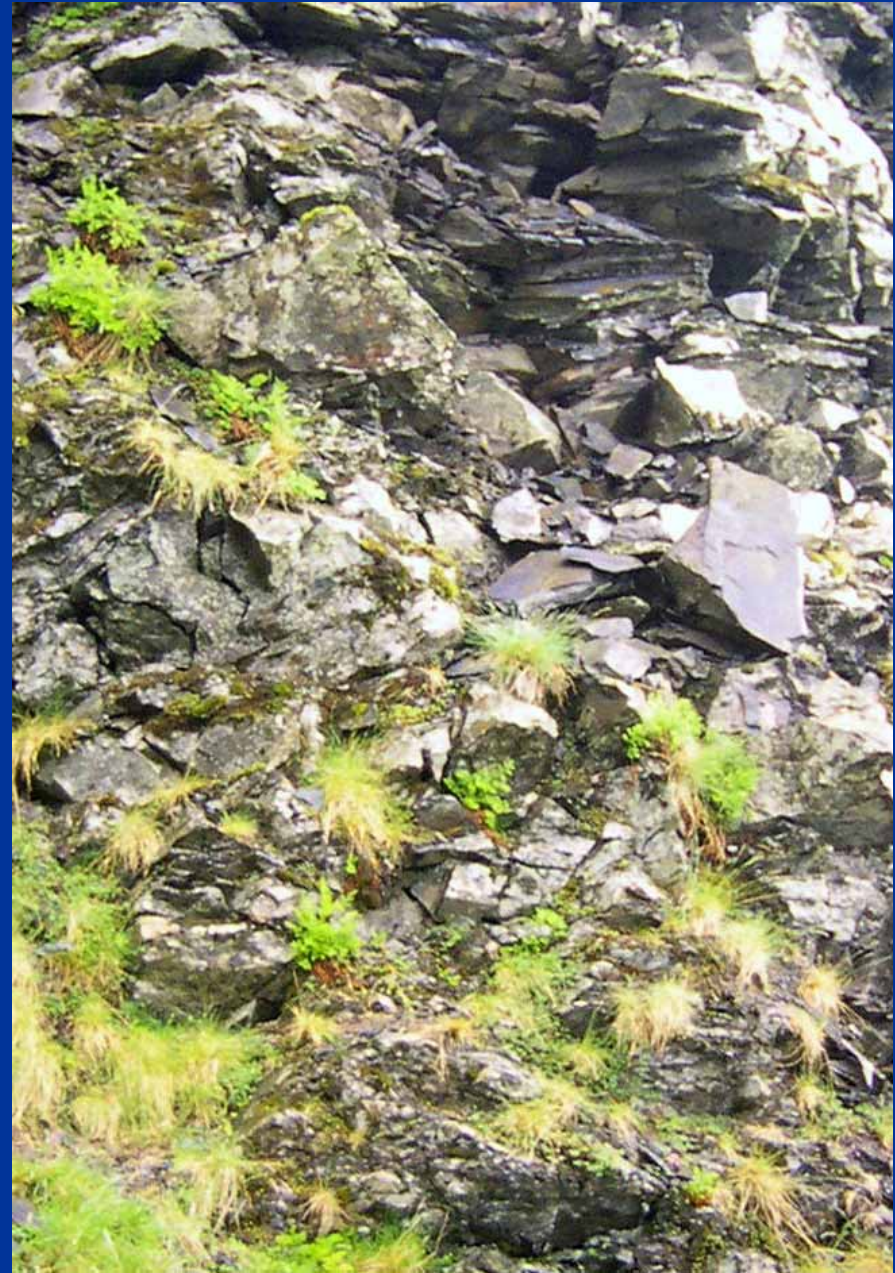
England – 47 clumps

Scotland – 15 clumps





Decline in one
population of *Woodsia
ilvensis* near Moffat



Conservation programme

- Spores collected under licence
- Spores germinated - variable
- Gametophytes produced
- Eventual sporophytes
- Conservation collection maintained
- Sporophytes distributed
- Four re-introduction sites



Number of ferns surviving until 2003 at the re-introduction to Teesdale planted 1999-2000

South-facing site	27/63 plants	43%
Number fertile	24/27 plants	89%
North-facing site	48/50 plants	96%
Number fertile	42/48 plants	88%

Woodsia ilvensis

Droughting experiment

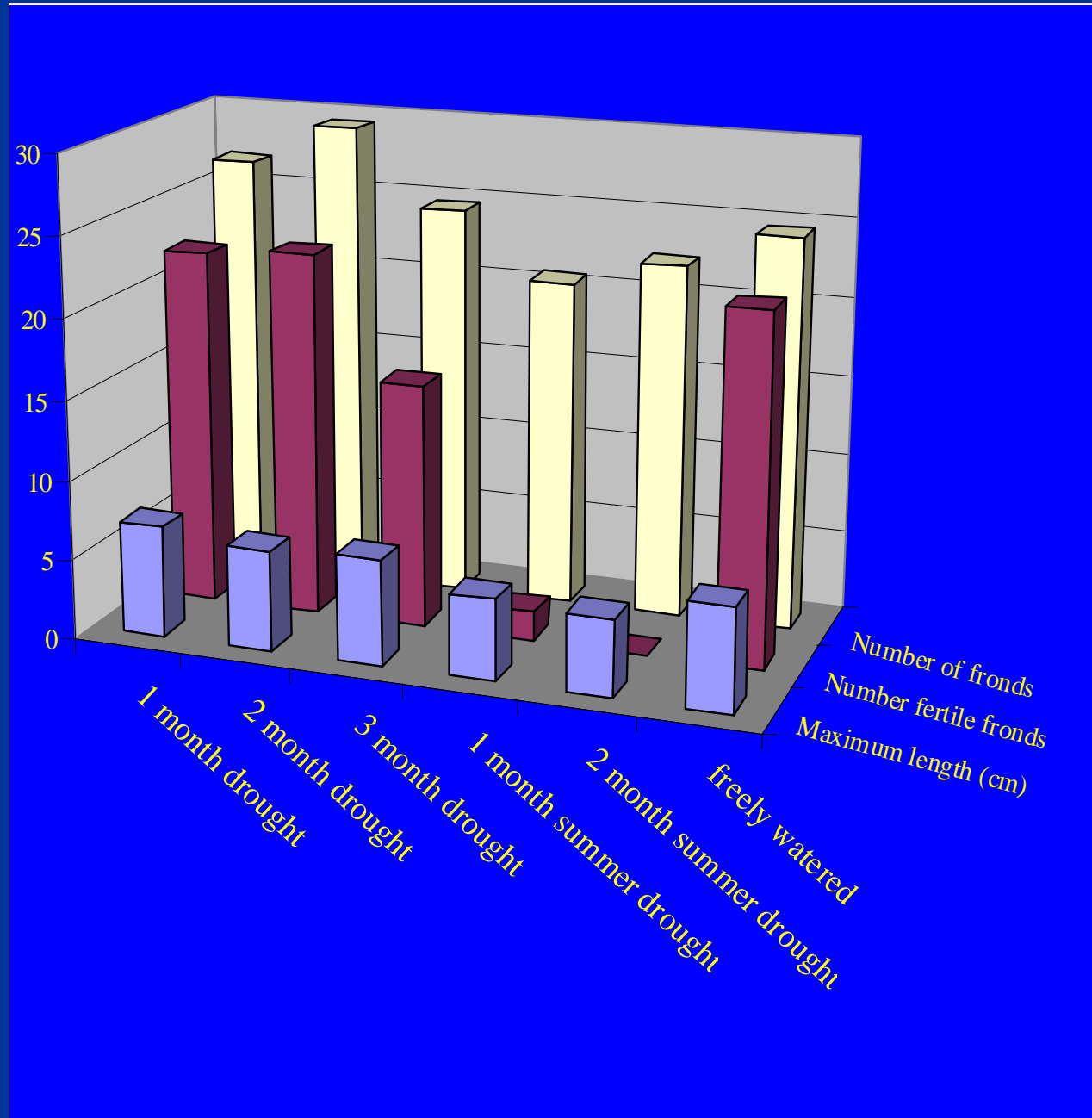
	April	May	June	July	August
Group 1	Drought	Water normally	Water normally	Water normally	Water normally
Group 2	Drought	Drought	Water normally	Water normally	Water normally
Group 3	Drought	Drought	Drought	Water normally	Water normally
Group 4	Water normally	Water normally	Drought	Drought	Water normally
Group 5	Water normally	Water normally	Drought	Water normally	Water normally
Group 6	Water normally	Water normally	Water normally	Water normally	Water normally

1, 2 & 3 month spring drought

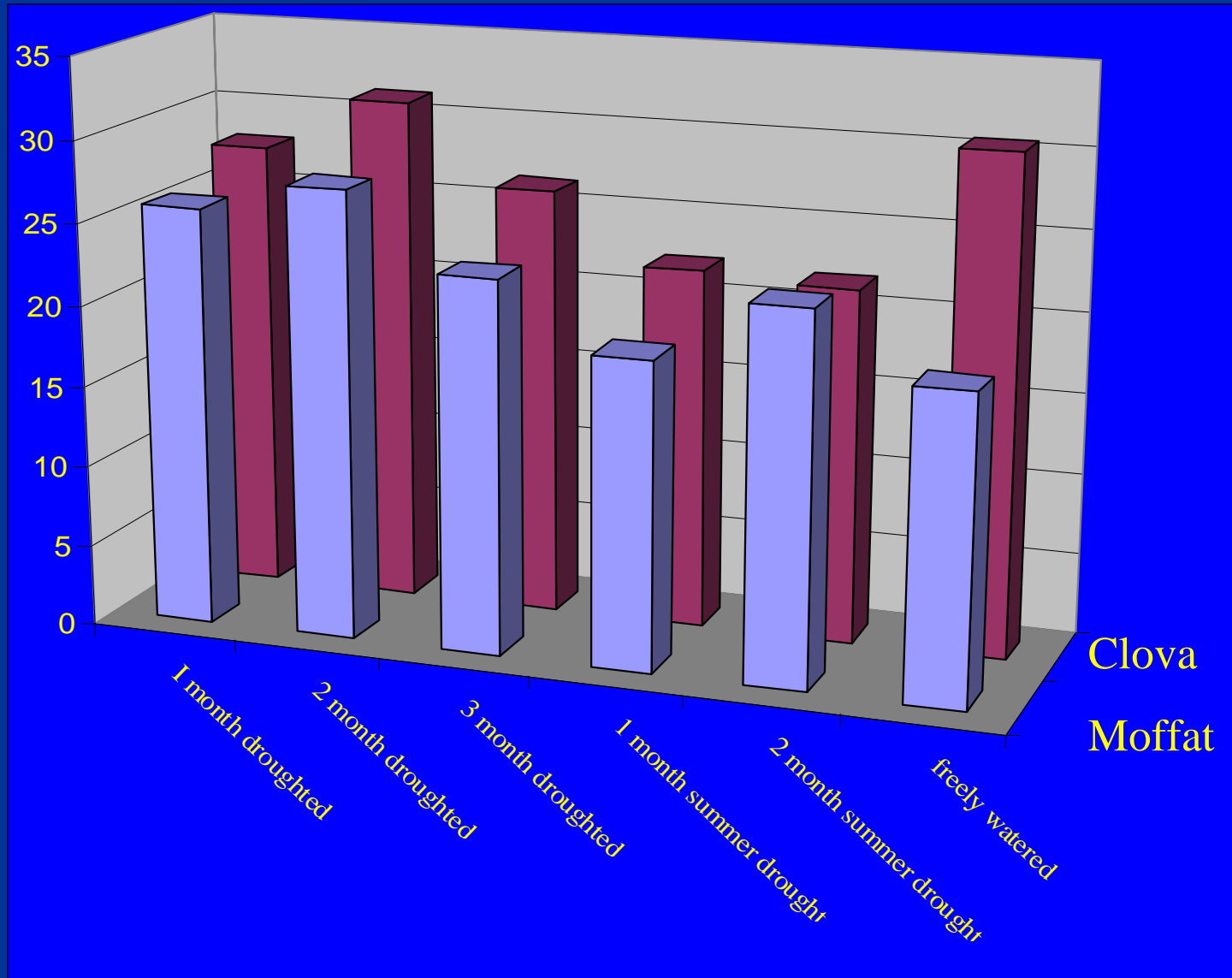


2, 1 & 0 month summer drought

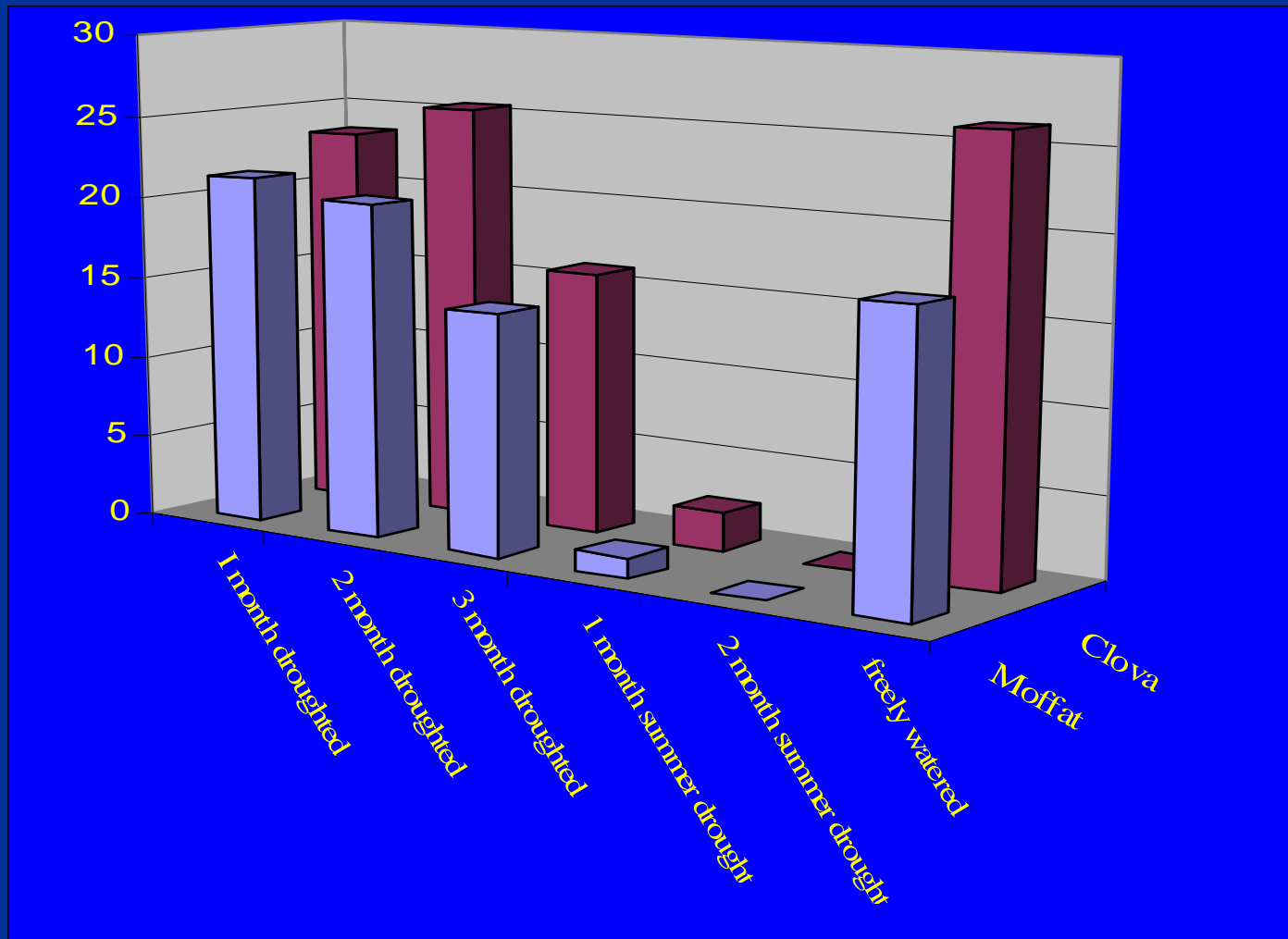
Growth of *Woodsia ilvensis* plants under stress



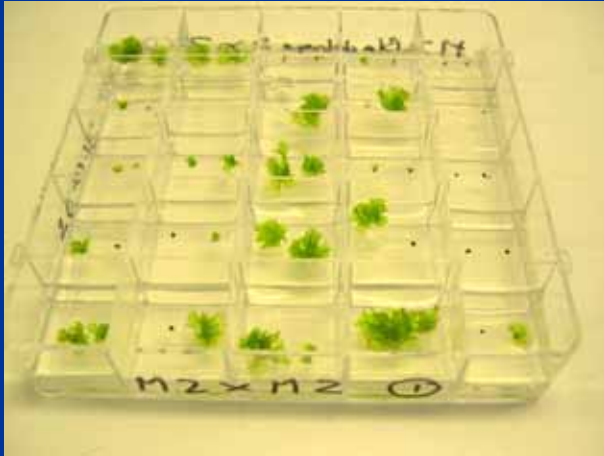
Frond number



Number of fertile fronds produced



Gametophyte growth



Moffat x Moffat



Moffat x Clova



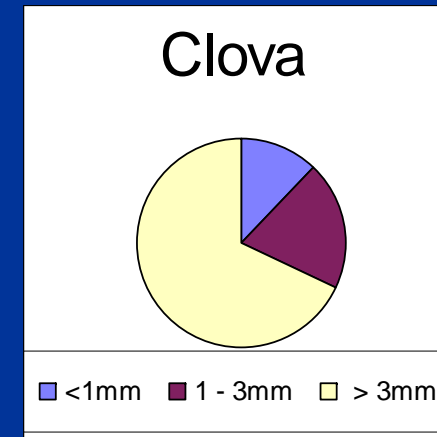
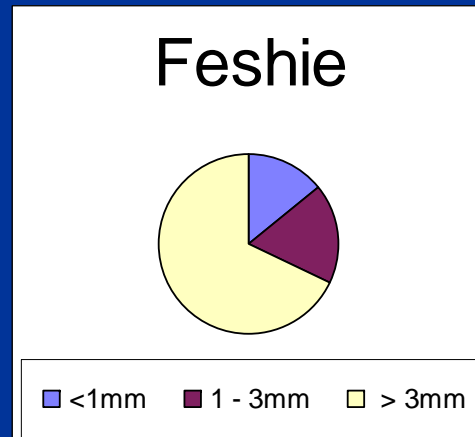
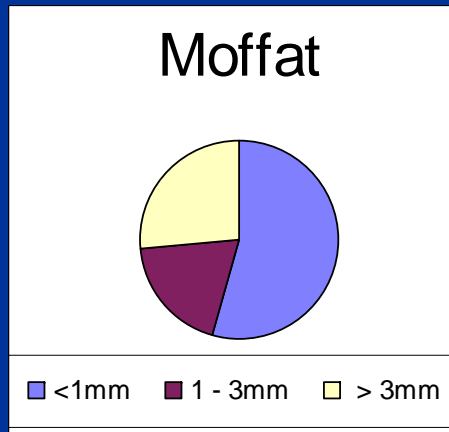
Feshie x Clova



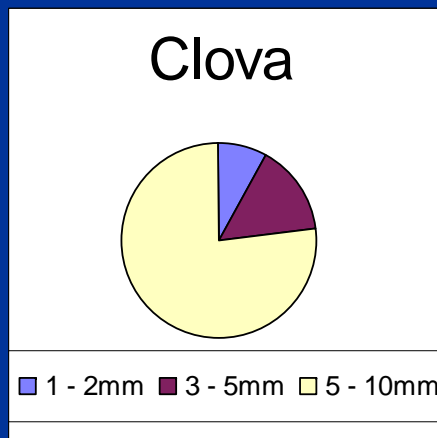
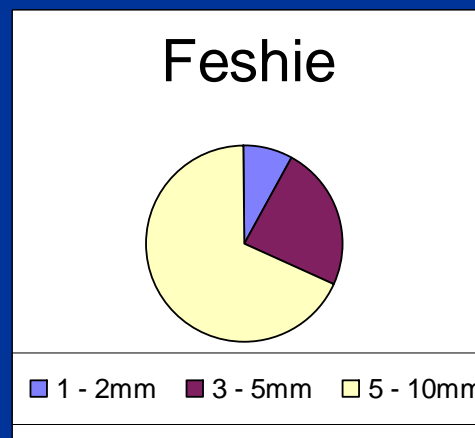
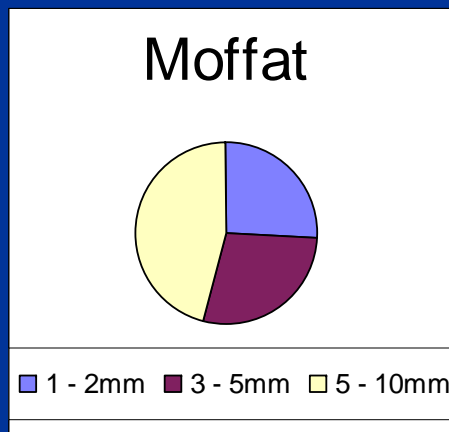
sporophyte

Size of gametophytes

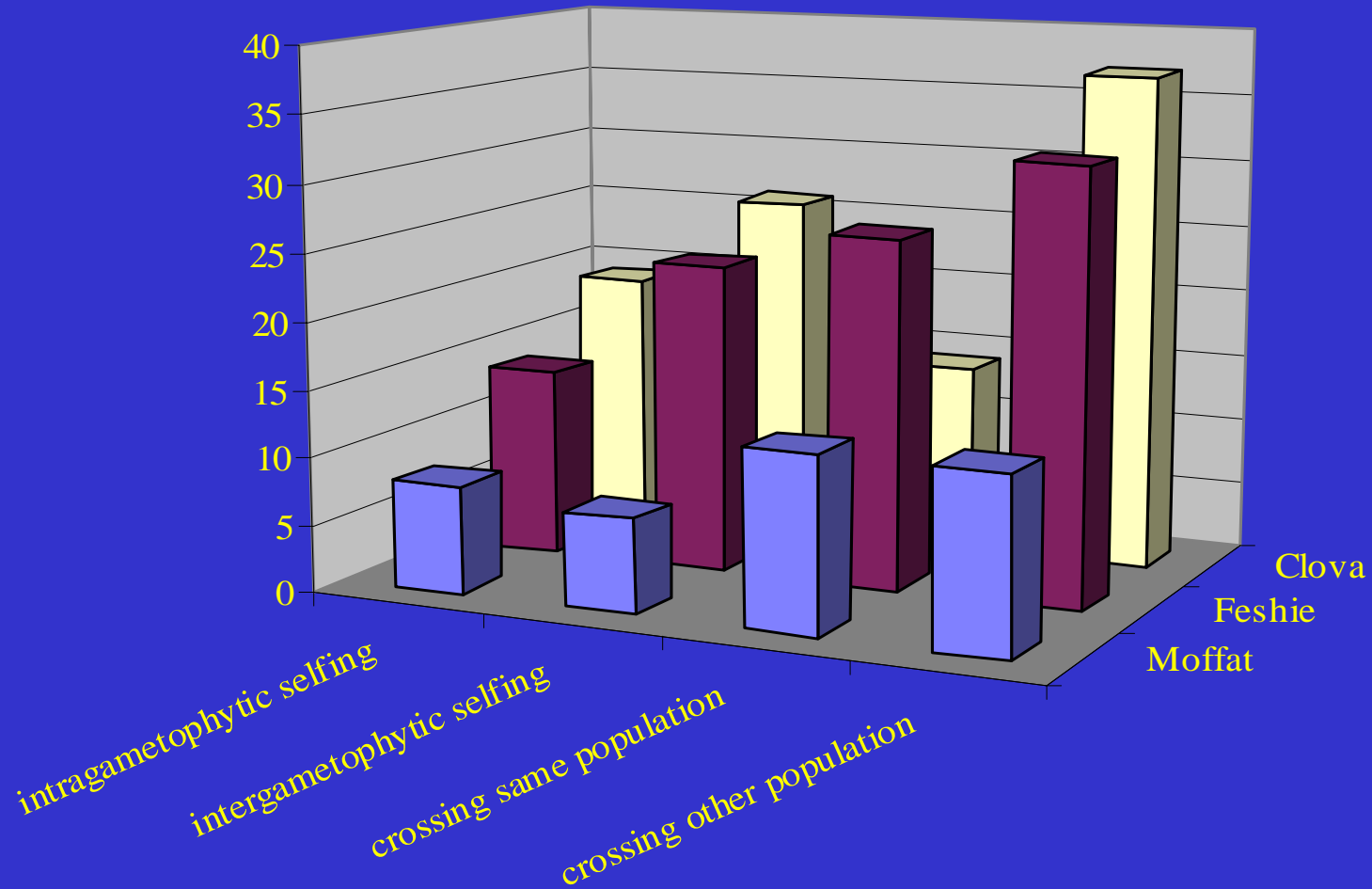
4 months



8 months



Sporophytes produced by gametophytes of *Woodsia ilvensis*



Conclusions

- Some populations are very small
- Not all plants produce spores every year
- Some gametophytes are very slow-growing
- Gametophytes prefer to outcross
- Optimum conditions are required for sporophyte establishment

