



# The genetics of body condition score in Scottish Blackface hill ewes

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SRUC

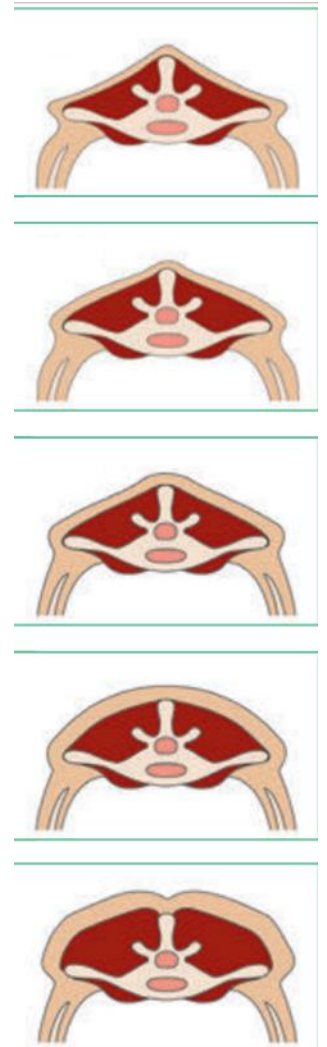
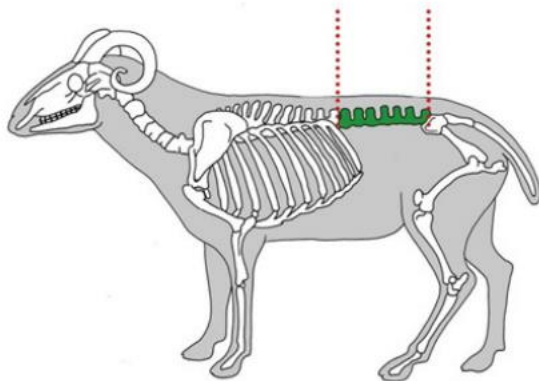


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# Introduction



- Body condition scoring = quick & simple tool farmers can use to monitor and manage their ewes
- Aim of this study = to estimate genetic parameters for body condition scores throughout the production year – ewe resilience



Images: FAS and AHDB

# Materials & methods



- Data available from Scottish Blackface ewes

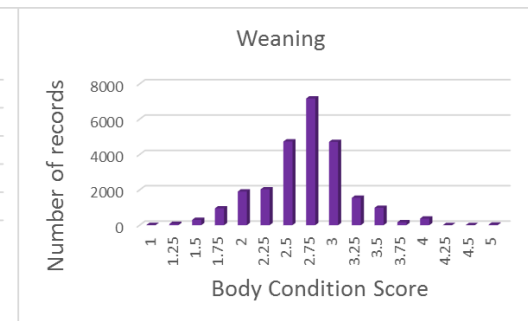
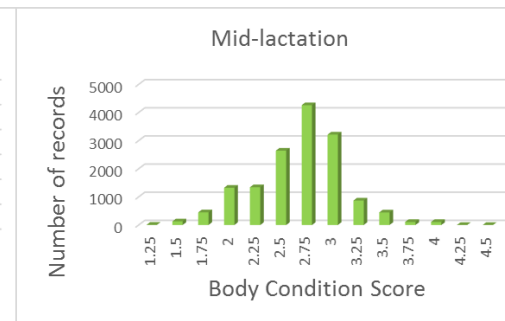
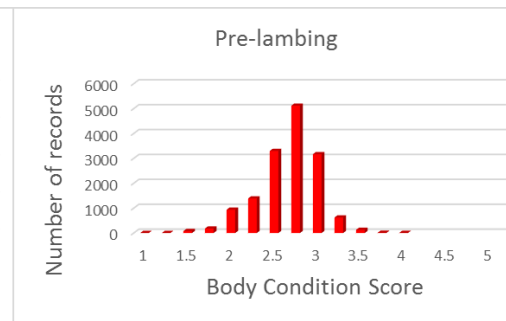
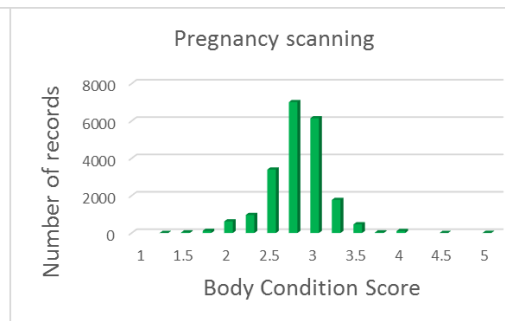
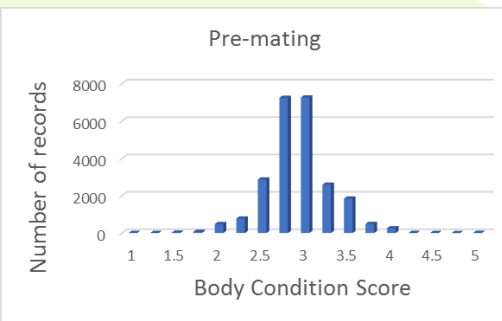
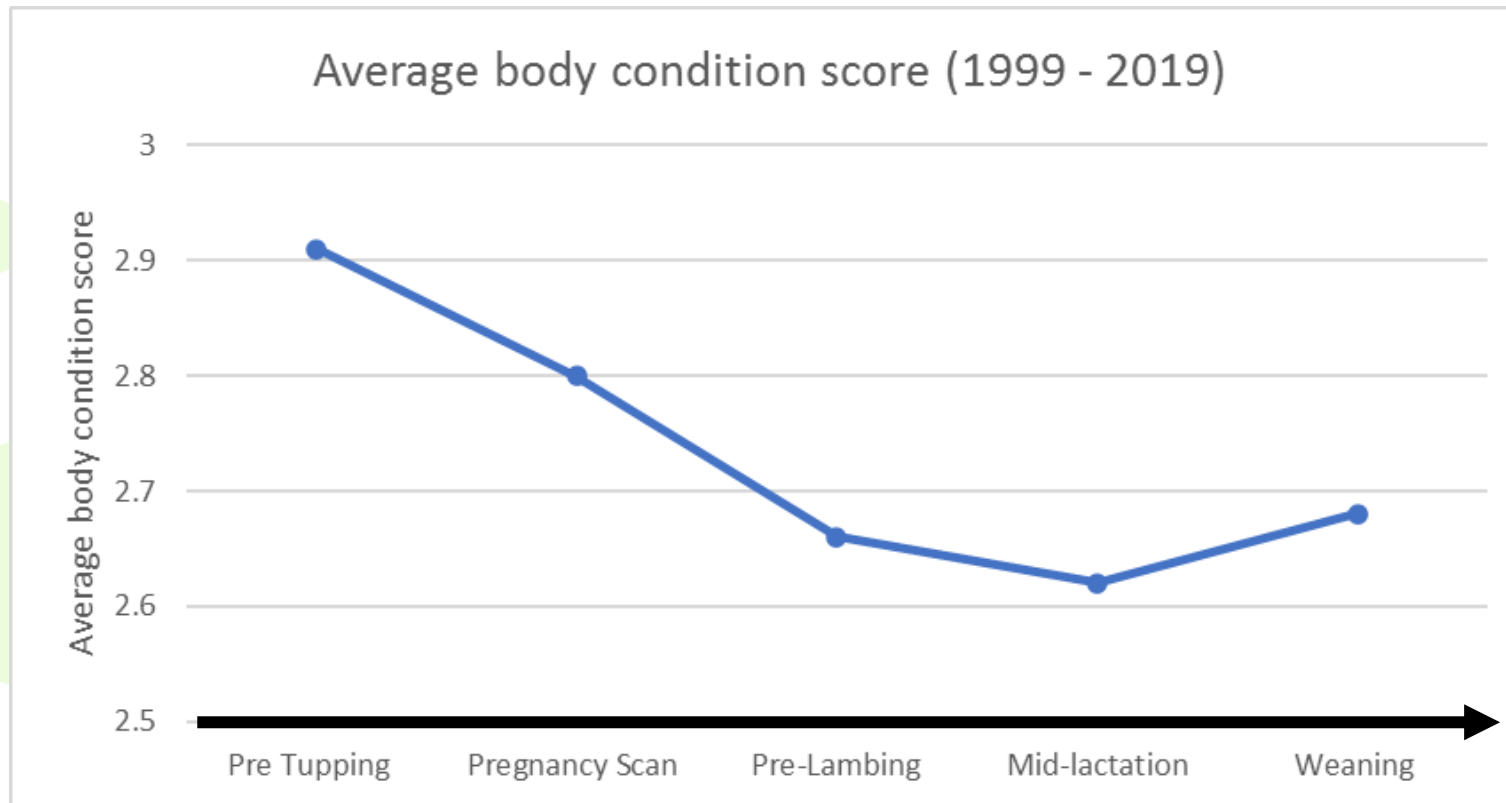
- 2 different extensively managed hill flocks
- Between 1999 and 2019

- Data collected at

- Pre-mating (November) - 23,903 records
- Pregnancy scanning (February) - 20,691 records
- Pre-lambing (April) - 14,936 records
- Mid-lactation (June) - 14,895 records
- Weaning (August) - 23,127 records



# Body Condition Score



# Body Condition Score Gain



Trait	Count	Min.	Max.	Average Gain	Gain SD
Pre-mating to Pregnancy Scanning (PSGain)	20590	-2.00	2.00	-0.12	0.35
Pre-mating to Pre-lambing (PLGain)	14865	-2.25	1.50	-0.29	0.42
Pregnancy Scanning to Pre-lambing (SLGain)	14265	-2.25	1.00	-0.14	0.32
Pregnancy Scanning to Mid-lactation (SMGain)	14241	-2.25	1.75	-0.12	0.44
Pre-lambing to Mid-lactation (LMGain)	14105	-1.50	2.00	-0.05	0.39



# Genetic analyses



- Pedigree information available for 45,697 animals
- Univariate analyses in ASReml (Gilmour et. al, 2015)
- Models fitted:
  - **BCS** = Ewe age + farm + year + number of lambs + (farm x year) + (farm x ewe age)
  - **BCS Gain** = Ewe age + farm + year + number of lambs + *initial BCS* + (farm x year) + (farm x ewe age)
- Direct and permanent environment random effects



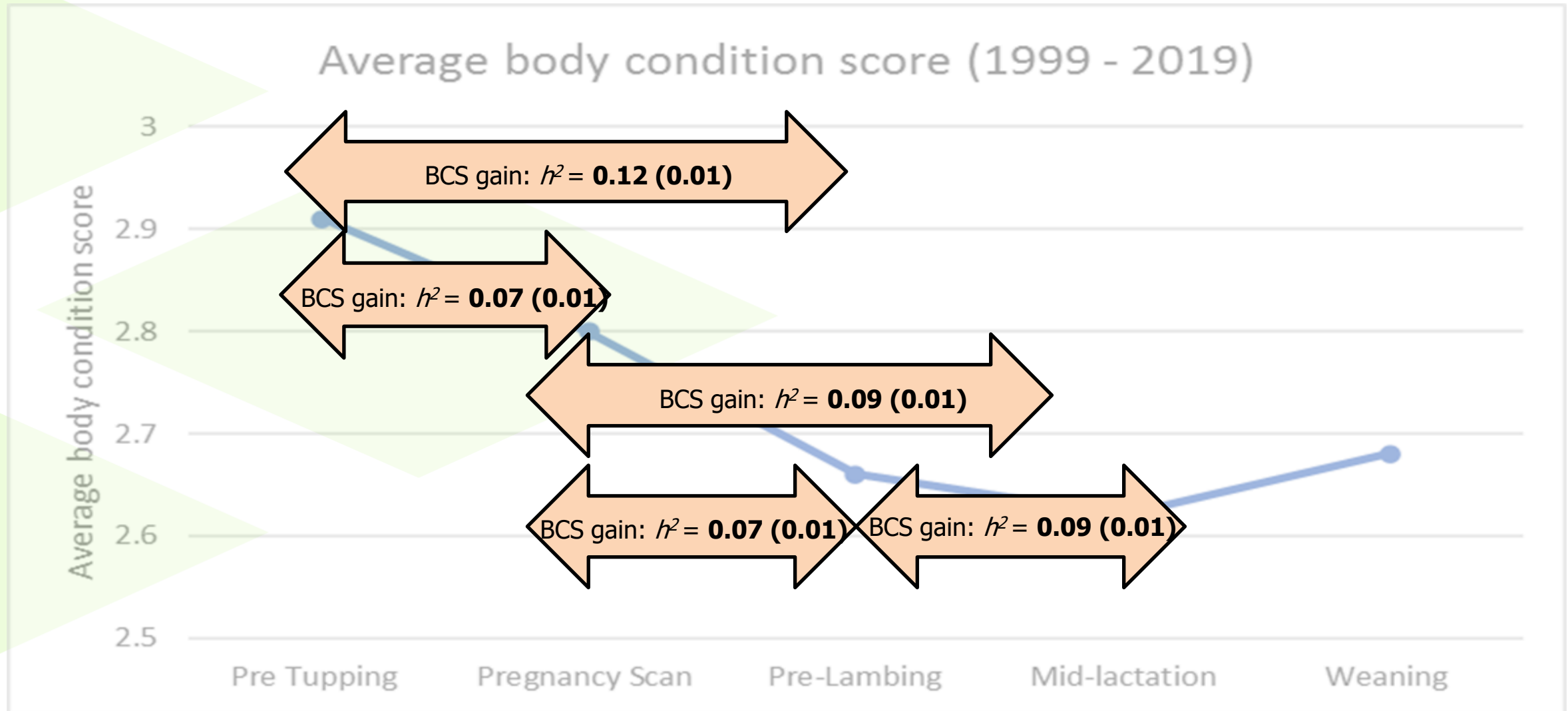
# Results – BCS at each event



Trait	PBCS	SBCS	LBSCS	MBCS	WBCS
PBCS	<b>0.14 (0.01)</b>	0.83 (0.03)	0.74 (0.04)	0.82 (0.04)	0.15 (0.21)
SBCS	0.49 (0.01)	<b>0.18 (0.01)</b>	0.94 (0.02)	0.75 (0.04)	0.23 (0.21)
SBCS	0.40 (0.01)	0.53 (0.01)	<b>0.16 (0.01)</b>	0.80 (0.04)	0.05 (0.24)
MBCS	0.27 (0.01)	0.32 (0.01)	0.39 (0.01)	<b>0.12 (0.01)</b>	0.37 (0.21)
WBCS	0.01 (0.01)	0.001 (0.01)	0.01 (0.01)	0.01 (0.01)	<b>0.003 (0.003)</b>

Pre-mating BCS = **PBCS**, Pregnancy scanning BCS = **SBCS**,  
Pre-lambing BCS = **LBSCS**, Mid-lactation BCS = **MBCS**,  
Weaning BCS = **WBCS**

# Results – BCS gain traits





# Conclusions



- The results suggest that the traits investigated so far associated with BCS are heritable (with the exception of BCS at weaning).
- Next steps to investigate associations with other traits = e.g. ewe performance, lamb loss...



# Acknowledgments

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- All technical and farm staff involved in data collection



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