

ROSLIN

Improving gait in ducks and chickens

Effects of selection on leg morphology and function

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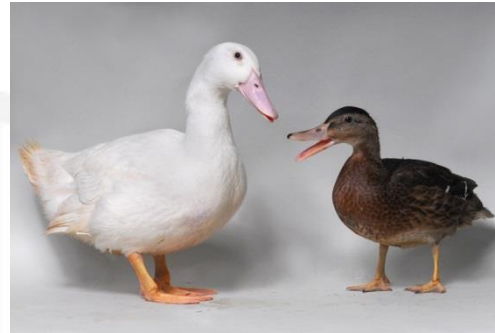
- Increased growth rates are associated with gait problems
- Semi-aquatic birds represent an interesting compromise in leg design



- Assess changes in leg morphology
- Assess changes in gait
- Develop a more objective method of assessing gait within breeding programmes

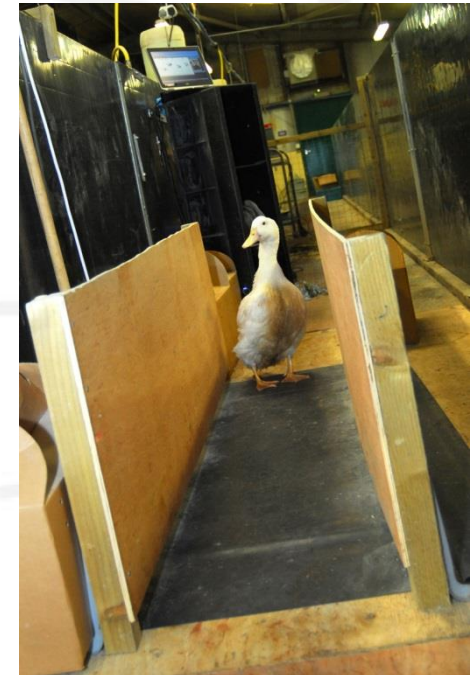


- Divergent lines of chickens and ducks

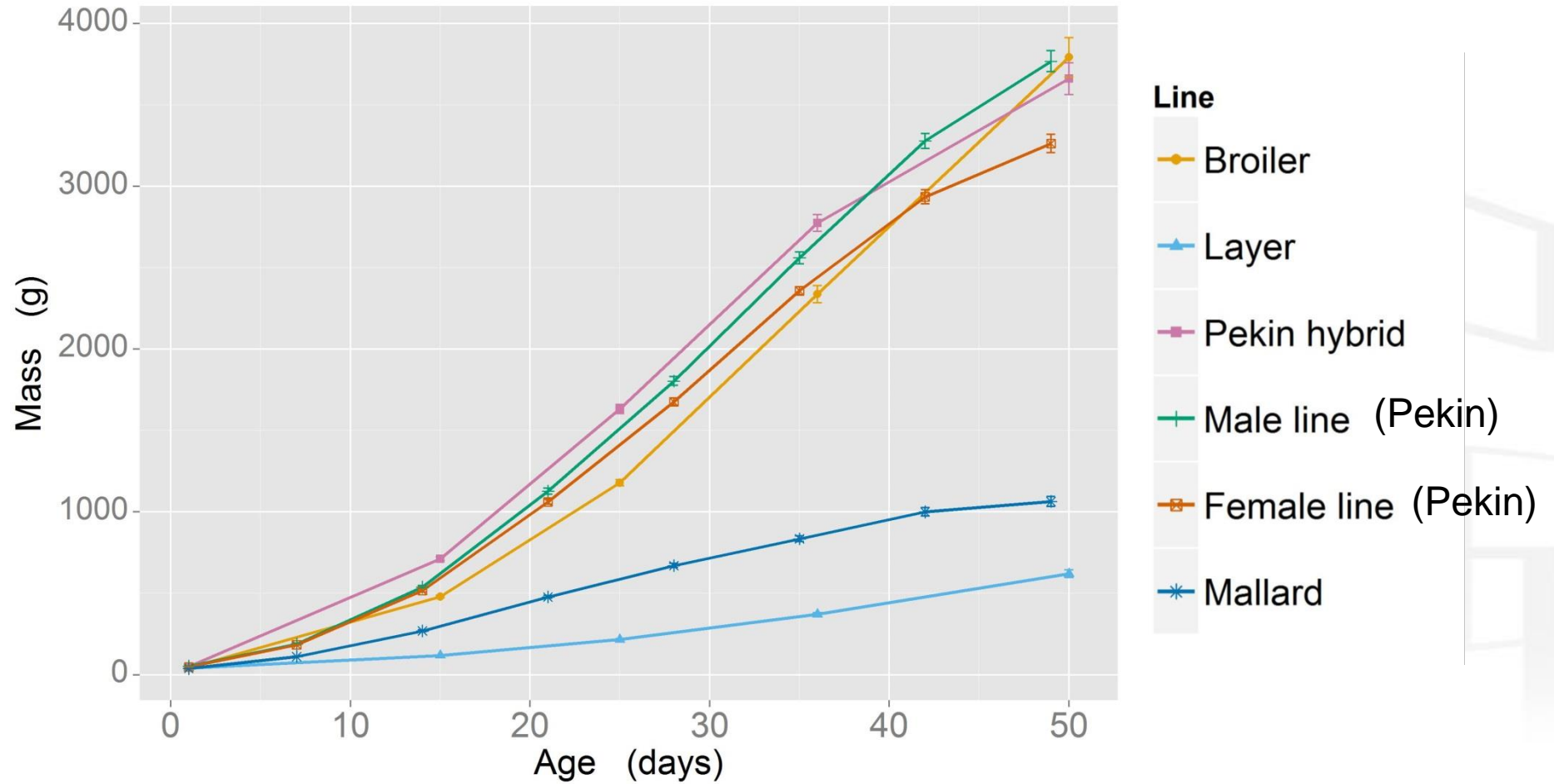


Birds measured at
3, 5 & 7 weeks of age

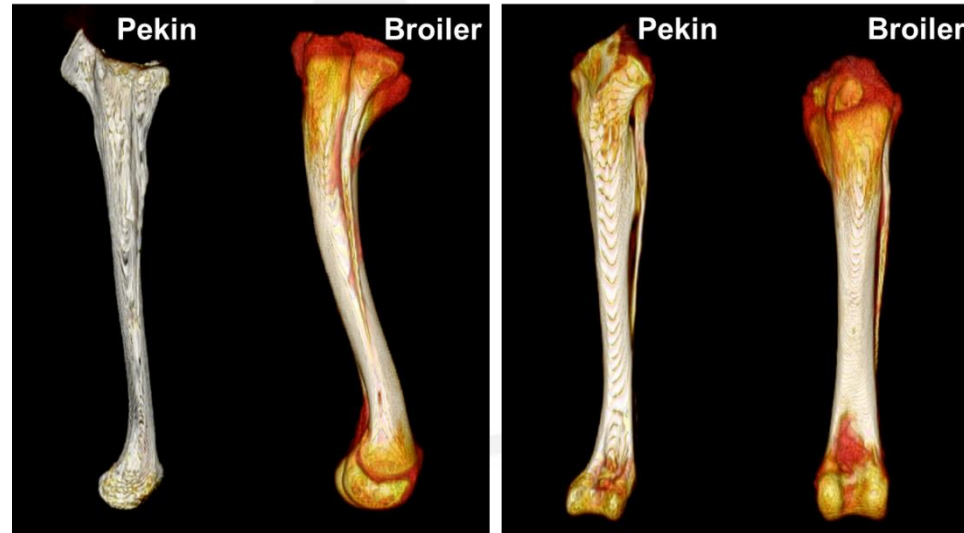
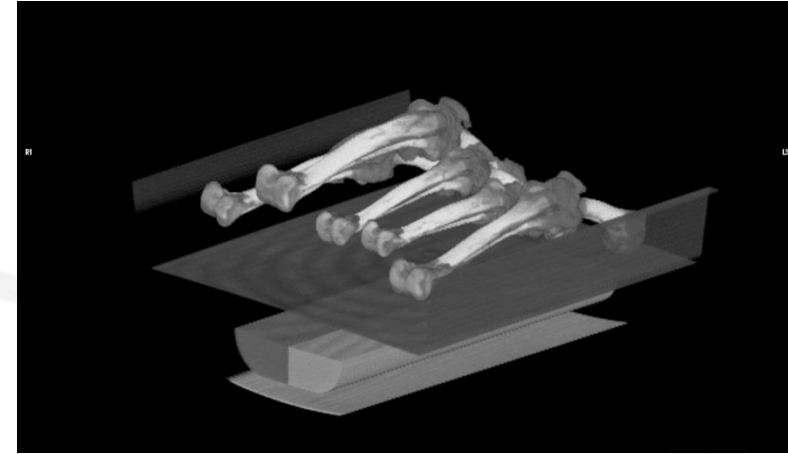
- Leg morphology and gait measured



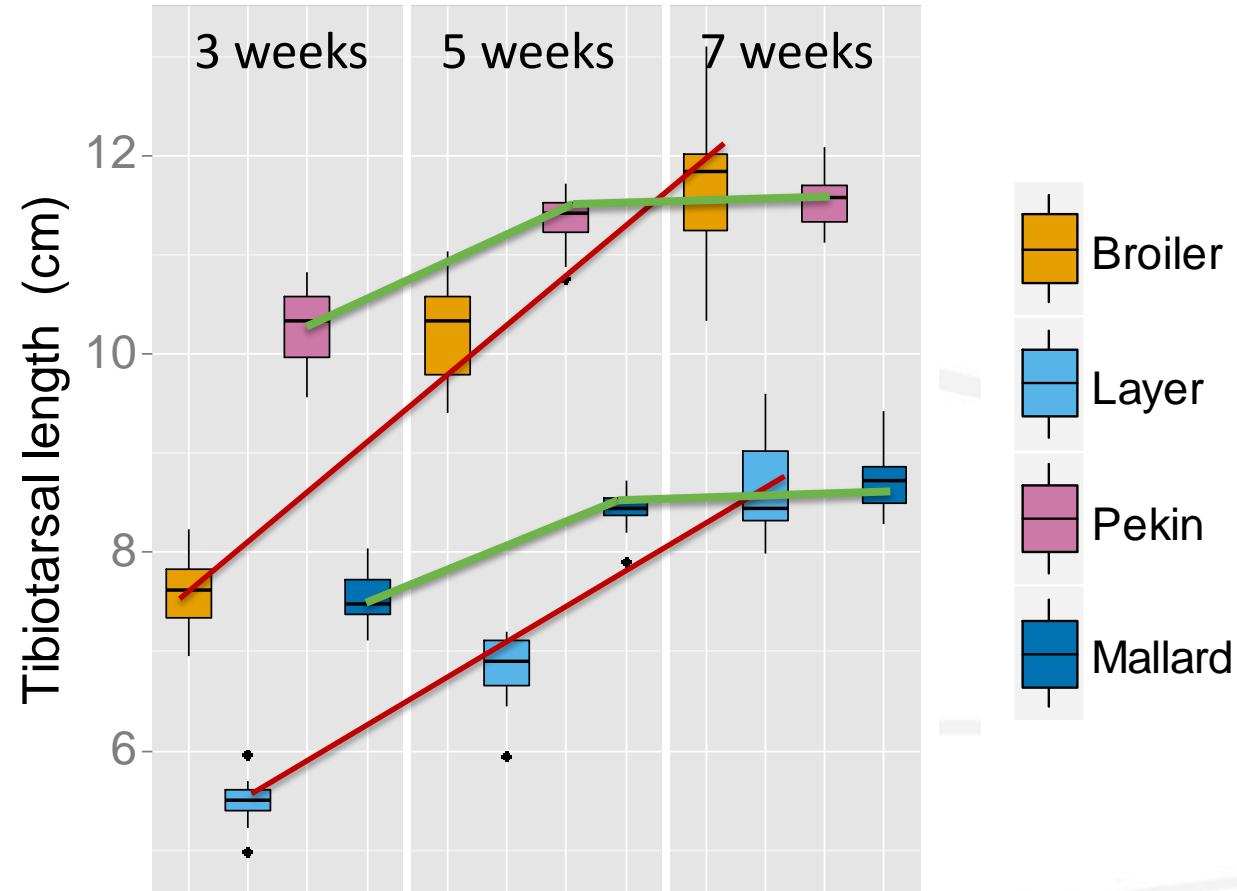
Growth rates



Bone morphology by CT



Early leg growth in ducks



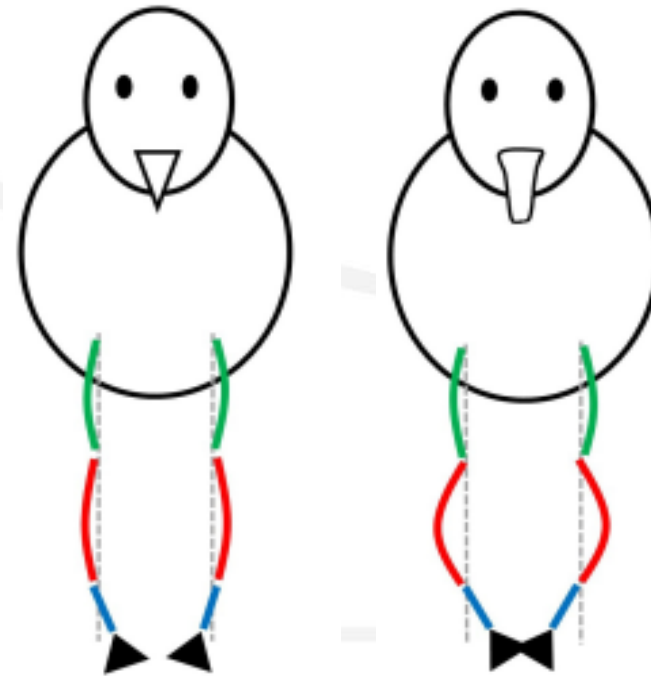
Duck legs reach adult size by 5 weeks

Bone curvature

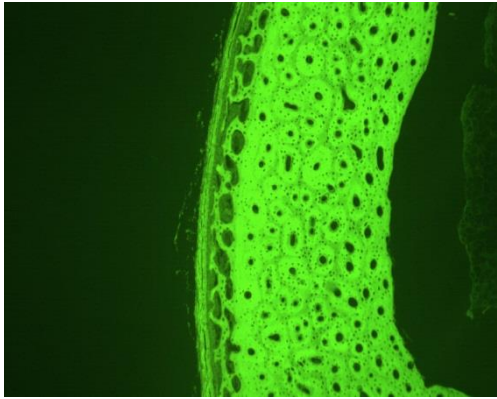


Chicken

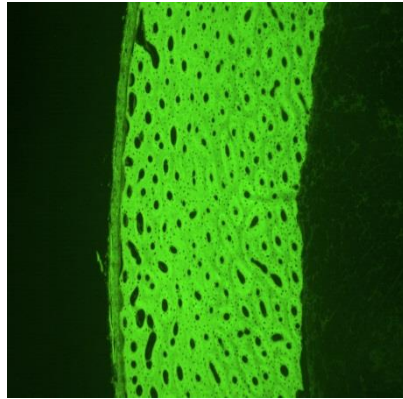
Duck



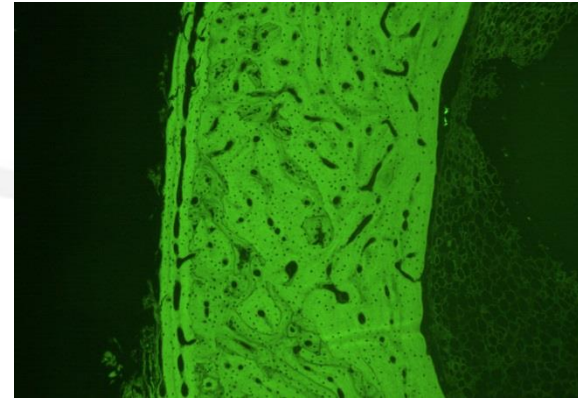
Ducks legs curve inward, moving feet medially



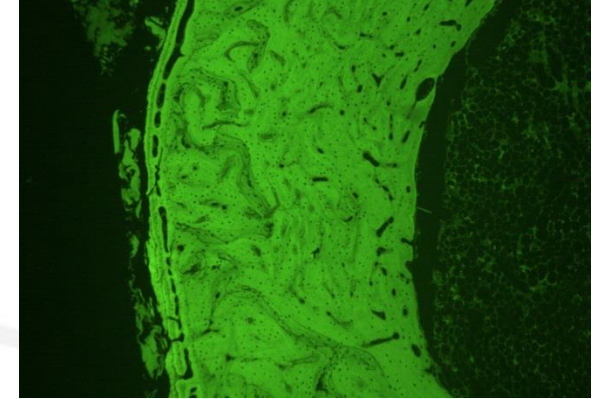
Layer chicken



Broiler chicken



Pekin duck

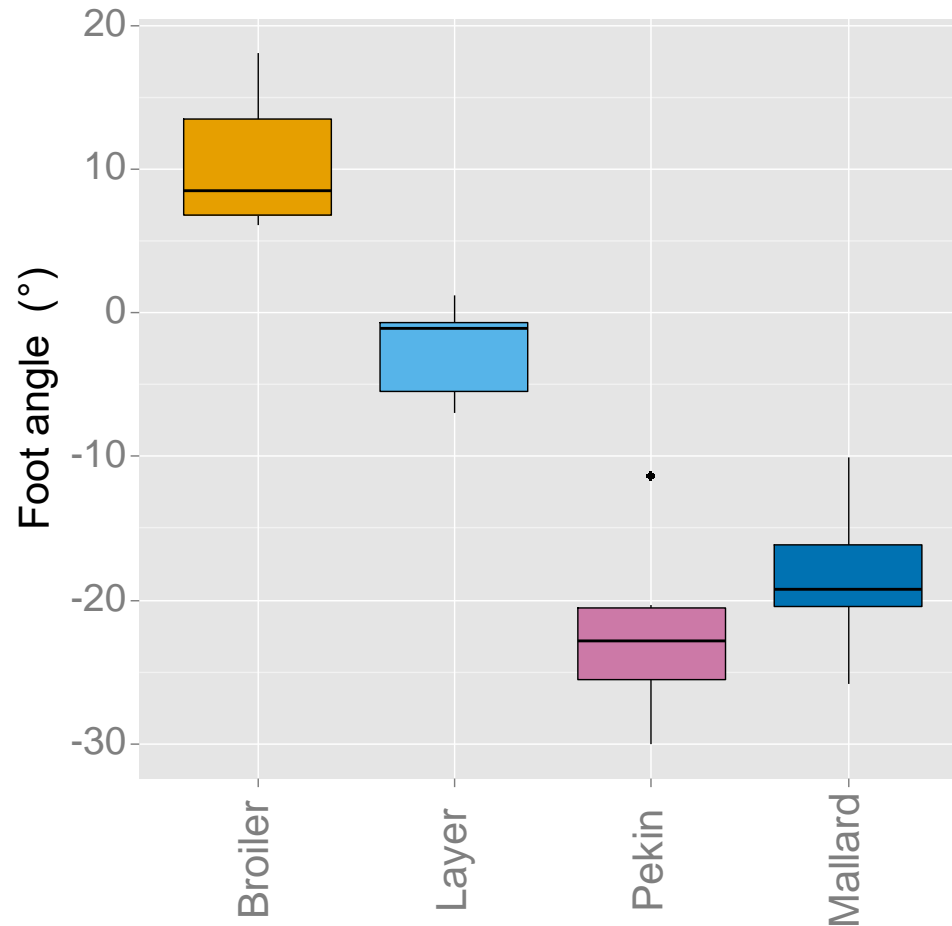
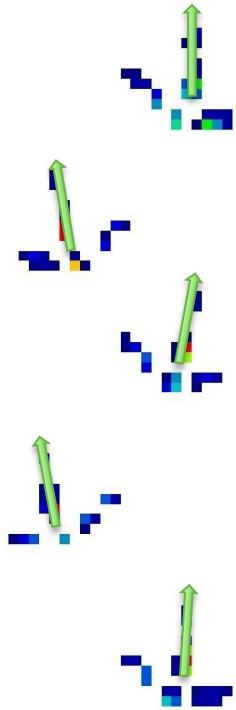


Mallard duck

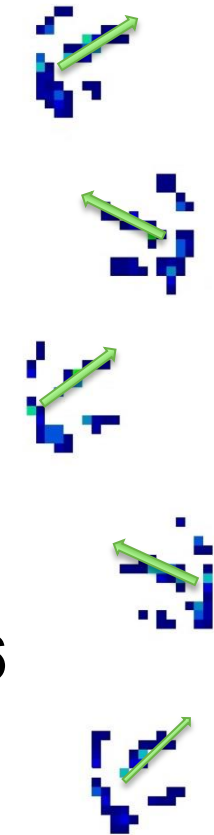
Duck bones, which are relatively stronger,
have irregular cortical arrangement

Foot angle at 7 weeks

7 week
broiler



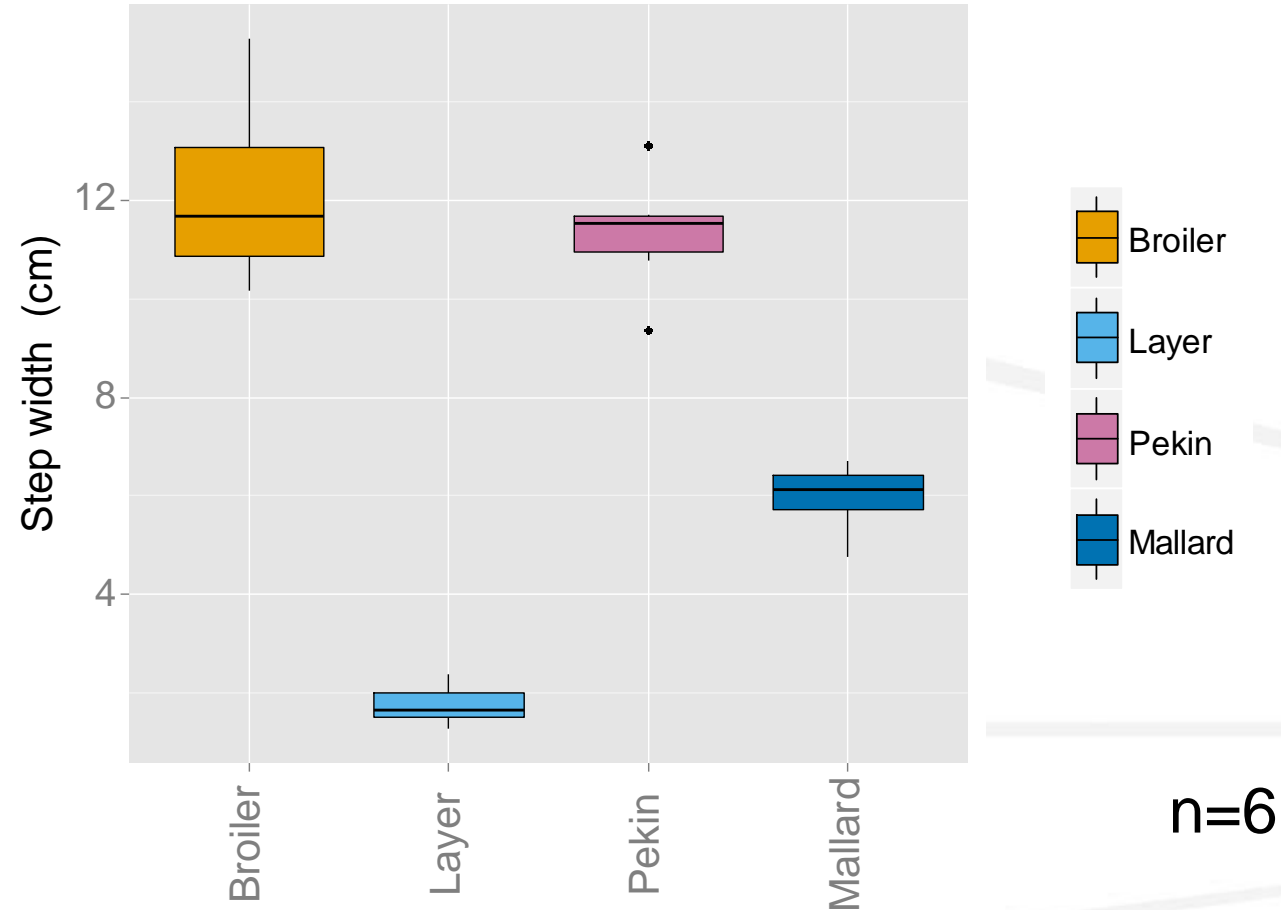
7 week
Pekin



n=6

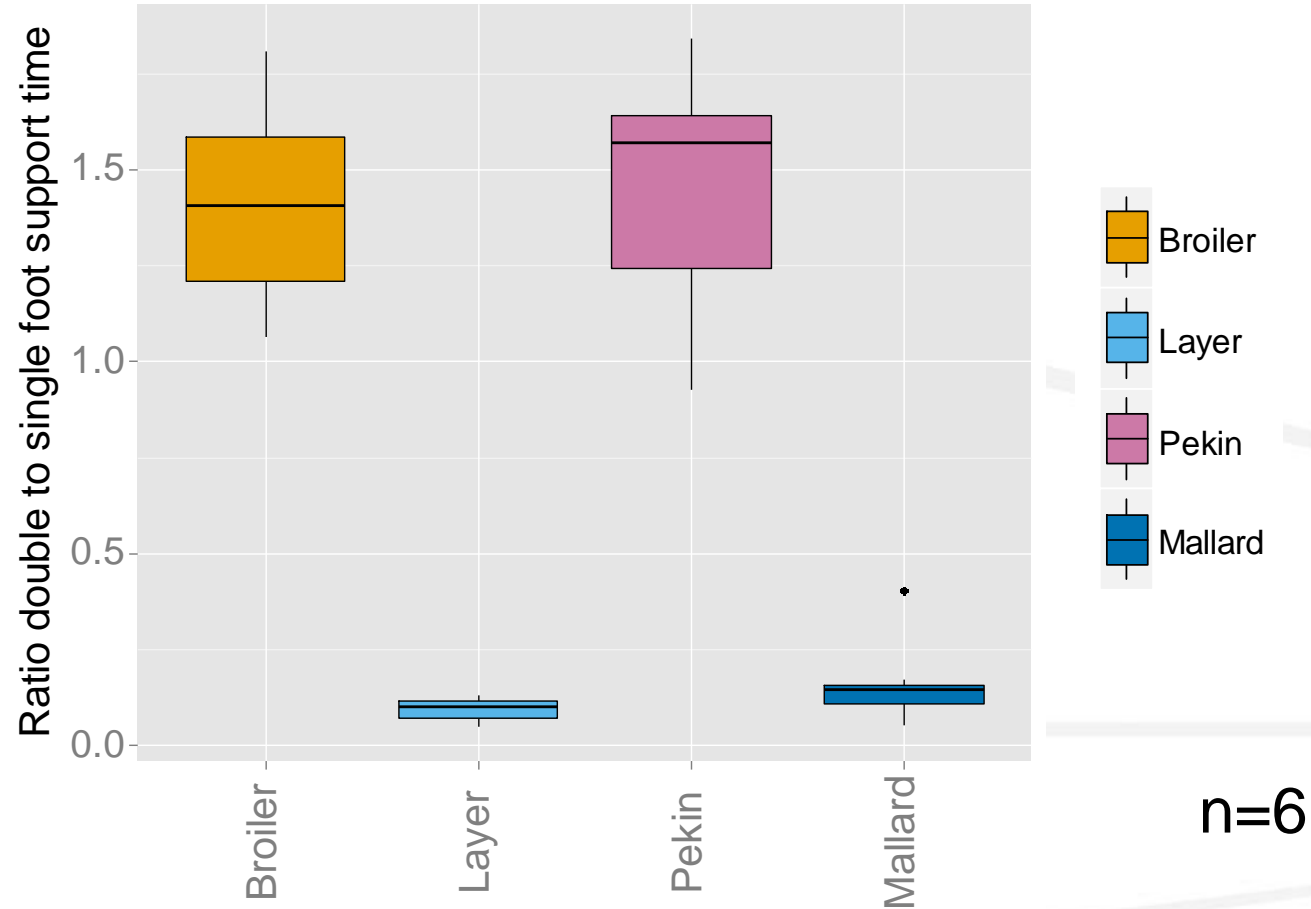
Duck feet turn inwards

Step width at 7 weeks



Heavier lines have wider steps

Foot support at 7 weeks



Heavier lines spend more time on both feet

- Will a more focussed visual gait score lead to higher heritabilities?
- 5000 pedigreed birds were scored using both the standard visual gait score and gait components
- Gait components have heritabilities which are as good or better than the standard gait score



- Ducks may not be ideally adapted for walking on land
- Gait has changed through selection
 - but the 'ideal' gait is unknown
- Gait components have better heritabilities than the overall gait score

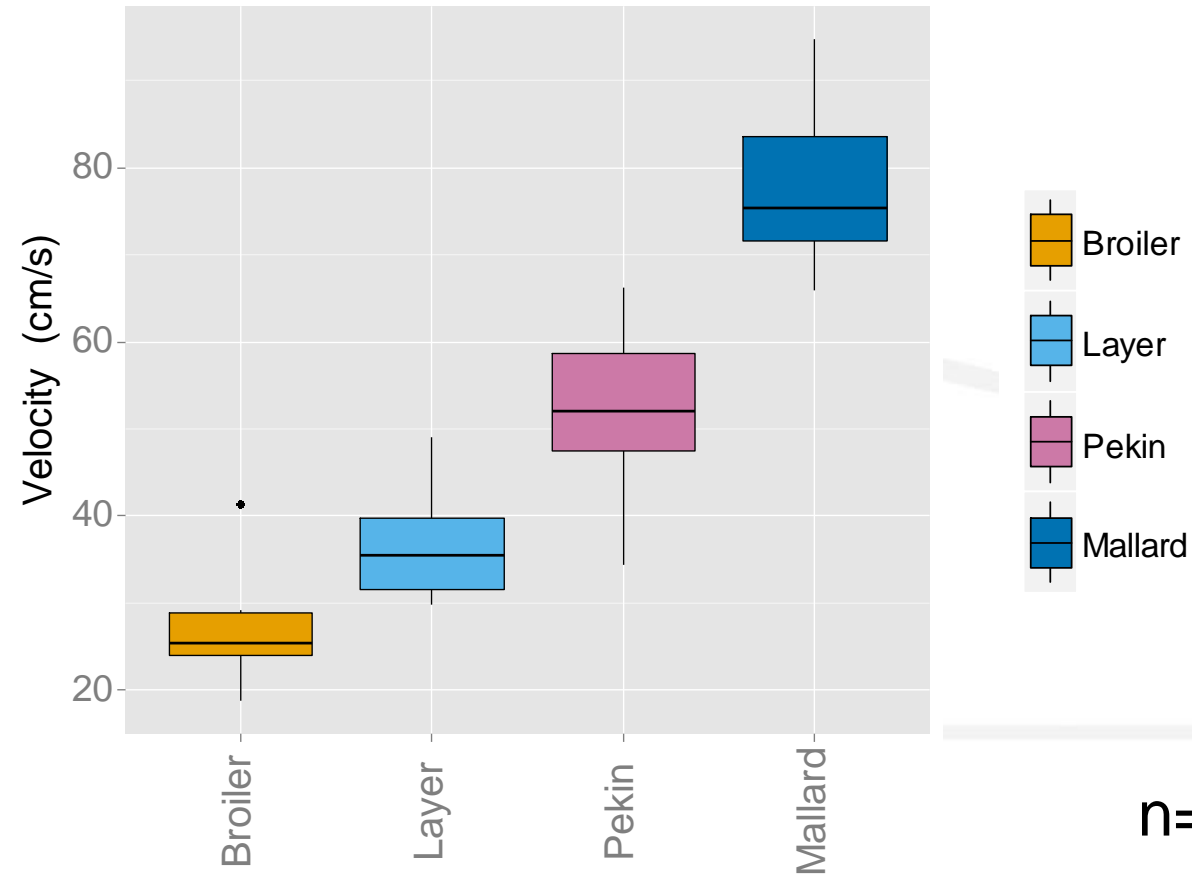


Thanks to

- Paul Hocking and Dylan Clements
- Graeme Robertson, Tobias Schwarz, Bob Fleming,
Norrie Russell, Willie Stewart
- Anne Rae & farm staff at Cherry Valley Farms



Velocity at 7 weeks



Each line has its own 'comfortable' velocity range