

RSPCA Australia Scholarships

Progress Report 2018

This form should be used for progress reports by recipients of the RSPCA Australia Alan White Scholarship for Animal Welfare or the RSPCA Australia Scholarship for Humane Animal Production Research.

Please **type** in the boxes provided. Completed reports should be forwarded by email (PDF format) to science@rspca.org.au.

If you require further information regarding your report please contact RSPCA Australia at science@rspca.org.au, phone (02) 6282 8300, fax (02) 6282 8311.

Reports are due by Friday 28 September 2018.

Contact Details

Name	Danielle Phibbs
Email address	danielle.phibbs@sydney.edu.au

Scholarship type (please tick)

	RSPCA Australia Alan White Scholarship for Animal Welfare
✓	RSPCA Australia Scholarship for Humane Animal Production Research

Project title

Exploring the value of perches on leg strength in fast growing meat chickens.

Project description

Aims

1. Assessment of the effect of perches on the leg strength of meat chickens housed in floor pens.
2. Identifying the effect that perch space, and the activities induced by the presence of a perch, have on the leg strength of chickens.

Methods

This project will be comprised of three animal trials, below is a brief explanation of each:

Experiment 1 - March-April 2018:

Chicks were randomly allocated to pens at one day old, with 6 floor-pens allocated to each of the following 4 treatments:

- A) Cobb 500 birds no perch.
- B) Cobb 500 birds with access to perch space of 47.6m per 1000 birds.
- C) Ross 308 birds no perch.
- D) Ross 308 birds with access to perch space of 47.6m per 1000 birds.

There were 42 birds per pen and 24 pens total, requiring 1008 chickens.

Experiment 2 - September-October 2018:

Chicks were randomly allocated to pens at one day old, with 6 floor-pens allocated to each of the following 4 treatments:

- A) Cobb 500 birds with access to perch space of 2.7m per 1000 birds.
- B) Cobb 500 birds with access to perch space of 5m per 1000 birds.
- C) Cobb 500 birds with access to perch space of 47.6m per 1000 birds.
- D) Cobb 500 birds with no perch.

There were 84 birds per pen and 24 pens total, requiring 2016 chickens.

Experiment 3 - timing/methods tentative subject to results from 1 and 2:

Chicks will be randomly allocated to pens at one day old, with 6 floor-pens allocated to each of the following 5 treatments:

- A) No perch.
- B) A-frame open perch that the bird can perch on and walk under/around.
- C) Open perch structure that the bird can walk under and around but that prevents perching (identifying the role of the structure as a barrier the bird needs to navigate around).
- D) Barrier perch structure that the bird can perch on but cannot walk under (identifying the role of the act of perching, but not navigation under the perch).
- E) Barrier perch structure that the bird can neither perch on or nor walk under, identifying the role of a perch as a barrier that the bird needs to navigate around.

Number of chickens required for this experiment to be confirmed.

For each of the above experiments, the following conditions will be true:

- Birds used for the studies will be mixed sexed.
- The stocking density will be approximately 28kg/m² when birds are 42 days old.
- Lighting pattern will reflect that used in the industry.
- Birds will be fed a commercially available feed.

For each of the above experiments, the following data will be collected:

- The number of birds on a perch will be recorded for each pen on alternate days at 9am, 11am, 1pm, 3pm and 5pm.
- Activity and spatial distribution data will also be collected at the above time points, and may involve photos and video recordings.
- Bird performance including body weight, feed intake and feed conversion ratio will be determined.
- Mortalities and culled birds will be recorded, the cause of death/culling identified.
- Litter moisture/quality will be determined when the birds are 2, 4 and 6 weeks of age.
- At 5 and 6 weeks of age bird leg health will be assessed through the following methods:
 - Latency to lie testing in 9 visually male birds/pen (54 birds per treatment).
 - Assessment of leg symmetry, hock bruising (HB), footpad dermatitis (FPD) and breast blisters at 5 weeks of age, and additionally for detached femoral articular caps (DC), femoral head necrosis (FHN), tibial dyschondroplasia (TD) at 6 weeks of age.
 - Blood taken to assess mineral - Ca, P and Mg, levels.
- Following observations in week 5 birds will be returned to their pen. At week 6, birds will be euthanized and a sample of toe collected to measure toe ash.

Results (to date)

To date, only results for experiment one have been fully collected and analysed. They are as follows.

Perch use was observed throughout the study from day 6 up until day 42 with an average of 1.25% of birds on the perch at any given time point (inclusive of upper and lower perch). Perch use peaked at day 38 and in the final weeks of the growing period when males were visually distinguishable from females, females showed a greater preference for perch use than males ($p < 0.001$). Perches did not impact the spatial distribution of the birds in the pens ($p = 0.78$), nor did they interact with litter moisture levels ($p = 0.059$). In terms of production, bird weights were not impacted by the presence of perches ($p = 0.475$), nor strain ($p = 0.186$). There was a notable effect of bird strain on activity distribution, with Cobb birds observed resting less than Ross ($p = 0.001$). There was no difference in feeding or drinking levels between strains, nor was there an effect of perches. Total mortality throughout the study was 2.9%.

In this study, the presence of perches had minimal impact on leg health. LTL times were long overall, with no increase in birds given access to perches at either day 35 ($p = 0.58$) or 42 ($p = 0.87$) of the experiment. There was some effect of perches on serum mineral levels, with serum magnesium in Cobb birds lower when given access to perches both at 35 days ($p = 0.01$) and 42 days old ($p = 0.001$). This result was mimicked by serum phosphorus at 35 days only ($p = 0.033$). In Ross birds, serum calcium was lower at 42 days for birds with access to perches ($p = 0.047$) whilst calcium and magnesium showed no change. There was little significance amongst the physiological observations of leg health, although Ross birds showed a slightly greater predisposition for footpad dermatitis than Cobb birds both at day 35 ($p = 0.031$) and 42 ($p = 0.045$). Overall, birds had healthy legs with prevalence of tibial dyschondroplasia particularly low, present in only 0.5% birds sampled.

Next steps

Results of this study were contradictory to preliminary work and are being retested in experiment 2. Currently underway, experiment 2 is going ahead as outlined above and will further seek to test the relationship between the amount of perch space provided and any potential physiological benefits they may have.