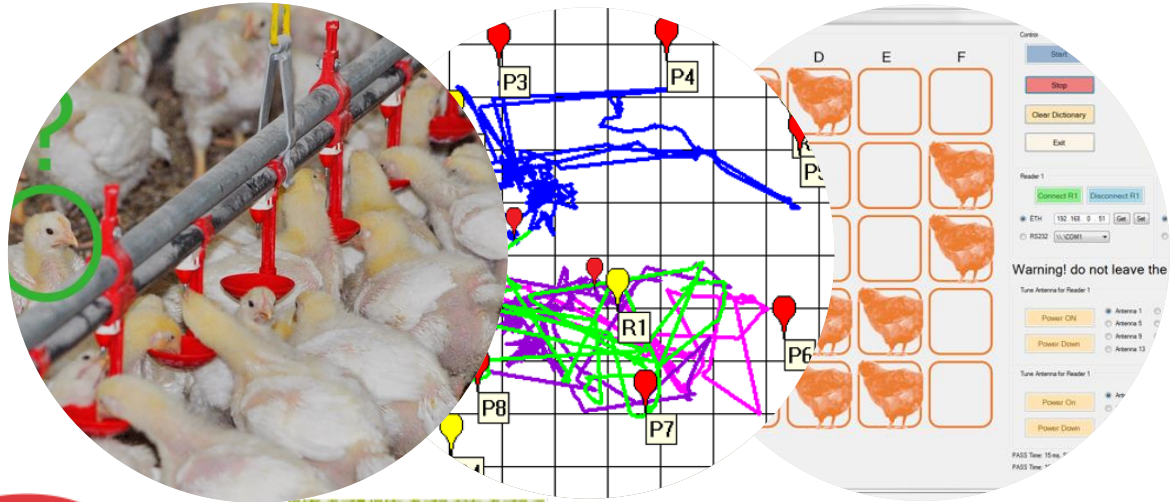


On-farm automated tracking of group-housed poultry

EAAP, August 26th 2019

Esther D. Ellen, Malou van der Sluis, Britt de Klerk, Yvette de Haas, Thijme Hijink, T. Bas Rodenburg



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- Malou van der Sluis



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- Data collection





Challenges

Identification



Monitoring

- Activity
- Behaviour
- Health

Monitoring group-housed animals

- Often video used
(Catarinucci et al., 2014)
 - Time-consuming
 - Prone to human error



➤ Automated systems to monitor individual animals are needed

Solution: sensor approaches

- Body-worn sensors:

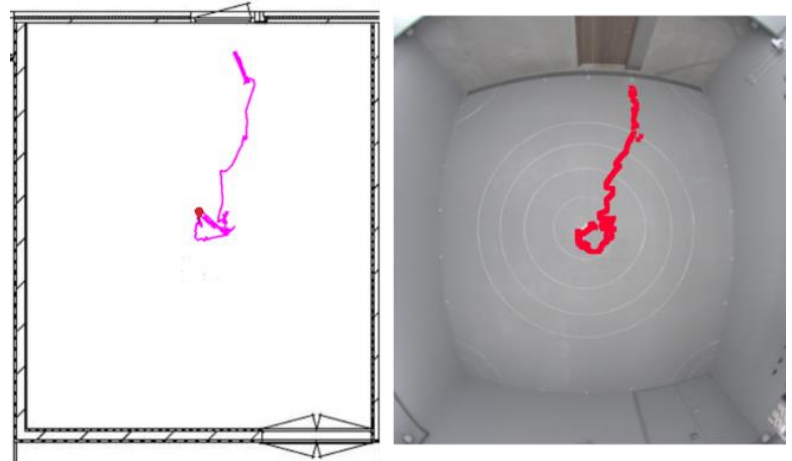


Radio frequency identification (RFID)

UWB tracking

Ultra-wideband (UWB) tracking

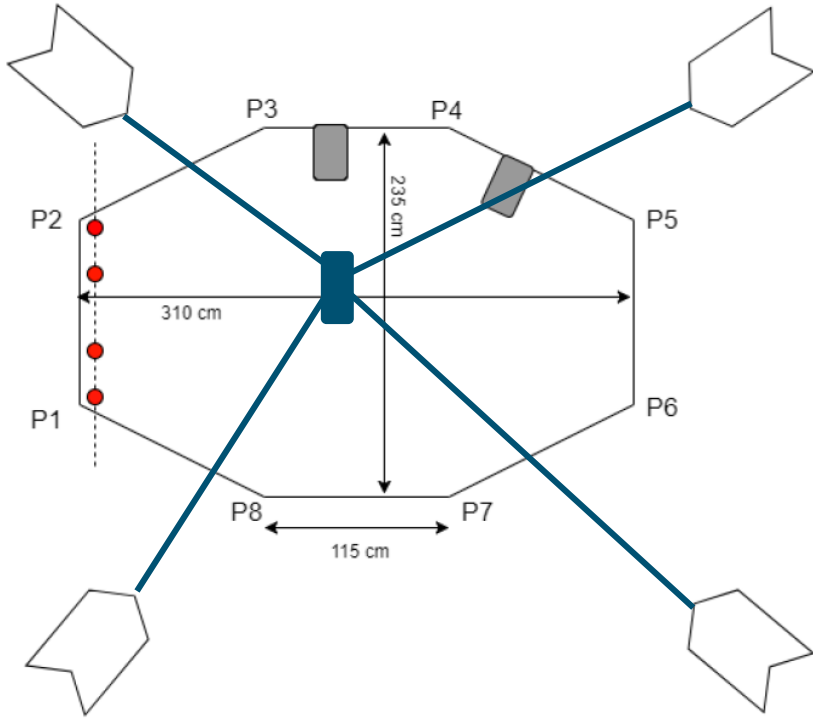
- Tag: 3.8 x 3.9 cm, ~ 25 g
- 4 beacons in corners
- Output: Coordinates



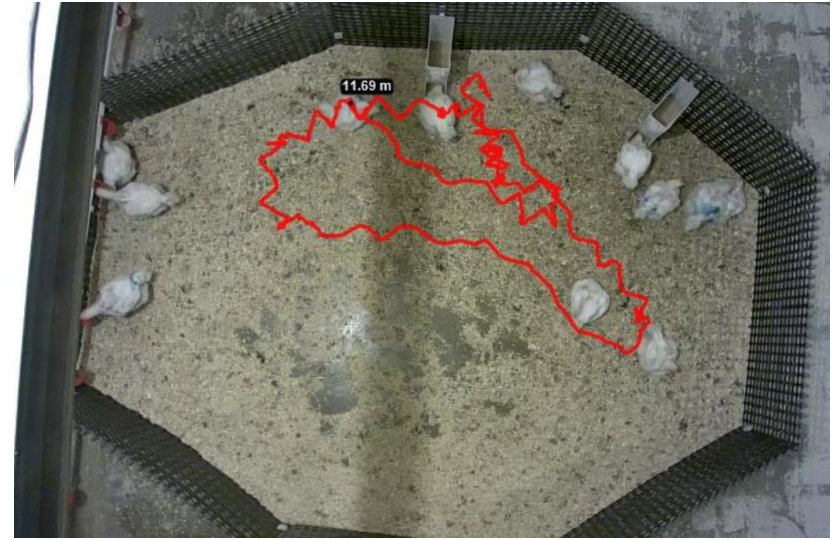
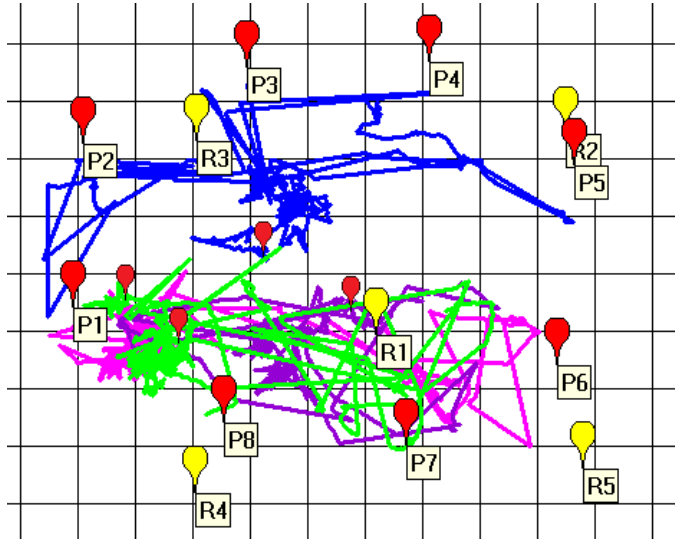
Detection of bird's location:
85% accuracy (Rodenburg et al., 2017)

Objective: To apply UWB tracking on a broiler farm to assess its on-farm applicability

Experimental design



Validation UWB system



Distance moved: correlation = 0.71 (van der Sluis et al., 2019)

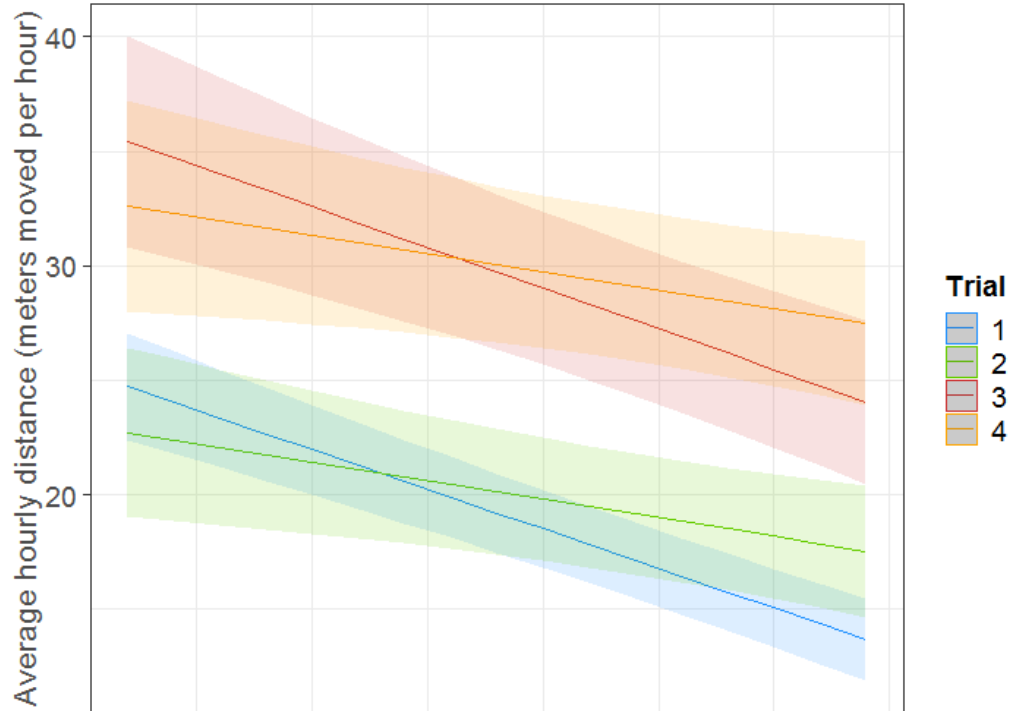
Material

Trial	Start (days)	Finish (days)	Weight category	# tagged birds	Start weight	End weight
1	13	34	Light	16	420 ± 5	2435 ± 43
			Heavy	16	520 ± 4	2635 ± 60
2	13	33	Light	18	485 ± 7	2450 ± 34
			Heavy	17	595 ± 6	2680 ± 45
3	14	35	Light	15	480 ± 12	2500 ± 55
			Heavy	20	630 ± 6	2715 ± 71
4	13	35	Light	17	340 ± 17	2155 ± 78
			Heavy	18	460 ± 5	2520 ± 32



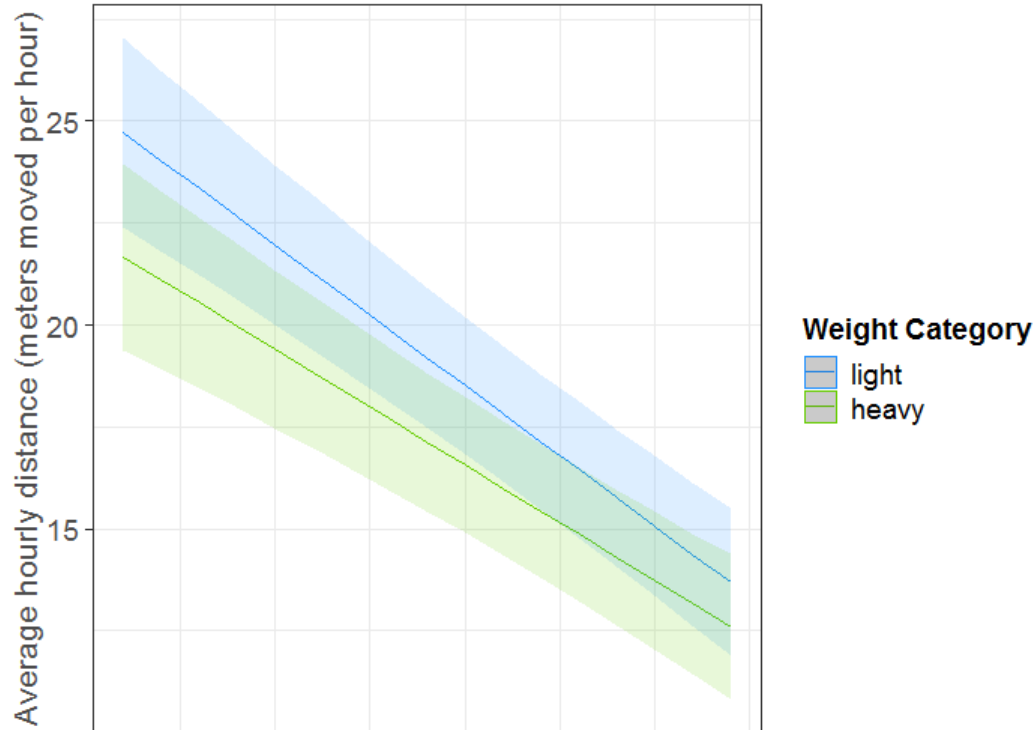
Trait: Activity  average distance moved per hour

Results – effect of trial



Activity decreases over time

Results – effect of weight category



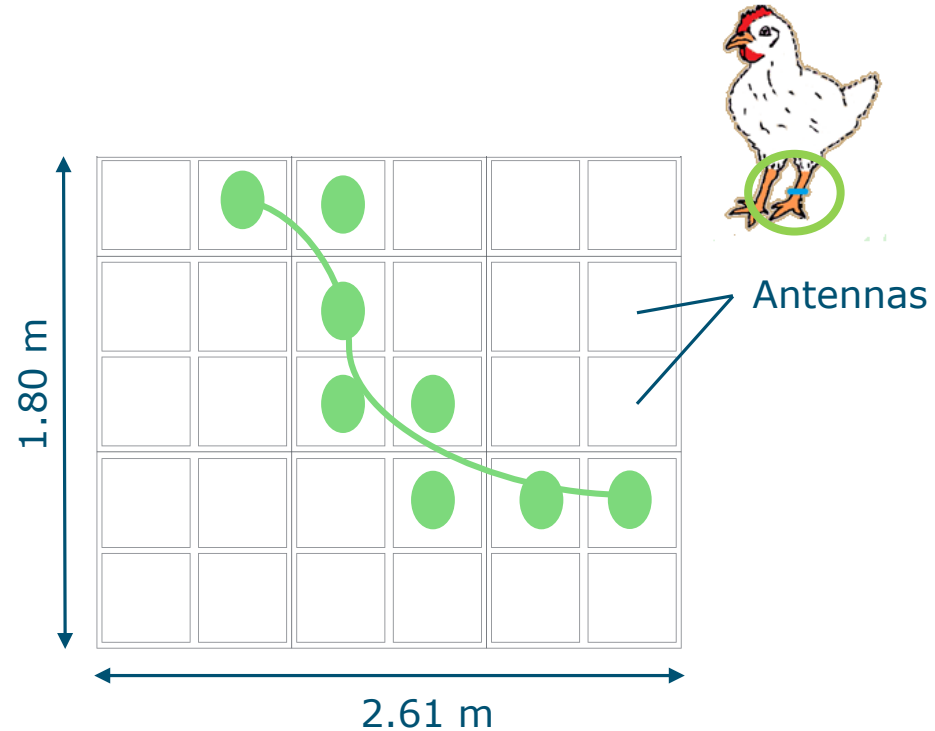
Light weight birds are more active

Discussion

- UWB system well suited to
 - Track birds
 - Measure activity
- Tags are relatively heavy
 - Monitoring from about two weeks old
- Accuracy of the system estimated at about 30 cm

Future

- Use of passive radio frequency identification (RFID) system
 - Start from day 1
- Relation between activity and health related traits
- Use of video images
- Application to larger groups



Take home message

- Longitudinal individual data on location & activity
- Less time and labour required
- Future application
 - Detection of illness or leg problems
 - Larger groups



Email: esther.ellen@wur.nl