

Minutes of NC-1029 Meeting
May 25-26, 2010
Washington State University, Pullman, WA

Participants

Cassandra Tucker (University of California-Davis), **Joy Mench** (University of California-Davis), **Lily Edwards** (Kansas State University), **Brenda Alexander** (University of Wyoming), **Ernie Minton** (Kansas State University), **Ruth Newberry** (Washington State University), **Janice Siegford** (Michigan State University), **Marcia Endres** (University of Minnesota)

Minutes

1. Introductions

- a. The Chair, Ruth Newberry, called the meeting to order, welcomed participants, and made introductory remarks. Participants introduced themselves.
- b. Dr. Dan Bernardo (Dean, College of Agricultural, Human & Natural Resource Sciences) and Dr. Margaret Benson (Chair, Dept. of Animal Sciences) welcomed the group to Washington State University and Pullman. Dr. Bernardo indicated that they have strong programs in Veterinary Medicine and Animal Sciences. He noted the importance of studies on animal behavior and well-being to animal agriculture and animal science. Washington has a 2 billion dollar animal industry, with dairy as the largest animal commodity. Addressing animal welfare and environmental issues is important for sustainability of animal industries in the state, and the general public has an impact on how animals are housed and handled. Dr. Benson indicated they have 18 faculty in Animal Sciences, including recently hired faculty members in reproductive biology (Jim Pru) and dairy systems management (Jude Capper). A chair in beef cattle research, plus another ag position in the department, have been approved for hiring. They have 230-250 undergraduate majors (80% pre-vet, urban and female). Exit interviews indicate a lot of interest in animal welfare. She noted a need more people in this area, which is very important to students. Research and industries in the state are very diverse – extensive/intensive, large/small, organic/conventional – and need to make good decisions on animal well-being based on science. She noted that animal welfare needs to be part of the discussion when we talk about animal production, and that producers are willing and wanting to do the right thing.

2. Administrative report

- NIMSS update— Ernie Minton
- Our committee is organized out of the North Central region, so it is called NC1029, even though is national in scope.
- Need to start the rewrite process, even though project ends September 2011
- September 15, 2010 we need to start the renewal proposal process and submit to NIMSS
- There are 25 members in the project, question on how many will be actively involved
- There is not an specific plan from NIFA about participation of PIs in the committee
- Need to discuss what to accomplish, etc, topic in the agenda later today

3. Station reports

a. Michigan State University (MSU) – Janice Siegford

- J. Swanson is now interim Department chair. PhD Student starting in the fall. She will also have a post doc and research associate soon.
- Working on activity monitoring in poultry along with Siegford and Mench.
- J. Siegford has 2 MS and one PhD, and is leading a study to develop an automated tracking and behavioral monitoring system for laying hens in cage-free housing. J. Siegford is conducting research on temperament, maternal behavior, phenotype and genotype in beef cattle, pasture based dairy with voluntary milking, exit blocking and milking frequently; wireless bird monitoring (AFRI grant) correlating with video, detecting location and activity.
- C. Heleski has one PhD who just finished and one MS defending this fall. Training methods of donkeys in Mali, animal welfare assessment in the ground. Urban equine issues, comparing developed vs. developing world.
- The group hosted another successful Animal Welfare Judging and Assessment Competition, including veterinary school teams for the first time. Multiple NC-1029 members are involved in training participants and acting as judges for this annual competition. 2010 is the 10th year anniversary – competition held Nov 20-21, 2010.
- Teaching – Siegford: Ethics in Animal agriculture, animal welfare assessment online course, applied animal behavior face-to-face undergraduate. Heleski: intro and animal welfare judging, horse behavior
- Fear testing for swine started at Purdue, then Guelph, then IA State, then Michigan State. Manuscript draft being written by Marchant-Forde.

b. University of Wyoming – Brenda Alexander

- Focus on male reproductive behavior, especially sheep
- 23-40% of rams are ineffective breeders
- Identification of developmental processes which influence expression of reproductive behavior, plus neuroendocrine function
- Genetic identification of poor sexually performing rams to enhance profitability of small flocks (USDA small ranch grant)
- Identification of production traits predictors of sexual performance to calculate an index. Used ADG and behavior (Grow-Safe)
- Highly sexually performing rams visit feed source more than low sexually performing rams
- Studied oxytocin effect on investigatory behavior (hamsters), but micro-array data did not indicate any differences in oxytocin concentrations
- On farm study indicated a large variation on how many ewes were bred by each ram; highly sexually rams compensate for low ones in mid size flocks; more of a problem in very large or small flocks
- Effect of progesterone in the male, it has been shown to restore male behavior in castrated male rats

c. Kansas State University – Lily Edwards

- Research on lactate analysis and physiology (treadmill and feed withdrawal) – what is the lactate threshold, what is the optimum way to handle pigs at packing

plant to reduce lactate levels; feed withdrawal at different times, measuring lactate, behavior, meat quality

- Humane on-farm euthanasia for piglets – hyobaric hypoxia; collaborative grant with Colorado State University, chamber is at Colorado State but should be moved to Kansas; will try to do EEGs; MS student working on this project. Another round of funding from Pork Producers will be requested later this year for continuing the work.
 - Pain control in castration of stocker calves, using Meloxicam
 - EEG during castration in dairy calves; USDA grant; castration at three different ages, different methods of castration. Question on methodology – is EEG the best way of evaluating pain? Maybe measuring more perception of pain, rather than physiological differences. They are also taking many other measurements, such as cortisol concentrations, behavior during and after, etc. EEG is more exploratory, need to evaluate how it would work.
 - Course on Behavior of Domestic Animals (AnSc655), 70 students, fall semester
 - Course on Contemporary Issues (AnSc595), use of video, 17 students
- d. University of Minnesota – Marcia Endres
- Y. Li is conducting a study assessing fearfulness of gestating sows. They found that sows in late gestation were more fearful than sows in early gestation. There was no difference in fear score between young (parity 1-5) and old (parity 6-9) sows. These results indicate that gestation stage affected fear response in sows, which may be associated with changes in hormone profile during gestation.
 - Other studies included effect of parity on pre-weaning mortality and growth performance of piglets in a bedded, group farrowing system, effect of lactation housing (group or stalls) on growth performance of pigs, and effects of previous housing in large groups on behavior of growing pigs at mixing.
 - M. Endres is investigating the use of thermography for early detection of hoof problems in lactating cows, optimal use of separated manure solids for bedding freestalls, welfare in cross-ventilated freestall barns and compost bedded pack barns, mortality risk factors in dairy herds, and validation of an automated feeding behavior system for freestall housed dairy cattle.
 - Course on Animals and Society, including modules on animal welfare, had about 230 students enrolled this year.
- e. Washington State University – Ruth Newberry
- Chickens – Work on how environmental enrichment and play behavior impact responses to alarming situations, investigating the ‘training for the unexpected’ hypothesis for play. Cage study – gave chickens worm-like objects and swinging perches. Fear tests – tonic immobility, open field, toss mealworm (novel object), inversion test (count wing flaps). Factor analysis, but questions about interpretation – factors could be active and passive fear responses, and bold response. No robust effect of treatments across age (5 and 10 weeks of age). Effect on growth rate by giving the mealworms.
 - Pigs – Work on bark vocalizations, usually given in alarm situations. Open the gate and let pigs run on straw in the walkway to promote play and detect vocalizations associated with positive events.

- S. Cloutier is investigating social play and playful handling by humans (tickling) as methods of social enrichment for laboratory rats. Assessment incorporates tests of anxiety including the open field, emergence, elevated plus maze, cat odor, and human approach tests.
- f. University of California, Davis – Cassandra Tucker
- Research on how cattle interact with their environment, including weather (heat stress, mud), design of freestalls, play behavior.
 - Course on Domestic Animal Behavior and another course on Methods.
 - On-farm assessment of welfare, National FARM Dairy Well-Being Program, workshops on guidelines for welfare are being currently presented
- g. University of California, Davis – Joy Mench
- Diverse research program with laboratory animals and poultry
 - Fear test with broiler and laying hens, Greg Archer, post-doc – hens genetic differences on fear responses; broilers, lighting effects.
 - Effect of light stimulation during incubation, development of fetus
 - UC-Davis is a repository of genetic stocks for chickens, investigated 7 genotypes
 - Used fear tests suggested by committee, but included others. Immobility test, inversion test (see how much they wing flap). On tonic immobility, jungle fowl seemed to be less fearful, domestic birds more fearful. Inversion test, opposite responses.
 - Conducted factor analysis to find out how the various measurements correlated or how they varied depending on the strains.
 - Varying the photoperiod for incubation period resulted in significant responses to approach test and chute test (from dark to wide open lighted area) with broiler chickens incubated in the dark with post-hatch photoperiods, little effect of post-hatch. Light/dark stimulation (12/12) during incubation resulted in reduced fear levels compared to all dark.
 - On naturally nesting chickens, they observed that some hens did not leave the nest to eat or drink for 14 days.
- 2) Discussion on completion of current NC1029 objectives
- a. Pigs
- Testing has been completed at Purdue University, University of Guelph, Michigan State University, and Iowa State University.
 - Marchant-Forde solicited data for the manuscript from all participants and he is going to write the materials and methods. Garner is performing statistics. Other participants will help with introduction, results and discussion. Goal is to submit for publication in the Journal of Animal Science.
- b. Poultry
- Newberry and Mench could submit a manuscript on the factor analysis overall for poultry or alternatively combine all three animal categories (swine, poultry and goats).
 - Additional publications from their individual studies on fear in poultry.
- c. Ruminants (Goats)

- L. Katz and J. Mench have conducted fear testing of goats. A manuscript on their study will be submitted.
- Endres, Siegford and Tucker discussed last year the possibility of cattle testing and decided that it was beyond the scope of the current project.
- d. Greg Archer (UC-Davis post-doc) could potentially take the lead in writing a synthesis manuscript including all animal categories.
- e. Experimental manuscripts should be submitted first. Goal is to submit the experimental poultry work by May 2011 (Newberry); swine work by May 2011? (Siegford will check with Marchant-Forde); writing up poultry work from UC-Davis depends on Greg's schedule.
- f. Fear test overall summarization could be submitted for board review article in Journal of Animal Science. Extension article also desirable by end of current project (Sept. 30, 2011).

3) Future plans for committee

- a. Renewal of committee and discussion of future objectives
 - Issue and justification statement needs to be submitted by September 15, 2010. Statement of issues: based on needs from stakeholders, impacts, outcomes, etc, 20,000 characters maximum. Couple of pages might be sufficient. We need to justify objectives.
 - Submission of objectives by October 15, 2010
 - Submission of appendix E by November 15, 2010
 - Submission of full proposal by December 1, 2010. That should include a literature review (previous proposal was one page), methods section (most extensive), outputs, impacts.
 - Where do we already have synergy and collaborations going on that we could develop further into objectives for the renewal project?
 - Optimization of housing and management systems for improved well-being could be a potential area of effort
 - Should we have veterinarians on the committee? Engagement with veterinarians in relation to animal welfare would be important for the livestock industry
 - On-farm animal welfare assessment and management tools could be a focus for the rewrite too. This could include development, validation, training for proper implementation, and guidance on interpretation of results. This theme would provide opportunities for research and extension.
 - Validation and use of non-invasive automated methods for measuring welfare/behavior.
 - Mench and Siegford to contact poultry participants to generate a paragraph on possible collaborations, Endres and Tucker on dairy, Johnson on swine. Submit to the whole group prior to ASAS/ADSA/PSA meetings.
 - Tuesday, July 13, 12:30 p.m., our committee will meet in the behavior session presentation room to define overarching objectives for the proposal renewal.
 - Email entire group that we would like to have broad objectives (like NC1022, i.e.) for the new project.

4) Business meeting

a. Elections

- M. Endres was elected to succeed R. Newberry as Chair.
- A. Johnson was elected to succeed M. Endres as Secretary.

b. Scheduling the 2011 meeting

- Possible options:
 - ❖ Have it in combination with WAFL (August 8-11, 2011) or ISAE
 - ❖ In Minnesota in or near U of M campus
 - ❖ Poll participants about preferred location at the Denver meeting

c. NIMSS page update

- Content – No change is needed at this time. Changed needed at the rewrite
- Member list and contact information –Minton to inform NIMSS for removal of Inma Estevez and Brad Imvalle