

Meeting Minutes
For
Annual Meeting of Multistate Project S-1076:
Arthropod Management in Animal Agriculture Systems and Impacts on Animal Health and
Food Safety

Orlando, FL, January 12-13 2026

Chair – Brandon Smythe

Vice Chair – Cassandra Olds

Scribe – Phillip Shults

Local Arrangements – Jerry Hogsette

January 13, 2026

8:40 – opening remarks. Gathering attendance. Talking about logistics of how the meeting is going to be run.

Position announcements:

Phil Kaufman – Livestock entomologist position (assistant/associate position)

Erica – Tick rearing manager

Dana – 2 USDA post-doc positions (one virology and one with modeling)

Nancy – UGA has an insect ecologist position

LIWC 2027 Meeting Will be in Santa Fe, New Mexico.

9:00 am

Cliff Lamb - update from an administrative side. It is imperative to get the reports on time this year because of the midterm review. The most important part of the annual report is the accomplishments and impact statements. Also, make sure to include grants and publications. At the meeting, we should discuss who will be responsible for submitting the next proposal in a few years. Ag innovation south puts on an annual workshop for writing impact statements (look for email). Multistate award submitted last year was well received and we were one of the top three submissions. Cliff encourages us to resubmit again this year. Becky is interested in getting us connected with other multistate group interested in our work, especially regarding new world screw worm.

9:15 am

Michelle Colby – email incoming with an overview. Terminology changes are coming with NIFAs grants management updates. 2027-2028 phase in. Sign up for NIFA funding opportunities or subscribe to the weekly update to stay informed for opportunities. AFRI 81713 is new priority research focused on emerging and reemerging disease systems focused on rapid response. This will always be open. Also, looking for reviewers. Annual report wording needs to comply with all executive orders and if you need

help stay compliant with all that nonsense, please reach out to Michelle for guidance. New USDA initiatives dropped and it would be good to know these as you apply for these grants.

9:30 am – Presentations begin – Objective 1

Scott Walters, global satellite engineering (GSE) – giving a presentation on their new software for tracking and monitoring animals mainly. He is interested in how this can be integrated this monitoring with regards to the impacts of new world screw worm. One of the data points is animal to animal interactions.

Cassandra Olds – Stable flies as mechanical vectors of *Theileria orientalis*. Bovine blood parasite transmitted via Asian longhorn tick. Herds are coming up positive for the parasites with the absence of the vector in KS and IA. Collected stable flies from 2 sites and found them to be pcr positive for the parasite near the positive herds. Looking to do transmission studies if funding comes through. All the ducks are being assholes.

Becky - Longhorned tick updates. Has a few publications coming out (please add to annual reports). Great infographics with google notebook lm. Multiple sampling efforts have shown *Theileria* prevalence in managed and wild animals. Investigated the prevalence of the different haplotype, but there seems to be no correlation. Creating a website called vector and vbd watch to get information out directly to the producers including updated distribution maps.

Phillip Shults – utilizing the new *Culicoides* genome. Arranged data in chromosomal format and developed powerful new tools that can now see interactions between genes (and more). Compared gene structure across some species (e.g., *Culicoides* vs mosquitoes) to look at genome evolution across vector groups. Looking into gene structure and why it matters. Module-trait correlations from gene expression (e.g., male and female specific genes). Close to identifying the effector gene controlling sex determination.

Travis Rusch – Thermal ecology of flies. Thermal profile of house fly oviposition is very broad (12.5-42.5 °C) range. However, when given a choice, the range narrows to 26-30°C meaning that they can lay in a variety of temperature, but they have a distinct thermal preference. This will be important for developing predictive models aimed at telling us when and where flies will be present and when reproduction will peak.

Lauren – Assessing stable fly microbiome profiles across various facilities. Performed blood meal analysis from several sites and most samples came up as cattle, except at the safari park which also had pigs. Then ngs meta genomic analysis was done on the gut from stable flies at the same sites. Overall similarity in the taxa among the wild collected flies with the biggest differences seen in the control colony flies. Found several significant pathogenic taxa present.

11:00 am Presentations continue – Objective 2

Cassandra Olds - Stable fly impacts cattle feed lots. There appears to be a lack of correlation between economic thresholds for stable fly treatment don't quite match weight loss. Better quantifying fly worry behaviorally might lead to better and more cost effect pest management. Stable flies make cattle clump in

pens and there was a difference in feeding efficiency between the cow in the inside of the clump vs those on the outside. The outside cattle had similar weight gain, but lower feeding efficiency meaning that more food was needed to achieve the same gains. This equates to a loss of \$70 a head on outside cattle. She suggested changes in how these animals are fed could potentially help mitigate this loss. This is likely a good candidate for an impact statement.

Alec - Spinose ear tick control and potential eradication on a California dairy. These pests are primarily found in free stall dairies. First control efforts using Catron 4 spray which worked well but logistically impractical. Treated tags were used next and these significantly reduced the tick burden on the cattle with much lower hands-on effort and cattle stress.

Ted - Ethiprole as a candidate insecticide for house fly control. This molecule is like Fipronil but more ecological safe and is an interesting active ingredient that could be utilized in veterinary pest control. Performed dose response in of Ethiprole against house flies with electrophysiological data for further examination. Topical applications had the same efficacy as Fipronil, but a small loss in efficacy when applied orally. Data show that Ethiprole is more potent at the nerve level, but an RDL mutation will likely confer resistance though this has never been found in house flies.

1:00 pm Presentations continue – Objective 2

Bethany - Botanical spatial repellents against Culicoides midges in the lab and field. Tested four oils (e.g., patchouli oil, soy bark oil, geranium oil, and amyris oil) for repellency. Compared old lab colony to newer lab colony and found similar responses to repellents. Moved from laboratory trials to field trials, but Bethany had to have back surgery, so much of the midge field season had passed before traps were put in the field. Put repellents around traps (traps had light attractants). Non-significant results for all repellents. Patchouli oil had interesting results, midges seemed to go to patchouli oil, but also all died after 24hrs. Needs more data when able to physically get back into the field.

Dave Boxler - Evaluation of Water-Based Garlic Spray for Pasture fly Control? Long history of use, but does it work – and at what cost? Some interest from organic and small producers. Looked at 5 concentrations (1-25%) over a multiyear period used on cattle. Measured fly reduction against multiple fly species (e.g., horn and stable fly). Results: 1% = ineffective, very short lived; 5-10% = strong immediate repellency, but poor long-term repellency; 15-25% = better short-term repellency, slight improvement in long-term repellency. All garlic treatments were inferior to permethrin (another treatment). Conclusion, effective garlic concentrations are costly.

1:30 pm Becky lead discussion about Medgene (company)

There is interest in creating vaccines (e.g., tick or horn fly vaccine). However, they have no data showing that the vaccines work. There are some positive testimonials, while others are terrible. Many of the positive testimonials are from veterinarians that all went to vet school together. One testimonial video was shown. Becky and collaborators are looking for additional farms for study to test vaccines. Producer is funding the entire project (i.e., provide the vaccine). Will have control plots where no vaccine(s) will be used. Dave Boxler is interested in horned fly vaccine only, but has livestock producers that may be

interested in participating. Karen Poe has some information (possibly) but was not on Zoom at the time of discussion. Concerns for opening ourselves up to litigation from getting involved. Phil Kaufman says ‘as long as you’re willing and ready to turn over the data, you should be okay’. Reach out to Becky if you are interested in joining vaccine studies.

2:00 PM Talks continue – Objective 3

Dana Nayduch (#1) – House fly resistome project updates. Using flies for good, to tell us what is out there in the world. Flies interact with livestock and pickup microbes in the environment, and then used as biosurveillance. Can they tell us about insecticide resistance as well? Collected flies from dairy cattle and beef cattle operations from multiple states. Extract and sequence metagenome and run through pipeline to look at genes (e.g., find insecticide resistance genes). This method helps producers see what is out there before there is a problem (e.g., find pink eye before it infects whole herd). Used to look for hot spots in the country. Second project has military personnel collecting flies. The pipeline also produces maps with hot spots. Map can change inputs to predict different hotspots (e.g., pathogens, resistance of genes) with snippet information using AI. Improve microbial nucleic acid yields with Jimmy’s new device. Still processing fly samples to improve results.

Dana Nayduch (#2) – House flies as sentinels for H5N1 HPAI at CA dairy farms. Received flies from dairies and poultries in California. Did whole genome sequencing of flies and found H5N1 virus in flies. Results lined up that samples came from milk. Probable acquisition from animals and animal excretions or secretions, including milk. Virus culture was not performed, remains TBD. High prevalence of viral RNA in flies from these farms = potential use as sentinels and for surveillance.

Jimmy Pitzer – Evidence for Insecticide Resistance Development in Biting Midges. “Let’s kill bugs...”. Ran field cage trials in Florida to catch wild midges and mosquitos. Then vaporized them with a spray. Tested if midges can become permethrin susceptible. Used a dose range to test effectiveness. Selected resistance for targeted 70%. Results: permethrin susceptibility in wild mosquitoes and biting midges 24-hr mortality; mosquitos = 76% susceptible; midges = 100% susceptible. Midges spend some time in tree refugia where they are not regularly sprayed. Conducted laboratory permethrin selection in *Culicoides sonorensis*. Wild biting midges are more susceptible than wild mosquitos.

Dylan Brown – Mechanisms of Insecticide Resistance in the Poultry Litter Beetle. Looked at metabolic detoxification. PBO reduced Permethrin and Spinosad resistance. DEF reduced Malathion, Spinosad, and Fipronil resistance. Leaning towards cross-resistance for Fipronil. Also looked at target site insensitivity. The full-length acetylcholinesterase and voltage gated sodium channel gene has been sequenced. A unique missense mutation (N1181S) found in vgsc of resistant population. No mutations have been found in AChE yet. Future directions are to test newer chemistries that are relatively non-toxic to mammals and birds. Also currently testing baits as a more target control approach. Also want to sequence the genome of this poultry pest.

Nannan Liu – Insecticide Resistance Surveillance in the Poultry Litter Beetle. Collected beetles in the southeast US. Tested a variety of chemicals on the beetles (permethrin, malathion, imidacloprid, Spinosad, and fipronil). High levels of resistance were observed for most insecticides. Continued work the Chlorantraniliprole and Tetrachlorvinphos.

Objective 4

Tyler Chan – Transgenesis and genetic sexing in stable flies. Trying to create some genetic controls (e.g., knock-in-out). Made brighter flies with new genetic sexing construct including ubiquitous green FP

expression and male-specific red FP expression. Tested 9 protocols and found first successful use of piggyBac transposons in stable flies, first promoter and FP clearly visible at all life stages. Also working on Cas9/sgRNA injections, a protocol for creating gene knockouts in stable flies. Hsp83:zsGreen stable fly line now available with bright constitutive fluorescence, have potential to be used for tracking studies.

4:10 PM Talks continue – Objective 5

Chris Geddin (not a talk) – discussion on shortfall of blood for insects and found a good substitute, spray dried red blood cells and serum, gave about 60% of eggs obtained from cow blood (company is APC). -blow fly artificial diets: easy and expedient, Purina kitten chow (kibbles with water and ager, reach out to Chris for recipe).

Justin Talley (not a talk) – Livestock Entomology webpage updated by Jonathan Cammack. Find new announcements about screw worms. Discussed example of New World Screwworm (Frenzy) that was released claiming to find New World Screwworm on a 4-day old calf. Report was not accurate.

Sonja (not a talk) showed the Texas A&M AgriLife Extension website and held an open discussion. Phil K continued discussion on A&M's involvement in the screwworm project(s). A&M website has a fact sheet on New World Screwworm and some videos. Screwworm.gov is a federal government website that shows the new world screwworm known locations. Screwworm Coalition of Texas is another website with information about new world screwworm. JME (Journal of Medical Entomology) and JEE (Journal of Economic Entomology) co-addition for screwworm articles. Swarm lure 4 is a product being used to attract flies and test for new world screwworm. Updates from AgriLife: eBeam as a potential replacement for gamma radiation in SIT. Intent is to use eBeam to sterilize flies in a similar to Gamma? Will use sister species *Cochliomyia macellaria*. Irradiating 3-5 day old pupae with either low eBeam, high eBeam, or Gamma (Cs-137) radiation and performing tests after adult emergence.

5:30 PM End of meeting!

01/14/26 8:30 AM – Meeting begins

-group photo taken

Talks begin – Objective #5

Erika Machtinger (#1) – Needs assessments of Veterinary Professionals and Pet Owners in the Ohio River Valley. Objectives: evaluate the use of technology to assess fly worry in horses, and to Develop a fly worry ethogram of horses. Put a heart rate monitor and gps collar on horse, as well as an accelerometer and fly spray was wiped onto some (treatment) horses. Observed horse behavior, including tail swishing, which may or may not be indicative of fly presence. Going to connect with Sue McDonnell (UPenn) on developing ethogram and collect year 2 data. Going to include TekScan (a pressure sensor)

Erika Machtinger (#2) – Needs Assessments for Veterinary Professionals. CDC's TECs expand nation's capacity to advance vector-borne disease prevention and control priorities. VectorED Network expansion attempt. Goal: equip veterinarians and pet owners with the knowledge and tools needed for proactive vector-borne disease prevention and management. Developed three different surveys to assess needs and knowledge of both pet owners and vets. Developed the VectorED Network Vector library database.

Alec Gerry (#1) – VetPestX Pesticide Database – Redesigned. Updating product list according to EPA registration (new products, new uses for products, and loss of registration). New view of VetPestX website, developed several new updates (e.g., shows total number of matches for search) based on

feedback received from 2025 S1076 meeting. Goal of website is to match pest products (e.g., pesticide) with pests (e.g., house fly). Now able to provide a review on products at a state level. Everything from website is pulled from the EPA. Will annually rerun the algorithm to ensure VetPestX is updated with the EPA data (i.e., products).

Jordan – Characterize the larval and pupal parasitoids among livestock-dense and livestock-sparse habitats of the *C. macellaria* as a model for NWS potential suppression. Ongoing project: larvicidal efficacy against a nanopesticide formulation against *C. macellaria* as a model for NWS potential suppression. Application to wounds aimed to have less wash off (i.e., cover and stick to wound better in order to kill larva). Neem oil and Doramectin show promising results.

Becky – REEVES: Research and Extension Experience for Veterinary Entomology Students. There is a critical need to train individuals in and for veterinary entomology extension. Program provides several benefits; salary, housing, and opportunity to go to LIWC. (<https://reeu.utk.edu/reeves/>). Sent out a survey and responses largely came back positive, both for students and scholars. Program is a growing success, but looking for more scientists to get involved to keep expanding and growing the program. 2026 is still recruiting with 3 years of funding left.

Xing Ping Hu – No PowerPoint. Take information from research based meeting to public. Used multiple tools. Want to find out what the needs of stakeholders are. #1 timely deliver all the information you have to us (email top choice), #2 don't put any news media in as it comes and goes fast, want the publication instead.

Cassandra Olds – Managing *Theileria orientalis* in cattle herds. Outbreaks in Kansas in late 2024 and Iowa in 2025, both had significant mortality (20%), and both probably had it circulating for years. Loss of appetite is a primary early sign of *Theileria orientalis*. Diseases present differently in mature animals and calves. Calf shipping and weaning time is of primary concern. Additional signs in mature animals included, weight loss, lethargy, and fever. Symptoms in calves include fever, appetite loss (and weight loss), elevated respiratory rate, anemia at later stages. Any immune suppressing event can exacerbate disease or cause relapse (stress is bad!), pregnancy and birth, weaning, shipping, nutrition, other infections, flies, weather. Production losses result in weight loss and reduced milk production. There is no approved anti-theilerial in the US. Things that may work; long-acting oxytetracycline during acute disease to combat secondary infections, banamine (veterinary prescribed) reduces fever and helps with appetite and anti-inflammatory, and importantly keep animals eating! There are some things that do not work, such as Ivermectin. Goal is to get and maintain endemic stability.

Jonathan Cammack – OSU Extension Updates. Two livestock pests accounted for a lot of activity, the Asian longhorned tick, and the New World Screwworm. Conducted a survey project of OK cattle producers regarding ticks; goal is to identify what cattle producers know about ticks, and what they are doing (or not doing) to protect their animals and people from ticks and tick-borne diseases, and use this information to develop targeted Extension materials. Summer 2025 ear tag studies; collected data on the effects on ear tags on horn flies, as well as weight changes across the season for calves. Developed a horn fly management pocket card, meant to give producers some quick information on horn fly management.

Alec Gerry (#2) – New World Screwworm – California efforts. Discussion (not a talk). Obtained funding from California Department of Food and Agriculture to do New World Screwworm work. Developing education and extension documents is part of the project. Cattle and swine movement concerns, as well as equine. Sick animals must be treated in order to be moved within and across states. This has a huge impact on production as some production is done in multiple states for single herds. Have established teams that can meet quickly and develop chains of communication as well as data and treatment resources readily available. Know your legislative liaison.

11:00 AM – Business Meeting

Cassandra – updates: Need materials for report, including publications and reports, and grants. Look for email from Cassandra on instructions and formatting. MUST BE FORMATTED ALL THE SAME.

Brandon – Need to compile notes and compile 2-3 impacts statements from each objective within 30 days of the meeting. Cassandra will move into chair position (5 year position, 2 year vice chair, 2 year chair, and 1 year advisor to mentor vice chair). Hannah Tiffin was nominated as the new vice chair and she accepted.

Where is the next S1076 meeting?

- Phil K volunteered Kerrville, TX
 - stay in local hotel and commute to station each day for meeting.
 - could be in town (San Antonio, Austin)
- Online is an option
- Travis Rusch (USDA Manhattan, KS) is going to be the new secretary (scribe) for 2026.
- Resubmission of grant and new projects (renewing S1076)
 - everyone writes down their projects, but how do we write objectives from all this?
 - need to be able to say “We set out to do ‘this’”, “we accomplished ‘this’”.
 - could create a thematic thread of all the projects to tie them together.
 - capitalized on “invasives”, ticks, flies, etc.,
 - initiatives from Brook Rollins (look up 5 items listed)
 - Animal health and well being
 - purpose of multistate is to do something you cannot accomplish something on your own
 - organizing as a group to pool resources and knowledge, to accomplish shared goals
 - spend more time planning projects (more planning and less talks?), add a planning meeting
 - screw worm response, shares national connection
 - could create new objective

11:51 AM END OF MEETING