March 30, 2014
Volume 7, Issue 1

Veterinary Entomology

Insect Updates

Spring is Here – So are the Flies

Even with the colder than usual winter most of Texas experienced this past winter, filth flies are here or will be very soon.

Stable flies are the first of the biting flies to make their presence known. They can be observed hanging around horse stalls and the legs of cattle.

The stable fly is one of the most detrimental flies for livestock; they take a single blood meal a day and deliver a nasty and painful bite.

These flies breed in hay/grass mixed with feces and urine and are best controlled for with sanitation instead of chemicals.

Horn flies will be showing up soon in small numbers but by mid-July the population will be in full force.

Although treatment is not needed just yet, it is suggested to wait until 100 flies per animal are observed, it is good to decide which method of control you will want to use.

In addition, other blood sucking flies will be seen in the next few weeks and some addition filth flies such as house flies and blow flies.

Observing livestock for fly presence, fields and barns for breeding sites and maintaining water troughs so they do not influence mosquito growth, are preventative measures that will decrease population outbreaks.

Veterinary, Medical and Urban Entomology Annual Report FY 2013

There are 46 scientists that work for USDA-ARS on veterinary, medical and urban entomology pests. Here are some of the notable accomplishments from FY 2013. If you want further information on any of these, please let me know.

DEET mosquito repellent works by taste as well as by smell

Gene silencing technology leads toward safe mosquito control

Gene silencing technology leads toward safe mosquito control

How house flies live in bacteria-rich habitats

Viruses as powerful new way to control fire ants

Sequencing the genome of the cattle fever tick

Biting midge gene expression

Chromosomal origin of fire ant social forms revealed

A viral biopesticide against house flies

Development of a new, selective insecticide

Desert treatments of biting insects

Rift Valley fever is more complicated than we thought

The difference between red and black fire ants

Pesticides

Bayer introduces Annihilator Polyzone

Bayer has announced the introduction of a broad-spectrum premise spray called Annihilator Polyzone.

This product provides livestock producers with long-term control of crawling, flying and wood-infesting pests.

This product can withstand aggressive surfaces, weather and wash-off conditions for up to 90 days.

The long residual enables users to maintain control with fewer applications.

A good location to use this is on calf facilities in the summer before calves are placed into the hutches/pens. Also spray the surrounding areas.

Previous applications show a residual of 8-12 weeks.

Cattle Care

"Implementing this strategy is an important step forward in addressing antimicrobial resistance," said FDA Deputy Commissioner for Foods and Veterinary Medicine Michael Taylor.

FDA plans to phase out some antibiotic use on farms

In an effort to address potential antimicrobial resistance concerns in humans, the US Food and Drug Administration has issued new guidelines to extend veterinary oversight and phase out the sub-therapeutic use of antibiotics that are important to human medicine in food producing animals for growth promotion purposes.

Guidance 213 calls for animal pharmaceutical companies to voluntarily revise the FDA-approved labels for these products to remove *growth promotion* labels.

FDA also proposes to change Veterinary Feed Directive regulations to move the over-the-counter status of the remaining appropriate therapeutic uses to require veterinary oversight when used to treat, control or prevent health issues in animals.

The new steps being taken by FDA will promote the judicious use of important antimicrobials to protect human health while ensuring sick and at-risk animals receive the care they need.

Bison in Montana with brucellosis

Bison of the Yellowstone herd are dealing with a brucellosis outbreak and this has ranchers concerned.

Efforts are being coordinated to thin the herd from 4,600 to 4,000-3,800 head in order to properly treat the animals.

Brucellosis is transmitted in birthing tissues and fluids, blood, milk, urine and semen and even by clothing, feed, equipment and water.

Preventative measures can minimize trich impacts

Trichomoniasis is a sexually transmitted protozoan disease that causes pregnancy loss or abortion in the cow, prolonged calving intervals and high open rates in infected herds.

An infected bull can quickly spread the disease to a high percentage of females in a herd.

Several states have adopted rules to reduce the risk of transmission.

Bulls are asymptomatic and there is no treatment for the disease. Currently 6-7% of US herds are showing an incidence of infection and annually there is an economic impact of $65 million.

Preventative strategies

- use AI exclusively
- import only virgin bulls
- test older bulls
- vaccinate

TrichGuard is the only vaccine available and it must be given in two doses.

A breath of fresh air for dairy calves

As many dairies turn to indoor housing for young calves, ventilation becomes a key consideration for animal health.

Outdoor hutches provided the ventilation but the weather exposure caused stress on calves and extra labor for dairy workers and cannot facilitate automated feeders.

Research has found that well-ventilated indoor barns can become badly polluted with microbes, airborne pathogens. Indoor barn counts are significantly higher than outdoor.

High total bacterial counts serve as an indicator of poor ventilation. To increase ventilation, Dr. Nordlund of U of Wisconsin-Madison suggests ventilation tubes. More info on tubes at http://www.dairyherd.com/dairy-resources/calf-heifer/manager-to-manager/A-breath-of-fresh-air-for-calves-238019591.html

Human & Animal Disease & Health

Texas Animal Health Commission Announcements

TAHC Adopts Cattle Rules or Animal Disease Traceability, Trichomoniasis and Fever Tick Programs

New rules:

Chapter 50, Animal Disease Traceability, Cattle Identification: identification requirements for adult cattle being sold within TX

Chapter 38, Trichomoniasis, Test Exceptions: allows untested adult bulls to be purchased without a current Trich test, if moved under TAHC permit with official permanent identification. Good for 7 days, allows for movement but no female commingling.

Chapter 41, Fever Ticks, New Authorized Treatments: adds new treatment options for cattle fever tick and expands the TAHC's authority to inspect and treat deer on premises adjacent to infected pastures.

Chapter 51, Entry Requirements, Trichomoniasis: this changes the Trich entry requirements to allow TX bulls participating in out of state "bull station feeding trials" to return to their TX farm of origin without a Trich test, if they were maintained in a controlled environment and without female contact.

Swine Health – CVIs to have PEDv statement (non-commercial hogs)

Effective Feb 7, 2014, a certificate of veterinary inspection accompanying non-commercial hogs entering TX for purposes other than immediate slaughter, must contain the following statement from the issuing veterinarian, **"To the best of my knowledge, swine represented on this certificate have not originated from a premise known to be affected by Porcine Epidemic Diarrhea virus (PEDv), and have not been exposed to PEDv within the last 30 days."**

Signs of *Mycoplasma bovis* infection in dairy cattle

Mycoplasma bovis infection is caused by mycoplasma, the smallest free-living pathogen in animals. The pathogen attached to mucosal surfaces and then invades tissue. Once in, it liberates toxins that cause severe tissue damage. *M. bovis* can also suppress immune systems and increase disease severity of other pathogens.

Symptoms can appear two weeks after birth, with severe symptoms appearing later. Symptoms:

- Inner ear infection
- Discharge from eyes and nose
- Increased respiration
- Frequent, hacking cough
- Fever
- Arthritis
- Mastitis

Infection can spread easily via cough, nasal secretions and direct contact with animals, milk, feedbunks and waterers. Infected animals do not respond well to treatment, therefore prevention is necessary to stop the infection cycle.

Work with your veterinarian to develop a prevention strategy and vaccinate animals to help reduce the incidence and severity of the disease.

Scientists report progress in prion research

Researchers at the Univ of Alberta's Centre for Prions and Protein Folding Diseases report finding a protective mechanism in cells related to the slow onset of symptoms, which could lead to methods for preventing the onset of neurological diseases such as Creutzfeldt-Jakob disease (CJD) in humans and bovine spongiform encephalopathy (BSE) in cattle.

The findings "present a breakthrough in understanding the secret life of prion molecules in the brain and may offer a new way to treat prion diseases," says David Westaway, PhD, a researcher on the project.

Prion diseases typically have long incubation periods, but can progress rapidly after the onset of symptoms, and there is no cure.

Red Meat Allergy after a Tick bite

As odd as it sounds, researchers say that the bite from a lone star tick can make some people allergic to red meat – even if they never had a problem before.

The allergic reaction can range from vomiting and cramps to hives to anaphylaxis.

Most cases are being reported in the north east but antibodies to alpha-gal have been found from Texas to Massachusetts.

The reaction is due to the exposure of alpha-gal in animal–fat. The reaction can be delayed by several hours.

Experts say that tick-triggered red-meat allergies may have occurred, unnoticed, for decades. The increase in lone star tick populations and expansion along with white-tailed deer could be the reason for increases in cases.

Lone star tick might not be the only culprit but the first implicated thus far.

"*Dogs sometimes develop meat allergy too, and typically react with itching, skin lesions and hair loss," Dr. Little says.*

AVMA salutes Senate passage of veterinary medicine mobility bill

Recently Congress has moved one step closer to allowing veterinarians the complete ability to provide care to their animal patients beyond their clinics, and the American Veterinary Medical Association has shown praise.

The legislation will give veterinarians who treat patients on the farm, in the wild, at patient's home or in any other mobile setting, the ability to bring and use controlled substances to provide pain management, anesthesia or euthanasia.

This is considered a step in the right direction for the licensed practitioners who help ensure public safety and care for animals.

AVMA has been actively engaged with Capitol Hill to get this amendment.

Special Topics of Interest

Federal appeals court removes ban on horse slaughter

In Dec of 2013, the 10th Circuit Court of Appeals lifted a temporary ban on domestic horse slaughter.

Three facilities in New Mexico, Iowa and Missouri that are ready and operational were stopped last year by the HSUS and others.

The suit brought on by HSUS was challenged and rejected, thus leading HSUS to appeal the case in November.

In early Dec the 10th Circuit said the activist rights groups "failed to meet their burden for an injunction pending appeal."

The order lifts the emergency status of the case but the final decision is still a few months away but the plats are ready to open.

Wolf attacks have lasting effect on cattle herd

Herds attacked by wolves don't just lose one animal; the rest of the herd is affected as well.

Faculty and grad students at the U of Montana have found producers incur more financial losses in reduced weight gain by the rest of the herd following an attack.

Researchers showed that the predation by wolves contributed to lower weight gain in calves on western Montana ranches. The calves weren't affected by the presence of wolves with territory overlapping the ranch, but once an attack occurred, the average weight of the calves on the ranch decreased by 22 pounds.

$65 Burger!!

The restaurant Meatingplace, located in Los Angelos, San Francisco and New York, has released its "Money's No Object" burger – M.N.O. for short.

The burger is part of a promotion for its annual truffle season and is available for a limited time.

The burgers are made with Bryan Flannery Wagyu Beef and topped with a port reduction and freshly shaved white truffles. In New York, the burger can be topped with foi gras for an addition $10.

It is possible that truffle season is already over, but next year if you are in one of the three areas and just have no idea what to do with your money, check them out. For $65 you can get a burgher and a shirt.

Bigger predators, bigger dogs

Being an owner of a big dog, a Great Dane, I was intrigued by this article.

AS the saying goes, it is not the size of the dog in the fight that matters, but the size of the fight in the dog. With the increase of large predators, USDA APHIS officials are re-thinking this.

Many places in the US deal with significant predation to their cattle and sheep herds. APHIS reports that dogs currently used for guarding herds (even Great Pyrenees, Komondors and Akbash) are suitable for coyote protection but come out on the losing end with encountered by larger predators.

USDA Wildlife Services has started importing young, larger European breeds such as Kangal, Karakachan and Cao de Gado Transmontano.

Dogs are being trained and observed for their livestock protection and demeanor to other dogs and people.

Kangal

Truth about common nutrition myths

Myth 1: Red wine is tops for your ticker
Truth: Not so superior, alcohol itself boosts HDL levels. Limit 1 per day

Myth 2: Organic produce packs more nutrient than the conventional kind.
Truth: False, no nutritional advantage over conventionally grown produce.

Myth 3: A grilled-chicken sandwich beats a burger.
Truth: Not so, more calories in chicken than plain burger and a potential sodium bomb. SO eat your beef, if you like.

Myth 4: Wheat is wicked.
Truth: No need to avoid unless you have celiac disease (7% US population), wheat is packed with important nutrients.

Myth 5: Sprinkling on less salt keeps sodium in check.
Truth: 90% of the sodium in our diets comes from processed and restaurant foods.

Myth 6: Raw veggies rule.
Truth: cooking can make more palatable and can increase their nutritional value.

Myth 7: Brown eggs are better than white.
Truth: Aren't all they are cracked up to be same nutritional value.

Myth 8: High-fructose corn syrup is worse for you than sugar.
Truth: all sweeteners make you gain weight.

Myth 9: Fried food makes you fat.
Truth: Can be just has healthy as sautéing when done properly. Use oil at temp of 325-350 degrees.

Myth 10: Loading up on fruit helps you slim down.
Truth: Nope, fruit is high in vitamins and fiber but still contains calories and sugar.

Journal Reviews

Tmperature and population density effects on locomotor activity of *Musca domestica* (Diptera: Muscidae). 2013. Schou et al. Environ Entomol. 42: 1322-1328.

Locomotor activity was looked at with temperatures ranging from 10 to 40ºC. Locomotor activity increased during the daytime with increased temperatures at all densities until reaching 30ºC and then decreased.

Density increases impacted locomotor activity after 15ºC. Nighttime locomotor activity was considerably lower for all treatments.

Males showed more predictable locomotor activity than females.

The Impact. There is less movement among house flies at higher densities and during the day when temps reach above 86ºF. Nighttime movement is much lower than thought to be.

Significance and survival of enterococci during the house fly development. 2014. Ghosh et al. J Med Entomol. 51: 63-67.

House flies have been implemented in the transmission of enterococci, including multi-antibiotic-resistant and virulent strains.

In this study 8 strains of enterococci were evaluated for their significance in the development of house flies from eggs to adults.

House flies survive better with nonpathogenic entercoccal species in their growth medium than when clinically important entercoccal species are present.

The Impact. Human pathogenic species of enterococci negatively impact house fly larval growth, therefore indicating that these bacteria are being picked up by the adults.

Use of highly sensitive immunomarking system to characterize face fly (Diptera: Muscidae) dispersal from cow pats. 2014. Peck et al. Environ Entomol. 43: 116-122.

The researchers used an egg white immunomarking system to record the dispersal distance of face flies from fresh cow pats.

Of the 663 collected face flies, 108 were found to be positive for the egg white marker. Females were found to disperse further than male flies.

The Impact. The findings provide a method for looking at multiple fly species and their dispersal rate and distance. This could be transferred to horn flies and maybe even stable flies and could assist with management.

Development of microsatellites for population genetic analyses of *Tabanus nigrovittatus* (Diptera: Tabanidae). 2014. Husseneder et al. J Med Entomol. 51: 114-118.

The greenhead horse fly, found in coastal marshes of the eastern US, is a notorious blood sucking pest. The researchers developed microsatellite markers to be used for species genomic studies and provide insight into the population genetic structure.

Horse fly populations from different trap sites or years were genetically distinct and diverse but data showed considerable amounts of inbreeding.

The Impact. The results data indicates that this horse fly stays close to home and this could be true to for many blood sucking flies.

Anatomical modifications, viviparous reproduction and hydraulic expulsion of larvae by *Cephenemyia* nasopharyngeal bot flies of deer. 2013. Anderson. Med Vet Entomol. 27: 367-376.

The author explored the anatomy of bot fly females in order to better understand the techniques used to expel larvae.

It was determined that species have varying non-return valves that can be used to separate them for identification purposes.

The Impact. To be honest this one doesn't have much impact on most but who doesn't want to read about the expulsion of larvae from a bot fly in to the nose of deer.

If you are interested in how they do this in more detail, then read the paper.

Larval development and emergence sites of farm-associated *Culicoides* in the United Kingdom. 2013. Harrup et al. Med Vet Entomol. 27: 441-449.

Culicoides biting midges are the biological vectors of internationally important arboviruses of livestock including bluetongue virus (BTV).

Information on the larval habitats is valuable for establishing targeted vector control strategies.

Culicoides were collected from broadleaved woodland leaf litter, broadleaved woodland vegetation, marginal vegetation surround open water, muck heaps, organically enriched substrates and open pastures.

The Impact. This study widens the known range of larval habitats for *Culicoides* species and provides insight into locations for management. Although *Culicoides* are not on the radar of livestock owners, they are a huge issue for deer farmers.

An insight into the microbiome of the *Amblyomma maculatum* (Acari: Ixodidae). 2014. Budachetri et al. J Med Entomol. 51: 119-129.

The aim of this study was to survey the bacterial diversity of *Amblyomma maculatum* and characterize its infection with *Rickettsia parkeri*.

Sequencing found *R. parkeri, R. amblyommii* and *R. endosymbiont* in the midgut and only *R. parkeri* in the salivary glands.

The Impact. This study provides insight into and confirmation that Gulf coast ticks are carriers of *R. parkeri.*

Ticks and tick-borne viruses from livestock hosts in arid and semiarid regions of the eastern and nothereastern parts of Kenya. 2014. Lutomiah et al. J Med Entomol. 51: 269-277.

Ticks were collected livestock, identified to species, pooled and processed for virus isolation.

This surveillance study demonstrates the circulation of tick-borne viruses in parts of the Kenya that are more known for their mosquito-borne viruses.

The Impact. Even in the US more emphasis is put on mosquito-borne diseases but ticks are a big concern too.

Prevalence of *Borrelia burgdorferi*, *Anaplasma phagocytophilum*, and *Babesia microti* in *Ixodes scapularis* collected from recreational lands in the Hudson Valley Region, New York State. 2014. Prusinski et al. J Med Entomol. 51: 226-236.

Blacklegged ticks were collected from 27 sites over 4 years to determine the prevalence and distribution of tick-borne pathogens.

Over 11,000 ticks were collected in the nymph and adult stage. Of these, 46% of adults had the pathogen for Lyme disease (*B. Burgdorgeri*) and 14% of nymphs.

33% of the adult ticks were found to have all three pathogens.

The Impact. Use repellents when outdoors. Ticks and mosquitoes are more dangerous than you might think.

Detection of Lyme *Borrelia* in questing *Ixodes scapularis* and small mammals in Louisiana. 2014. Leydet, Jr and Liang. J Med Entomol. 51: 278-282.

Each year, over 25,000 cases of Lyme disease are reported in the US, making it the most common vector-borne disease.

The majority of the cases (90%) are contained in the northeast and Great Lake states but Canada and some southern states are reporting rises in the number of human disease cases.

The researchers looked into the presence of locally acquired cases of Lyme disease in Louisiana and found 11 of 174 (6%) ticks and 5 of 22 (23%) animals to be positive for *B. burgdorferi*.

The Impact. Although Texas is not a hot bed for Lyme disease, the presence of it in Louisiana would likely mean it could easily be found and acquired in TX at a higher rate in the near future.

Sonja L. Swiger, PhD
Assist. Professor
Livestock Extension Entomologist

1229 North US Hwy 281
Stephenville, TX 76401

CELL:
(239) 220-0168

PHONE:
(254) 968-4144

E-MAIL:
SLSwiger@ag.tamu.edu

Birthday Season @ the Swiger House

Control of the chewing louse *Bovicola* (*Werneckiella*) *ocellatus* in donkeys, using essential oils. 2013. Ellse et al. Med Vet Entomolo. 27: 408-413.

Infestation of large animals with lice can be a significant clinical and welfare issue. There are limited commercial pediculicides available and resistance is an issue.

Many have begun exploring alternative approaches such as essential oils. This study looked at tea tree and lavender oils.

Results of contact and vapor bioassays showed that 5% tea tree and lavender oils resulted in >80% louse mortality after 2h of exposure. On the farm, significant reductions in numbers were observed.

The Impact. This data shows a potentially alternative method for controlling louse populations.

Geographical distribution of pyrethroids resistance allele frequency in head lice (Phthiraptera: Pediculidae) from Argentina. 2014. Toloza et al. J Med Entomol. 51: 139-144.

Head louse infestations are widespread throughout the world and have been increasing since the early 1990s partially because of ineffective pediculicides.

In Argentina, resistant populations have developed due to the overuse of pyrethroid insecticides.

The researchers looked at the distribution of the resistant louse populations with genetic markers.

The Impact. Resistant populations of lice can be found throughout, knowing the allele markers can assist researchers with developing control measures that will work.

Expansion of zoonotic Babesiosis and reported human cases, Connecticut, 2001-2010. 2014. Stafford et al. J Med Entomol. 51: 245-252.

Human babesiosis is transmitted from the rodents by *Ixodes scapularis* ticks and is caused by the protozoan *Babesia microti*.

The prevalence of this disease in white-footed mice compared to humans in Connecticut was compared and referred back to the Connecticut Department of Public Health.

Data shows a significant increase in the number of cases recorded from 2005-2010.

The Impact. Evidence from this paper shows that babesia cases are increasing; this could be due to increased exposure or more thorough reporting.

New records and human parasitism by *Ornithodoros mimon* (Acari: Argasidae) in Brazil. 2014. Labruna et al. J Med Entomol. 51: 283-287.

The bat tick *Ornithodoros mimon* distribution has been expanded by the observation of researchers.

Ticks were collected from human dwellings that had reported tick bites on persons during the night.

The homes reporting bites were found to be infested with bats and opossums in the attics.

The Impact. Take home message; check your attic for unwanted critters. All mammals have at least one ectoparasites associated with it and if you let the mammal live with you or near you, so will the ectoparasites (i.e. mite, tick, mosquito)

Livestock/veterinary website
http://livestockvetento.tamu.edu

Livestock Veterinary Entomology on facebook