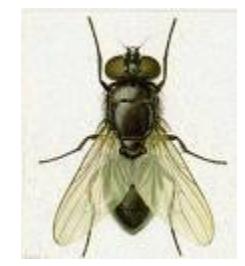


Veterinary Entomology

Special Interest Articles:

- Kissing Bugs
- Stable Fly
- Vesicular Stomatitis Outbreak
- Parasites Affect Performance



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Insect Updates

Kissing Bugs – Be Knowledgeable, but Not Scared

This year Texas has seen a surge in kissing bug sightings but these nocturnal feeders are not new to Texas. The kissing bug has been here forever but only recently have people begun to notice them and only recently have they become a major concern for dog-loving Texans.

The kissing bug, also referred to as conenose bug, is a small group of assassin bugs that utilize blood for their food source. They are typically found in ground animal dwellings in the US but have become more prevalent around outdoor dog kennels, chicken coops and even homes.

So why the sudden increase interest in the kissing bug?

In addition to the kissing bug being blood feeding insects that will feed on humans if they get access to them, they also carry the blood pathogen *Trypanosoma cruzi*, which can lead to Chagas disease. This disease is of concern in Central and South America and has been and although found in the US, people are thought to rarely contract the disease here.

Chagas disease is transmitted to humans by the kissing bug through their feces. This is not the most efficient way to transmit a disease but it can be contracted by bug fecal contact, blood transfusion, organ transplant and birth.

So the means of contracted the disease takes having an

infected kissing bug; that infected kissing bug then must enter your home, find you and feed for about 30 minutes. After completing the feeding process to full engorgement, the bug must then defecate ON you and then YOU must rub the feces into your body either through an opening or a wound.

Dog cases of Chagas disease are on a rapid increase in Texas and this is being attributed to the dogs EATING the bugs instead of how humans typically contract it. Consumption of the kissing bug puts the animals into direct contact with the feces and gives the pathogen direct access to the body of the dogs.

More info
<http://livestockvetento.tamu.edu>

Stable Flies = Cattle Stomping

Are your cattle stomping? Are they bunching in groups? Or visiting the watering hole for extended periods of time?

Then they are suffering from stable flies, *Stomoxys calcitrans*.

Historically considered to be a dairy or feedlot issue, the stable fly has found a way to survive and thrive in the beef pasture (hay bales). These black and gray flies resemble house flies, and are blood thirsty biters. The stable fly costs the US cattle industry

just under **\$700 million** / year.

Stable flies have a protruding mouth part with small teeth on the end that is used for getting blood. Both males and females take a single blood meal each day (takes 3-5 mins) and then spend the remainder of the day resting on fences, buildings or in tall grass.

Stable flies cause cattle to bunch in groups to avoid being bitten, stomp their legs to try to dislodge the flies or stand in water to prevent biting. The stable fly is very persistent and

can be seen on the legs of cattle and other livestock.

The stable fly can reproduce and overwinter in the pasture with the beef cattle. The breeding location for stable flies is hay, straw or grass (vegetation) that has been mixed with urine or feces.

The use of chemicals is insufficient for controlling stable flies.

The best method to control for stable flies is sanitation. Rotate the placement of hay bales.



Cattle Care

How and Why Parasites Affect Performance

It is well documented that infections with internal parasites can reduce weight gains, feed efficiency and reproductive performance in cattle, but just why different parasites have evolved to affect or manipulate their hosts in different ways is unclear.

A current paper "Host performance as a target of manipulation by parasites: A meta-analysis" by researchers

McElroy and de Buron, assessed 49 published papers to understand how parasites manipulate their hosts.

In their review, they sought to answer three questions:

1. Do parasites exert an important effect on host performance capacity?
2. Is that effect routinely to decrease or enhance performance capacity?
3. What factors explain variation

in the effect sizes that have been quantified?

Findings, the parasites' effects on host varied depending on factors such as host age, the tissue infected, and whether a study was based on natural infections or experimental. The type of performance affected was also a factor, with parasites more often affecting endurance than speed.

Female markets soar during August

Demand for bred females was strong this summer, with prices in most categories improving over already-high July prices.

Bred heifers through the first 3 wks of Aug averaged \$1,800 / head, up from \$1,690 in July and \$1,380 in Aug 2013.

Young and middle-aged cows also sold high, averaging \$1,796 compared with \$1,612 in July and \$1,126 last year.

Cows with young calves averaged \$2,117, up from \$1,981 in July and \$1,318 in 2013.

Manure Management is Important for all Farm Sizes

Manure is a valuable resource on the farm as a great source of nutrients for crop production and it can help to improve soil health.

When manure is not properly managed, it can pollute the environment. This includes ground or surface water and mismanaged manure can contribute to air quality concerns.

Two options are available for small farms when it comes to managing manure.

Option 1 is to collect the manure and bedding daily, load it in a spreader and spread it on cropland, hay or pasture.

This is time consuming and has to be done regularly despite soil moisture, weather or time of year.

Option 2 is to stockpile or store the manure for a period of time.

The manure is then spread or hauled away and utilized at a later time.

Storing manure eliminates the need to spread daily and allows farm owners to store manure until it can be removed and used by other farmers, gardeners or landscapers.

FDA Plans Antiparasitic Resistance Webinar – Oct 14, 2014

FDA's Center for Veterinary Medicine and the AVMA will host a one-hour webinar titled "Resisting Resistance: FDA's Antiparasitic Resistance Management Strategy," on

Tuesday, October 14, 2014 from 11 am to 12 pm Eastern Standard time.

The webinar is free and open to the public and will focus on

antiparasitic resistance in US grazing livestock, FDA's response to this animal health threat, and the current science related to slowing down further development of resistance.

Human & Animal Disease & Health

Vesicular Stomatitis (VS) Outbreak in Texas & Update

Vesicular stomatitis (VS) has occurred again this year in Texas but more often and in more locations. 53 premises

VS is classified as a rhabdovirus with two serotypes. Infection with one serotype does not protect against the second serotype.

Clinical signs of VS, which infests equines, cattle, bison, sheep, goats, pigs and camelids include vesicles, erosions, and sloughing of the skin on the muzzle, tongue, teats and above the hooves.

VS is transmitted by the bites of insects such as sand flies and black flies but it is also transmissible through blood.

Since September 10, TAHC has received 3 new cases of VS in horses.

One premise is located 3 miles north of Bastrop, one is located 5 miles east of Bastrop and the other is located 10 miles northeast of Giddings.

On a happier note, 7 premises have been released in Bastrop County and 1 location in Travis County.

To date, 61 premises in 13 counties in Texas have been confirmed positive for VS.

The current infected counties are Bastrop, Falls, Guadalupe, Lee, McLennan, and

Travis.

Of the 61 premises, 47 have been released. Seven counties have been released from quarantine: Jim Wells, Kinney, Nueces, San Patricio, Val Verde, Williamson and Hidalgo.

If you are found to have VS on your premises, it will be placed under quarantined by the TAHC. Affected horses will be monitored by regulatory veterinarians while under quarantine. Premises are eligible for quarantine release 21 days after all lesions have healed.

Impact of BVD on feedyard cattle

Bovine viral diarrhea (BVD) virus can cause severe losses in cow herds, especially when a calf that is persistently infected survives and exposes the rest of the herd to the virus.

Research is now indicating that BVD virus can cause significant losses during the finishing phase.

BVD is a known contributor to bovine respiratory disease (BRD). But research

also shows that BVD titers in an animal, helps protect them against BRD infection in the feedyard.

Results indicate exposure to BVD-PI calves during marketing, transport or upon arrival correlates with higher incidence of respiratory disease, and that vaccination upon arrival reduces morbidity rates in PI-exposed calves.

Can BVD be eradicated?

BRD Control Measures Need Improvement

BRD, Bovine Respiratory Disease is a constant battle for the beef and dairy industries alike.

Even with improved vaccines, treatments and management systems, the disease remains the number-one disease of

stocker, backgrounder and feedlot cattle in North America. Today there are higher incidences of BRD in feedlots than 20 years ago.

The industry can do better, according to Dr. Mark Hilton, but there is no single

FDA Finds Positive and Negative Resistance Trends

NARMS 2011 Executive Report was released in August showing both increasing and decreasing antimicrobial resistance trends in foodborne bacteria.

Key Findings: - 85% of non-typhoidal Salmonella collected from humans had no resistance to any of the antibiotics tested.

- In people, the 5-drug resistance pattern "ACSSuT" in Salmonella

Typhimurium has declined to 19.5% from 1997 peak at 35.1%

- Salmonella resistance to ciprofloxacin (a drug used to treat) is found to be very low (less than 0.5% in humans, less than 3% in retail meat, and less than 1% in animals at slaughter)
- Multi-drug resistance in Salmonella from humans, chickens and swine, lowest

since testing began

- Erythromycin resistance in *Campylobacter jejuni* has remained less than 4%
- *Campylobacter* resistance to ciprofloxacin has increased slightly
- Resistance to 3rd generation cephalosporin rose among ground turkey and cattle, used for Salmonella

Anthrax Case Confirmed in a Goat in Kinney County

The first Texas case for 2014 has been confirmed in a goat in Kinney County. The premise is located 4 miles north of Bracketville, TX.

TAHC quarantined the premises (June 30).

Anthrax is a bacterial disease caused by *Bacillus anthracis*, which occurs naturally worldwide, including certain parts of Texas.

Not uncommon to diagnose livestock or wildlife with anthrax in the southwestern

A pair of upcoming conferences will explore the possibility, along with current science, prevention and control.

Oct 13 in Kansas City, Merck Animal Health will sponsor a conference titled "Bovine Viral Diarrhea Virus Eradication: Reality or Myth?"

On Oct 14 and 15 at the same location will be the 2014 BVDV/ESVV Pestivirus Symposium, titled "Pestiviruses: Old Enemies, New Challenges."

solution. Reducing BRD losses will require efforts across the production chain, with prevention measures beginning at the cow-calf stage.

Control of BRD is confounded by the multifactorial nature of the disease complex.



Monitoring antimicrobial resistance through NARMS is an important component of the overall effort.

regions of the state.

A vaccine is available for use in susceptible livestock in high risk areas.

Common signs in livestock include acute fever followed by rapid death with bleeding from body openings.

"In other words, genetic engineering mimics the same biological processes that take place in plants naturally.

"Creating a GMO is as simple as taking the gene that codes for one of those naturally occurring compounds and inserting it into a different food."

But the natural label neither promises, nor has any bearing whatever on, any of these factors.

According to USDA, any meat can be called natural if it contains no artificial ingredients or added color.

Special Topics of Interest

A new counter to GMO Haters

According to Beau Kjerulf Greer, PhD at Sacred Heart University, "It is no mystery as to why GMOs invoke a knee-jerk reaction, frankly it sounds scary that corn can be engineered to produce its own pesticide – UNTIL you

know that a regular head of cabbage produces 49 different pesticides of its OWN."

Many are not aware that common vegetables are capable of producing such a wealth of endogenous pesticides.

The survey also showed that 89% thought getting "natural" meat and poultry was products from animals not given growth hormones, 81% other drugs, 85% animals whose feed did not contain genetically engineered organisms and 85% artificial ingredients.

What does natural mean?

What does "natural" mean when it appears on a food label? Recent survey shows most consumers really haven't a clue.

A *Consumer Reports* survey showed that consumers do want, and are willing to seek out, foods that are natural – 59%.

Panthers prey on calves, amount varies

A study conducted in Immokalee, FL (close to my hometown), consisted of tagging calves with radio-transmitter tags from two cattle ranches for two years and then observing what lead to their death.

One ranch lost 10 calves, 5% of the herd each year, to preying panthers. The other

ranch lost only 1 calf or 1/2 % of the herd to panthers.

Other predators contributed to loss, 8 and 5 respectively. Other predators included one bear per farm, coyotes and vultures.

The Florida panther had almost gone

extinct but efforts have been enforced to bring them back.

Ranchers need to maintain landscape for the big cats to survive but programs should be made available to pay ranchers for their losses, says researcher Caitlin Jacobs, master's student at UF.

5-yr comparison study organic vs. conventional dairies

Cows raised on organic and conventional dairy farms in three regions of the US show no significant differences in health or in the nutritional content of their milk, according to a study by Oregon State University.

Many of the organic and conventional dairies in the study did not meet standards set by three commonly used cattle welfare programs.

300 small dairy farms – 192 organic and 100 conventional – in NY, OR and WI participated in the study funded by NIFA-USDA.

Findings after 5 years:

- 1 in 5 herds met standards for hygiene
- 30% of herds met criteria for body condition
- Only 26% organic and 18% conventional met recommendations for pain relief during dehorning
- 4% of farms fed calves recommended doses of colostrum
- 88% of farms did not have an integrated plan to control mastitis
- 42% of conventional farms met standards for treating lameness
- Cows on organic farms produced 43% less milk / day than

conventional non-grazing cattle, and 25% less than conventional grazing herds

- 69% conventional farms used veterinarians compared to 36% organic dairies



Some organic herds showed a strain of bacteria, Strep. ag., that was eliminated long ago on conventional dairies.

Organic dairies had fewer cows with hock lesions and calves were fed a greater volume of milk.

The results show room for improvement on all dairies.

Insects: They're what's not for dinner

This is not the first time I have written about eating insects but it appears they are back in the news.

Be that they are an alternative way to consume protein, minerals and healthy fat, and the Food and Agriculture Organization reports them as just what the world needs to feed 9 billion people,

Americans won't be joining this band wagon anytime soon.

When it comes to meat-loving Americans, insects belong on the bottom of shoes (or on my desk), not in mouths.

LSU Professor Kurt Guidry, an economist, says "We'll probably see, before that would happen, a shift from

the animal proteins to more of the plant type proteins before you see a shift to ... having insects be a large part of anybody's diet."

A beef to bean shift would happen first and that isn't likely either, there hasn't been much of a change in consumption patterns, Dr. Guidry explains.

Journal Reviews

Efficacy of Novaluron as a feed-through for control of immature horn flies, house flies, and stable flies (Diptera: Muscidae) developing in cow manure. 2014. Lohmeyer et al. J Med Entomol. 51: 873-877.

A newer benzoylphenyl urea insecticide, Novaluron in Cattle Mix, was tested by the researchers on horn fly larvae, house fly larvae and stable fly larvae at two different rates via feed through capsules.

Results showed a significant decrease or

complete control of all adult fly emergences during the application of the capsules.

The Impact. The use of feed through products is well understood and recommended by many, but most are not effective on stable flies. The results from

this study show a 100% reduction in stable fly adults.

Note: Field testing needed, straight manure was used for rearing larvae and stable fly larvae are known to develop in manure mixed with vegetation.

Simultaneous detection of pyrethroid, organophosphate, and cyclodiene target site resistance in *Haematobia irritans* by multiplex polymerase chain reaction. 2014. Domingues et al. J Med Entomol. 51: 964-970.

Insecticide resistance in horn fly populations has made horn fly control increasingly difficult to achieve.

In this study, the researchers developed a multiplex polymerase

chain reaction (PCR) assay to simultaneously detect target site resistance to pyrethroids, organophosphates, and cyclodienes. Then they looked at the changes due to different insecticidal pressure.

The Impact. Having one PCR reaction that can detect all resistance mutations is useful, affordable and time efficient. This allows an easier way to test field-collected horn fly populations throughout the US.

Survival and fate of *Salmonella enterica* serovar Montevideo in adult horn flies (Diptera: Muscidae). 2014. Olafson et al. J Med Entomol. 51: 993-1001.

The researchers looked at the possibility of horn fly acquiring *Salmonella enterica* during feeding and grooming periods on the animal and manure.

Data shows that some horn flies pick up the bacteria either from the animal or in the manure, but at varying rates.

There is evidence that horn flies could

be a mechanical vector of *Salmonella* to cattle.

The Impact. Horn flies could potentially carry *Salmonella* on their mouth parts to susceptible cattle.

Insecticidal activity of *Torricellia tiliifolia* extracts against *Musca domestica* and *Aedes albopictus*. 2014. Huang et al. J Med Entomol. 51: 989-992.

The insecticidal effects of toxic extracts from leaves, stems, and bark of *Torricellia tiliifolia* de Candolle was evaluated against house flies and the Asian tiger mosquito.

Bark extract proved to be the most toxic

with the chloroform fraction with LC₅₀ values of 306.15 µg/g and 23.05 µg/g for the house fly and mosquito, respectively.

Two compounds in particular, torrilliolide and torricelline, were highly toxic to both

species with topical LC50 values 0.40 and 0.33 µg/adult, respectively.

Results were similar to those of rotenone.

The Impact. There is evidence to show *T. tiliifolia* has insecticidal properties that are worthy of further investigation.

Insecticidal and repellent effects of tea tree and andiroba oils on flies associated with livestock. 2014. Klauck et al. Med Vet Entomol. 28: 33-39.

The insecticidal and repellent effects of tea tree and andiroba essential oils were tested against horn flies and house flies.

Both oils showed insecticidal activity.

Tea tree oil killed 100% house flies at 5%, andiroba killed 67%. Both oils had 100% insecticidal efficacy against horn flies. Both oils also had a 24 hr repellency effect against horn flies and lead to a 61.6% and 57.7% reduction in

numbers on cattle.

The Impact. Being able to successfully use essential oils for horn fly control and repellency would allow producers more insecticidal options.

Survey of ticks and tick-borne pathogens in North Dakota. 2014. Russart et al. J Med Entomol. 51: 1087-1090.

Ticks were sampled from nine locations in ND in 2010 and subsequently tested for pathogens they might be carrying.

A total of 1,762 ticks were collected;

the dominant species were *Dermacentor variabilis* (82%), and *Ixodes scapularis* (17%).

A few nymphal and adult *I. scapularis* tested positive for *Borrelia burgdorferi*

and *Anaplasma phagocytophilum*.

The Impact. This is the first report of *I. scapularis* and associated pathogens in ND, showing evidence of a westward expansion of this important tick.

Against *Rhipicephalus microplus*. 2014.

Acaricidal properties of the essential oil from *Zanthoxylum caribaeum* against cattle ticks, *R. Boophilus microplus*. Nogueira et al. J Med Entomol. 51: 971-975.

The essential oil from *Z. caribaeum* was tested for its efficacy against the cattle tick, *R. Boophilus microplus*.

At the 5% rate, 65% mortality was seen on the first day post-treatment, 85% on

the second day and 100% mortality by the fifth day.

This is the first demonstrated use of *Z. caribaeum* as an acaricide against cattle ticks.

The Impact. The addition of another treatment for cattle ticks would be greatly appreciated but more research might be needed to see if this essential oil could hold up to the requirements needed to control cattle ticks.

Influence of temperature on oviposition by *Dermacentor andersoni*. 2014. Lysyk. J Med Entomol. 51: 932-940.

The effect of temperature on oviposition by *D. andersoni* was examined using replete females ranging in weight from 30 to 1,198 mg.

greater levels as temperature increased.

Lower temperatures resulted in greater oviposition failure and reduced egg production.

The Impact. The observed effects of temperature on oviposition might suggest influence on the distribution of ticks in northern regions.

The relationship between deer density, tick abundance, and human cases of Lyme disease in a residential community. 2014. Kilpatrick et al. J Med Entomol. 51: 777-784.

White-tailed deer serve as the primary host for the adult blacklegged tick, *Ixodes scapularis*, the vector for Lyme disease.

1995-2008 to document resident's exposure to tick-related disease and frequency and abundance of deer observations.

After initiating hunts, the number and frequency of deer observed was greatly reduced and so were the number of resident-reported cases of Lyme disease.

Results – 76% reduction in tick

abundance, 70% reduction in entomological risk index and 80% reduction in resident-reported cases of Lyme.

The Impact. *I. scapularis* carry several disease pathogens, the data from this paper shows the chances of encountering these ticks is reduced when deer are.

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Dengue virus is an emerging disease of concern in the Americas. The LRGV has experienced dengue transmission.

Researchers looked at the potential for dengue virus transmission by examining

Field evaluations of topical arthropod repellents in North, Central, and South America. 2014. Lawrence et al. J Med Entomol. 51: 980-988.

This study evaluated the repellent efficacy of four new EPA registered topical repellent products, two with picaridin and two with IR3535 as the active ingredient.

All were evaluated against a wide range of

High phylogenetic diversity of the cat flea (*Ctenocephalides felis*) at two mitochondrial DNA markers. 2014. Lawrence et al. Med Vet Entomol. 28:330-336.

The cat flea is the most common flea species found on cats and dogs worldwide. The researchers investigated the genetic identity of the cosmopolitan subspecies *C. felis felis* in Australia.

Application of spinosad increase the susceptibility of insecticide-resistant *Alphitobius diaperinus*) to pyrethroids. 2014. Lambkin and Furlong. J Econ Entomol. 107: 1590-1598.

The researchers examined the effects spinosad had on pyrethroid- and organophosphate-resistant populations of lesser mealworms.

Pyrethroid resistant

Comparison of the vector potential of different mosquito species for the transmission of heartworm, *Dirofilaria immitis*, in rural and urban areas in and surrounding Stillwater, OK. 2014. Paras et al. Med Vet Entomol. 28: 60-67.

The objectives of the study were to a) evaluate the relationship between landscape and social factors and b) test if heartworm is more prevalent in suburban than rural areas.

X-ray-induced sterility in *Aedes albopictus* and male longevity following irradiation. 2014. Yamada et al. J Med Entomol. 51: 8111-816.

The sterilization of males is conducted prior to release with gamma-ray irradiation. But these machines are getting harder to purchase and transport. Therefore X-ray irradiator techniques are

Dengue vectors, human activity, and Dengue virus transmission potential in the Lower Rio Grande Valley, TX. 2014. Vitek et al. J Med Entomol. 51: 1019-1028.

vectors in the region, and assessing human behavior.

No correlation between human behavior and mosquito abundance was found, results support a correlation between knowledge of

vectors and DEET. Human volunteers were used.

Results showed the products performed as well as the standard US military repellents and recommended for use.

important vectors.

The Impact. This paper shows that some of the more commonly encountered species of mosquitoes are higher carriers of dog heartworm, just confirming the need to protect dogs all year

treatment become 100% sterile and die faster.

The Impact. Sterilization is an alternative means of controlling insects that has been researched for many years, being able to use an X-ray irradiator is an alternative easier to obtain.

Dengue vectors, human activity, and Dengue virus transmission potential in the Lower Rio Grande Valley, TX. 2014. Vitek et al. J Med Entomol. 51: 1019-1028.

mosquitoes and dengue. High risk is associated with socioeconomic conditions.

The Impact. TX residences should be knowledgeable about all mosquito-borne diseases.

The Impact. These results provide confirmation that there are several repellent products available that work just as well as DEET, giving the consumer a broader product choice.

They found that the Australian cat flea is the same nominal subspecies in Europe and America.

The Impact. Although some of the data

is a bit complex for most, it shows how the subspecies throughout the world of *C. felis* fit together genetically.

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

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