

## THE CERATOPOGONIDAE INFORMATION EXCHANGE

The CIE, issued twice a year (no subscription fee), was begun in 1968 as a newsletter to facilitate communication among workers interested in the Ceratopogonidae. The format is extremely flexible. Contributions may be of any length and deal with any subject having some bearing on the study of ceratopogonids. For example, contributors may report their current interests or plans, observations or techniques of probable value to the readership, requests for addresses, study material or reprints, or any other matter of concern. The newsletter serves also as a bulletin for planning and communicating information on meetings, symposia, workshops and so forth. Finally, there is in every issue a compilation of recent literature in the field. Any person(s) wishing to contribute to the newsletter or to receive future issues by email should contact:

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### CIE No. 101 –May 2018 -The Ceratopogonidae Information Exchange Newsletter

Research Colleagues,

It is my hope that this May, 2018 issue of the CIE Newsletter will assist you in your various research projects. The Recent Literature section contains citations of 151 original research papers, reviews, books, reports, letters and patents representing diverse research areas. I have again included figures with images from two of these papers on the last page of this issue.

Four significant works are cited in this issue (a chapter on Ceratopogonidae in the Manual of Afrotropical Diptera; Remarkable dipteran diversity in a Costa Rican cloud forest; the Culicoides of Venezuela and The State of Phylogenetic Analysis (see a review of this paper by Mathias Jaschhof on page 14 of the April issue of *Fly Times*). Many thanks to all who kindly sent material to be included in this issue.

Lastly if anyone is not listed in the Directory of Workers, please send your contact information (or an update) to me. Lastly, please also send copies of your published papers, research summaries, requests for information, etc. to me for the December, 2018 issue by Friday, Dec. 7<sup>th</sup>.

With Kind Regards,  
Steve Murphree, Nashville, Tennessee, U.S.A.

Summary of Contents:	
<a href="#">CIE Subscribers/Updated Addresses</a> .....	2
<a href="#">Obituaries</a> .....	3
<a href="#">Announcements</a> .....	5
<a href="#">Recent Literature on Ceratopogonidae</a> .....	7
<a href="#">Taxonomy and Morphology</a>	
<a href="#">Ecology and Methodology</a>	
<a href="#">Bluetongue Virus and Other Pathogens</a>	

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[Back to Summary of Contents](#)

## **Obituary**

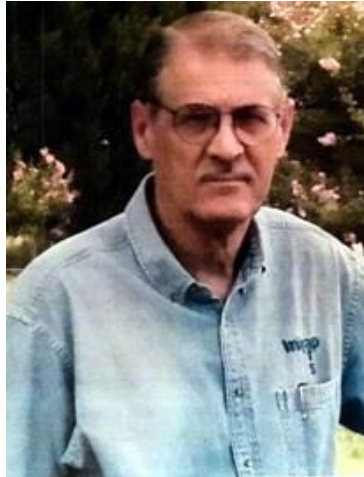
**In Memory of Terry Alan Wheeler (June 08, 1960 - July 25, 2017)**



Terry was a professor of Entomology with McGill University, Macdonald campus for 22 years. He earned the respect of his students and teaching colleagues and was recognized with the C. Gordon Hewitt Award, Entomological Society of Canada, Macdonald Campus Award for Teaching Excellence, Principal's Prize for Excellence in Teaching, McGill University, Alan Blizzard Award, Society for Teaching and Higher Education. Terry was Curator & Director of the Lyman Entomological Museum. He was devoted to his students and his research. [Though he specialized in the Chloropidae, Terry was known to many dipterists including Ceratopogonidae workers – Ed].

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## In Memory of John E. George (April 1, 1935 - January 3, 2018)



Dr. John George was the son of William Conde George and Gladys Marie George. He was born in Pampa, TX in 1935. He grew up in Amarillo, TX and loved to play outside. He collected insects and performed surgeries on frogs. He was a good athlete with a propensity for basketball. He was a star varsity player in high school and earned an athletic scholarship to play basketball at West Texas State in Canyon, TX. He earned a BS in Biology and Chemistry in 1957. He was involved in the Baptist Student Union where he shared the word of God and his faith in Jesus Christ. It was here that he met Jaye Cunningham and they married within a year to begin a spectacular journey of love, family, the pursuit of science and the betterment of mankind.

After graduating from college, he taught biology and coached basketball in Stratford, TX. He earned a Masters in Zoology from Texas Tech University in 1960 and a Ph.D. in Entomology from the University of Kansas in 1964 under the guidance of Dr. Russell Strandtman.

His took a Post Doctorate assignment with the University of Maryland where he moved the family to Lahore, Pakistan to study medical acarology. Due to the India-Pakistani war the family moved to Tehran, Iran until they returned to Lahore. It was a grand cultural adventure for the family. Upon completion of this assignment, the family moved to Lubbock, TX and Dr. George began an 11-year tenure as a professor of biology at Texas Tech University. He began his life-long research of ticks, taught many courses in biological sciences and mentored many masters and PhD students. In December of 1971 he took a trip to Antarctica with Dr. Strandtman to study mites.

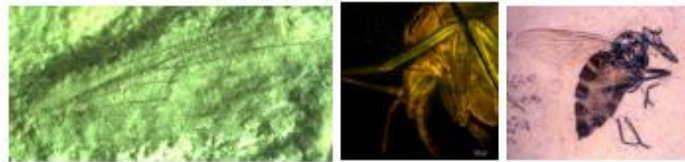
He then served as the Head of the Department of Biology at Georgia Southern University for a short term and then moved Jennie and Jaye to Kerrville, TX. The Hill Country would be their home for the next 37 years. He was initially a research scientist and eventually became the director of the Knipling-Bushland U.S. Livestock Insects Research Laboratory. He travelled to Africa, Europe, Mexico and South and Central America as a representative of the Food and Agricultural Organization of the United Nations to work on the eradication of ticks and tick borne illness. He supported and mentored many other scientists. He authored or coauthored some 200 research papers and earned many awards for his work. He and Jaye built so many long lasting friendships with people all around the world. Their time and friends in Amarillo, Lubbock and Kerrville were special memories to them.

Through his life, he loved time with his family, playing tennis, riding long distances on his bicycle, backpacking in New Mexico and Colorado, fly-fishing and walking around the hilly streets of Kerrville. He played the harmonica, dulcimer and ukulele. He was a scholar and a deep thinker in many areas, but loved the pursuit of faith in Jesus

Christ. He had a library of books that were resources to support his many discussions with other seekers, bible groups and to help teach Sunday school. In his 20's he was ordained as a Baptist Minister, but never pursued this as a career. He was a Deacon at Trinity Baptist Church and First Presbyterian Church in Kerrville. He supported several community organizations and helped raise thousands of dollars for the Texas State Mental Hospital in Kerrville. He devoted his life to his beautiful wife Jaye and their three children. He was a genuine person that cared deeply about the quality of lives of other people. Despite the decline in his health in his later years, he was always optimistic and thankful for the quality of life he lived at The Forum Assisted Living Community. He was an extraordinary man. [Dr. George was a friend to Ceratopogonidae workers who attended Livestock Insect Workers Conferences. Dr. George received the LIWC Lifetime Achievement Award in 2003 – Ed]

## Announcements

Submitted by: Shahin Nawai, Zoologisches Museum, Berlin, Germany



### **Flies in time – how fossils change our understanding of Diptera evolution**



Dear colleagues! We are happy to invite you to participate in upcoming symposium “Flies in time – how fossils change our understanding of Diptera evolution” which will take place during the 9th International Congress of Dipterology, Windhoek, Namibia, 25-30 November 2018. Symposium’s main goal is to promote development of integrative palaeodipterology beyond description of new taxa, and to encourage research community to answer broader biological questions using palaeontological material.

- Application of fossils to phylogenetic reconstructions
- Palaeological studies based on fossil Diptera – from Quaternary to Triassic
- Studies of fossil Diptera as a way to enrich understanding of Diptera diversity and Disparity
- Integrative paleodipterology



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Submitted by: Shahin Nawai, Zoologisches Museum, Berlin, Germany

**Two- year Post-doctoral Research Fellowship at the Museum für Naturkunde in Berlin**

They are looking for a talented and motivated taxonomist / biodiversity researcher who will build, develop and use the new central unit for integrative biodiversity discovery at the Museum of Natural History Berlin - Leibniz Institute for Evolutionary and Biodiversity Research.

**Application Deadline: 22 May 2018:**

<https://www.museumfuernaturkunde.berlin/de/ueber-uns/jobs-und-karriere/stellenausschreibungen/wissenschaftliche-mitarbeit-biodiversitaet-0>



<http://icd9.co.za/>

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Please consult the Second Circular (<http://icd9.co.za/wp-content/uploads/2017/11/ICD9-Second-circular.pdf>) for details, including post-Congress tours, travel information, social events, information on accommodations and accompanying persons, and invitations from the Council for the International Congresses of Dipterology and the ICD9 Organizing Committee.

**Registration Information**

Separate online forms for Registration (<http://icd9.co.za/registration/>) and Abstract submissions (<http://icd9.co.za/abstractsubmissions/>) are available. Payment should be made at the time of Registration. Note, no registrations or abstract submissions will be allowed after **1 September 2018**.

[Daniel Kline is organizing a symposium entitled, "Taxonomy and ecology of Ceratopogonidae" ([dan.kline@ars.usda.gov](mailto:dan.kline@ars.usda.gov)) – Ed.]

The **Gnatwork**, introduced by Simon Carpenter in the December issue of this newsletter, is now live at: <https://www.gnatwork.ac.uk/> . The Gnatwork brings together researchers on blackflies, sandflies and biting midges from around the world to address technical issues that arise when working on small biting flies. Researchers can become a member by [clicking here](#). They can also sign up for the monthly Gnatwork newsletter by [clicking here](#).



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[Back to Summary of Contents](#)

## Recent Literature:

### Taxonomy and Morphology

- Abubekerov, L. A., and B. A. Mullens. 2017.** Egg and Larval Morphology of *Culicoides sonorensis* (Diptera: Ceratopogonidae). *Journal of Medical Entomology* 55(3):553-560 ([Read Abstract](#)).
- Bakhoum, M. T., K. Labuschagne, K. Huber, M. Fall, B. Mathieu, G. Venter, L. Gardes, T. Baldet, J. Bouyer, A. G. Fall, G. Gimonneau, and C. Garros. 2018.** Phylogenetic relationships and molecular delimitation of *Culicoides* Latreille (Diptera: Ceratopogonidae) species in the Afrotropical region: interest for the subgenus *Avaritia*. *Systematic Entomology* 43(2): 355-371.
- Barber, J., L. E. Harrup, R. Silk, E. Veronesi, S. Gubbins, K. Bachanek-Bankowska, and S. Carpenter. 2018.** Blood-feeding, susceptibility to infection with Schmallenberg virus and phylogenetics of *Culicoides* (Diptera: Ceratopogonidae) from the United Kingdom. *Parasites & Vectors* 11(116):1-13.
- Borkent, A. 2017.** Chapter 34. Ceratopogonidae (Biting Midges). In: Kirk-Spriggs, A.H. & Sinclair, B.J. eds., *Manual of Afrotropical Diptera. Volume 2. Nematoceros Diptera and lower Brachycera. Suricata 5.* South African Biodiversity Institute, Pretoria; pp. 1-51.
- Borkent, A. 2018.** The State of Phylogenetic Analysis: Narrow Visions and Simple Answers —Examples from the Diptera (flies). *Zootaxa* 4374 (1): 107–14 [SUMMARY: Diptera are an excellent group for phylogenetic analysis but practical and theoretical approaches have hampered their interpretation. Both morphological and molecular analyses require scrutiny].

- Borkent, A., Brown, B.V., Adler, P.H., Amorim, D. de S., Barber, K., Bickel, D., Boucher, S., Brooks, S.E., Burger, J., Burington, Z.L., Capellari, R.S., Costa, D.N.R., Cumming, J.M., Curler, G., Dick, C.W., Epler, J.H., Fisher, E., Gaimari, S.D., Gelhaus, J., Grimaldi, D.A., Hash, J., Hauser, M., Hippa, H., Ibáñezbernal, S., Jaschhof, M., Kameneva, E.P., Kerr, P.H., Korneyev, V., Korytkowski, C.A., Kung, G.-A., Kvifte, G.M., Lonsdale, O., Marshall, S.A., Mathis, W.N., Michelsen, V., Naglis, S., Norrbom, A.L., Pape, T., Pereiracolavite, A., Pollet, M., Rochefort, S., Rung, A., Runyon, J.B., Savage, J., Silva, V.C., Sinclair, B.J., Skevington, J.H., Stireman, III, J.O., Swann, J., Vilkamaa, P., Wheeler, T., Whitworth, T., Wong, M., Wood, D.M., Woodley, N., Yau, T., Zavortink, T.J. and M.A. Zumbado. 2018. Remarkable fly (Diptera) diversity in a patch of Costa Rican cloud forest: Why inventory is a vital science. [Zootaxa 4402 \(1\): 053–090.](#)
- Brown, B.V., Borkent, A., Adler, P.H., Amorim, D.de.S, Barber, K., Bickel, D., Boucher, S., Brooks, S.E., Burger, J., Burington, Z.L., Capellari, R.S., Costa, D.N.R., Cumming, J.M., Curler, G., Dick, C.W., Epler, J.H., Fisher, E., Gaimari, S.D., Gelhaus, J., Grimaldi, D.A., Hash, J., Hauser, M., Hippa, H., Ibáñez-Bernal, S., Jaschhof, M., Kameneva, E.P., Kerr, P.H., Korneyev, V., Korytkowski, C.A., Kung, G.-A., Kvifte, G.M., Lonsdale, O., Marshall, S.A., Mathis, W., Michelsen, V., Naglis, S., Norrbom, A.L., Paiero, S., Pape, T., Pereira-Colavite, A., Pollet, M., Rochefort, S., Rung, A., Runyon, J.B., Savage, J., Silva, V.C., Sinclair, B.J., Skevington, J.H., Stireman III, J.O., Swann, J., Thompson, F.C., Vilkamaa, P., Wheeler, T., Whitworth, T., Wong, M., Wood, D.M., Woodley, N., Yau, T., Thomas J. Zavortink, T.J. and M.A. Zumbado. 2018. Comprehensive inventory of true flies (Diptera) at a tropical site. [Communications Biology 1\(21\):1-8.](#) [There are exactly 200 species of Ceratopogonidae noted – Ed.]
- Diaz, F., G. R. Spinelli, and M. M. Ronderos. 2018. Two new species of *Dasyhelea* Kieffer and the immature of *D. azteca* Huerta & Grogan from northwestern Argentina (Diptera: Ceratopogonidae). [Zoologischer Anzeiger 272: 6-19.](#)
- Diaz, F., C. Mangudo, G. R. Spinelli, R. M. Gleiser, and M. M. Ronderos. 2018. The Immatures of *Culicoides trilineatus* (Diptera: Ceratopogonidae) Potential Vector of the Bluetongue Virus. *Journal of Medical Entomology* [Early View -[Read Abstract](#)].
- Han, X.-J., X.-F. Li, Q.-Q. Chang, and X.-H. Hou. 2017. Description of a new species of *Forcipomyia* (*Euprojoannisia*) Brethes, 1914 (Diptera: Ceratopogonidae) and a key to Chinese species of the subgenus. *Entomologica Fennica* 28: 107-112.
- He, J., Z. Liu, and Y. Yu. 2017. Fauna and a new species of the genus *Palpomyia* (Diptera: Ceratopogonidae) from China. [Entomotaxonomia 39\(4\): 265-268.](#)
- Hochman, S. I., P. I. Marino, and G. R. Spinelli. 2017. Two new species of biting midges of the genus *Forcipomyia* Meigen from Ecuador (Diptera: Ceratopogonidae). *Annales Zoologici* 67: 811-821 ([Abstract & References](#)).
- Perruolo Laneti, G.J. 2016. [Los Culicoides \(Diptera: Ceratopogonidae\) de Venezuela. Fondo Editorial UNET, Decanato de Investigación, Universidad Nacional Experimental del Táchira, Venezuela. 216 pp.](#) [Ebook].



- Liu, Y., H. Tao, Y. Yu, L. Yue, W. Xia, W. Zheng, H. Ma, X. Liu, and H. Chen. 2018. Molecular differentiation and species composition of genus *Culicoides* biting midges (Diptera: Ceratopogonidae) in different habitats in southern China. [Veterinary Parasitology 254: 49-57.](#)
- Nielsen, S. A., H. Holm, and B. O. Nielsen. 2017. Biting midges (Diptera: Ceratopogonidae: *Culicoides* Latr.) associated with livestock farms in the Faroe Islands. *Entomologiske Meddelelser* 85: 1-11 ([Read Abstract](#)).
- Saha, P., and N. Hazra. 2018. First record of an extant and new species of the genus *Serromyia* Meigen from India (Diptera: Ceratopogonidae). *Annales de la Societe Entomologique de France* 54(1): 45-50 ([Read Summary](#)).
- Santarem, M. C. A., A. Borkent, G. Spinelli, and M. L. Felipe-Bauer. 2018. New Neotropical species of *Downshelea* Wirth and Grogan and redescription of *D. multilineata* (Lutz) (Diptera: Ceratopogonidae). *Journal of Natural History* 52(9-10): 509-540 ([Read Abstract](#)).
- Schmidt, A.R., Kaulfuss, U., Bannister, J.M., Baranov, V., Beimforde, C., Bleile, N., Borkent, A., Busch, A., Conran, J.G., Engel, M.S., Harvey, M, Kennedy, E.M., Kerr, P.H., Kettunen, E., Kiecksee, A.P., Lengeling, F., Lindqvist, J.K., Maraun, M., Mildenhall, D.C., Perrichot, V., Rikkinen, J., Sadowski, E.-M., Seyfullah, L.J., Stebner, F., Szwedo, J., Ulbrich, P. and D.E. Lee. 2018. Amber inclusions from New Zealand. *Gondwana Research* 56: 135-146 ([Read Abstract](#)).
- Sghaier, S., S. Hammami, M. Goffredo, M. Hammami, O. Portanti, A. Lorusso, G. Savini, and J. C. Delecolle. 2017. New species of the genus *Culicoides* (Diptera Ceratopogonidae) for Tunisia, with detection of Bluetongue viruses in vectors. [Veterinaria Italiana 53\(4\): 357-366.](#)
- Spinelli, G. R., M. M. Ronderos, M. Donato, and A. Siri. 2018. *Yungahelea*, a new genus of predaceous midge from northwestern Argentina (Culicomorpha: Ceratopogonidae). [Anais Da Academia Brasileira De Ciencias 90\(1\): 137-146.](#)
- Yang, T. C., and Y. X. Yu. 2017. *Lasiohelea tianmushana* Yu & Yang (Diptera: Ceratopogonidae), a New Species from Western Tianmu Mountain, Zhejiang, China. *Journal of Entomological Science* 52: 436-444 ([Abstract & References](#)).

[Back to Summary of Contents](#)

## Ecology and Methodology

- Blanda, V., M. Blanda, F. La Russa, R. Scimeca, S. Scimeca, R. D'Agostino, M. Auteri, and A. Torina. 2018. Geo-statistical analysis of *Culicoides* spp. distribution and abundance in Sicily, Italy. [Parasites & Vectors 11\(78\):1-9.](#)

- Bogarin, D., M. Fernandez, A. Borkent, A. Heemskerk, F. Pupulin, S. Ramirez, E. Smets, and B. Gravendeel. 2018.** Pollination of *Trichosalpinx* (Orchidaceae: Pleurothallidinae) by biting midges (Diptera: Ceratopogonidae). *Botanical Journal of the Linnean Society* 186(4): 510-543 ([Read Abstract](#)). [Art Borkent: “Amazingly, it is the weight of a single *Forcipomyia* female which triggers the mechanism to attach the pollenia!”]
- Brand, S. P. C., and M. J. Keeling. 2017.** The impact of temperature changes on vector- borne disease transmission: *Culicoides* midges and bluetongue virus. *Journal of the Royal Society Interface* 14: [20160481\(1-130\)](#).
- Cuellar, A. C., L. J. Kjaer, C. Kirkeby, H. Skovgard, S. A. Nielsen, A. Stockmarr, G. Andersson, A. Lindstrom, J. Chirico, R. Luhken, S. Steinke, E. Kiel, J. Gethmann, F. J. Conraths, M. Larska, I. Hamnes, S. Sviland, P. Hopp, K. Brugger, F. Rubel, T. Balenghien, C. Garros, I. Rakotoarivony, X. Allene, J. Lhoir, D. Chavernac, J. C. Delecolle, B. Mathieu, D. Delecolle, M. L. Setier-Rio, R. Venail, B. Scheid, M. A. M. Chueca, C. Barcelo, J. Lucientes, R. Estrada, A. Mathis, W. Tack, and R. Bodker. 2018.** Spatial and temporal variation in the abundance of *Culicoides* biting midges (Diptera: Ceratopogonidae) in nine European countries. *Parasites & Vectors* 11(112):1-18.
- Dourado, E. D. R., R. L. Ferreira-Keppler, R. T. Martins, and M. M. Ronderos. 2017.** Biting midges (Diptera: Ceratopogonidae) from an urban forest fragment in Central Amazon (Brazil): Effects of opening areas on abundance, richness, and composition. *Anais da Academia Brasileira de Ciencias* 89(4): 2757-2770.
- Erram, D., and L. Zurek. 2018.** Larval Development of *Culicoides sonorensis* (Diptera: Ceratopogonidae) in Mud Supplemented with Manure of Various Farm Animals. *Journal of Medical Entomology* 55(1): 43-50 ([Read Abstract](#)).
- Fernandez-Carrion, E., B. Ivorra, A. M. Ramos, B. Martinez-Lopez, C. Aguilar-Vega, and J. M. Sanchez-Vizcaino. 2018.** An advection-deposition-survival model to assess the risk of introduction of vector-borne diseases through the wind: Application to bluetongue outbreaks in Spain. *PLoS One* 13: [e0194573\(1-16\)](#).
- Jess, S., G. M. Thompson, S. Clawson, I. W. N. Forsythe, I. Rea, A. W. Gordon, and A. K. Murchie. 2018.** Surveillance of biting midges (*Culicoides* spp.) in Northern Ireland: influence of seasonality, surrounding habitat and livestock housing. *Medical and Veterinary Entomology* 32: [48-60](#).
- Kline, D. 2017.** Various strategies utilizing attractant toxic sugar baits in population management for mosquitoes, biting midges and tabanids. *Abstracts of Papers of the American Chemical Society* 254. [[Presentation Abstract](#)].
- Liu, Y., H. Tao, Y. Yu, L. Yue, W. Xia, W. Zheng, H. Ma, X. Liu, and H. Chen. 2018.** Molecular differentiation and species composition of genus *Culicoides* biting midges (Diptera: Ceratopogonidae) in different habitats in southern China. *Veterinary Parasitology* 254: [49-57](#).

- Magliano, A., P. Scaramozzino, S. Ravagnan, F. Montarsi, G. Da Rold, G. Cincinelli, A. Moni, P. Silvestri, A. Carvelli, and C. De Liberato. 2018.** Indoor and outdoor winter activity of *Culicoides* biting midges, vectors of bluetongue virus, in Italy. [\*Medical and Veterinary Entomology\* 32: 70-77.](#)
- McDermott, E. G., C. E. Mayo, and B. A. Mullens. 2017.** Low Temperature Tolerance of *Culicoides sonorensis* (Diptera: Ceratopogonidae) Eggs, Larvae, and Pupae from Temperate and Subtropical Climates. *Journal of Medical Entomology* 54: 264-274 ([Read Abstract](#)).
- Mohlmann, T. W. R., U. Wennergren, M. Talle, G. Favia, C. Damiani, L. Bracchetti, W. Takken, and C. J. M. Koenraadt. 2018.** Community analysis of the abundance and diversity of biting midge species (Diptera: Ceratopogonidae) in three European countries at different latitudes. [\*Parasites & Vectors\* 11: 217 \(1-11\).](#)
- Szadziewski, R. 2018.** Biting midges (Diptera: Ceratopogonidae) as indicators of biostratigraphy, ecological reconstructions and identification of amber deposits. *Earth and Environmental Science Transactions of the Royal Society of Edinburgh* 107: 219-230 ([Abstract and References](#)).
- Vigil, S. L., M. G. Ruder, D. Shaw, J. Wlodkowski, K. Garrett, M. Walter, and J. L. Corn. 2018.** Apparent Range Expansion of *Culicoides (Hoffmania) insignis* (Diptera: Ceratopogonidae) in the Southeastern United States. *Journal of Medical Entomology* [Early View: Read Abstract at <https://doi.org/10.1093/jme/tjy036>].
- Wong, N. D., E. G. McDermott, A. C. Murillo, and B. A. Mullens. 2018.** Field Distribution and Density of *Culicoides sonorensis* (Diptera: Ceratopogonidae) Eggs in Dairy Wastewater Habitats. *Journal of Medical Entomology* 55(2): 392-397 ([Read Abstract](#)).

[Back to Summary of Contents](#)

## **Bluetongue Virus and Other Pathogens**

- Abera, T., M. Bitew, D. Gebre, Y. Mamo, Y. Deneke, and S. Nandi. 2018.** Bluetongue disease in small ruminants in south western Ethiopia: cross-sectional sero-epidemiological study. [\*BMC Research Notes\* 11: 112 \(1-6\).](#)
- Ahasan, M. S., K. Subramaniam, J. A. Lednicky, J. C. Loeb, K. A. Sayler, S. M. Wisely, and T. B. Waltzek. 2018.** Complete Genome Sequence of Epizootic hemorrhagic disease virus Serotype 6, Isolated from Florida White-Tailed Deer (*Odocoileus virginianus*). [\*Genome Announcements\* 6\(14\):1-2.](#)
- Asmare, K., B. Sibhat, G. Ayelet, E. Z. Gebremedhin, K. A. Lidete, and E. Skjerve. 2018.** Serological evidence of Bovine herpesvirus-1, Bovine Viral Diarrhea virus and Schmallenberg virus infections in relation to reproductive disorders in dairy cattle in Ethiopia. [\*Acta Tropica\* 178: 236-241.](#)

- Barber, J., L. E. Harrup, R. Silk, E. Veronesi, S. Gubbins, K. Bachanek-Bankowska, and S. Carpenter. 2018.** Blood-feeding, susceptibility to infection with Schmallenberg virus and phylogenetics of *Culicoides* (Diptera: Ceratopogonidae) from the United Kingdom. [\*Parasites & Vectors\* 11\(116\):1-13.](#)
- Barcelo, C., and M. A. Miranda. 2018.** Bionomics of livestock-associated *Culicoides* (biting midge) bluetongue virus vectors under laboratory conditions. [\*Medical and Veterinary Entomology\* 32\(2\):216-225.](#)
- Baylis, M., C. Caminade, J. Turner, and A. E. Jones. 2017.** The role of climate change in a developing threat: the case of bluetongue in Europe. [\*Revue Scientifique Et Technique-Office International Des Epizooties\* 36\(2\): 467-478.](#)
- Becker, E., G. J. Venter, T. Greyling, U. Molini, and H. van Hamburg. 2018.** Evidence of African horse sickness virus infection of *Equus zebra hartmannae* in the south-western Khomas Region, Namibia. [\*Transboundary and Emerging Diseases\* 65: 278-280.](#)
- Berenger, J.-M., P. Parola, W. G. Powderly, and S. M. Opal. 2017.** 12 - Arthropod Vectors of Medical Importance A2 - Cohen, Jonathan, pp. 104-112.e101, [\*Infectious Diseases\*](#) (Fourth Edition). Elsevier.
- Bianchi, R. M., W. Panziera, T. C. Faccin, G. L. de Almeida, J. F. Cargnelutti, E. F. Flores, G. D. Kommers, and R. A. Figuera. 2017.** Clinical, pathological and epidemiological aspects of outbreaks of bluetongue disease in sheep in the central region of Rio Grande do Sul. [\*Pesquisa Veterinaria Brasileira\* 37\(12\): 1443-1452.](#)
- Bournez, L., L. Cavalerie, C. Sailleau, E. Breard, G. Zanella, R. S. de Almeida, A. Pedarrieu, E. Garin, I. Tourette, F. Dion, P. Hendrikx, and D. Calavas. 2018.** Estimation of French cattle herd immunity against bluetongue serotype 8 at the time of its re-emergence in 2015. [\*BMC Veterinary Research\* 14\(65\):1-11.](#)
- Brand, S. P. C., and M. J. Keeling. 2017.** The impact of temperature changes on vector- borne disease transmission: *Culicoides* midges and bluetongue virus. [\*Journal of the Royal Society Interface\* 14: 20160481\(1-130\).](#)
- Breard, E., C. Schulz, C. Sailleau, C. Bernelin-Cottet, C. Viarouge, D. Vitour, B. Guillaume, G. Caignard, A. Gorlier, H. Attoui, M. Gallois, B. Hoffmann, S. Zientara, and M. Beer. 2018.** Bluetongue virus serotype 27: Experimental infection of goats, sheep and cattle with three BTV-27 variants reveal atypical characteristics and likely direct contact transmission BTV-27 between goats. *Transboundary and Emerging Diseases* 65: e251-e263 ([Read Summary](#)).
- Brown-Joseph, T., C. Batten, L. E. Harrup, L. Frost, J. Flannery, H. Hicks, V. Ramkissoon, R. Ramdeen, C. V. Carrington, and C. A. L. Oura. 2017.** Bluetongue virus infection in naive cattle: Identification of circulating serotypes and associated *Culicoides* biting midge species in Trinidad. [\*Veterinary Microbiology\* 211: 1-5.](#)

- Burrell, C. J., C. R. Howard, and F. A. Murphy. 2017a.** Chapter 2 - Classification of Viruses and Phylogenetic Relationships, pp. 15-25, Fenner and White's Medical Virology (Fifth Edition). Academic Press, London.
- Burrell, C. J., C. R. Howard, and F. A. Murphy. 2017b.** Chapter 24 - Reoviruses, pp. 345-353, Fenner and White's Medical Virology (Fifth Edition). Academic Press, London.
- Calvo-Pinilla, E., S. Gubbins, P. Mertens, J. Ortego, and J. Castillo-Olivares. 2018.** The immunogenicity of recombinant vaccines based on modified Vaccinia Ankara (MVA) viruses expressing African horse sickness virus VP2 antigens depends on the levels of expressed VP2 protein delivered to the host. *Antiviral Research* 154: 132-139.
- Chacko, N., S. K. Biswas, N. N. Mohanty, K. Chand, B. Mondal, A. B. Pandey, and S. B. Shivachandra. 2017.** Immuno-reactivity of recombinant non-structural protein 3 N-terminus (rNS3Nt) in indirect-ELISA for detection of bluetongue viral antibodies in serum samples. *Indian Journal of Animal Sciences* 87(11): 1304-1309 ([Read Abstract](#)).
- Chand, K., S. K. Biswas, B. Mondal, and A. B. Pandey. 2018.** Immunoaffinity purification of bluetongue virus group specific antibody using recombinant protein adsorbed to polystyrene wells. *Indian Journal of Animal Research* 52(1): 126-130 ([Read Abstract](#)).
- Claine, F., D. Coupeau, L. Wiggers, B. Muylkens, and N. Kirschvink. 2018.** Modelling the evolution of Schmallenberg virus seroprevalence in a sheep flock after natural infection. *Preventative Veterinary Medicine* 154: 132-138 ([Read Abstract](#)).
- Collins, A. B., J. F. Mee, and P. D. Kirkland. 2018.** Pathogenicity and teratogenicity of Schmallenberg virus and Akabane virus in experimentally infected chicken embryos. *Veterinary Microbiology* 216: 31-37 ([Read Abstract](#)).
- Costa, A. G., A. Sadahiro, A. M. Tarrago, F. A. C. Pessoa, B. P. Loiola, A. Malheiro, and J. F. Medeiros. 2018.** Immune response in *Mansonella ozzardi* infection modulated by IL-6/IL-10 axis in Amazon region of Brazil. *Cytokine* 104: 98-103 ([Read Abstract](#)).
- Courtejoie, N., B. Durand, L. Bournez, A. Gorlier, E. Breard, C. Sailleau, D. Vitour, S. Zientara, F. Baurier, C. Gourmelen, F. Benoit, H. Achour, C. Milard, S. Poliak, C. Pagneux, C. Viarouge, and G. Zanella. 2018.** Circulation of bluetongue virus 8 in French cattle, before and after the re-emergence in 2015. *Transboundary and Emerging Diseases* 65: 281-284.
- Crainey, J. L., M. A. Marin, T. R. R. da Silva, J. F. de Medeiros, F. A. C. Pessoa, Y. V. Santos, A. C. P. Vicente, and S. L. B. Luz. 2018.** *Mansonella ozzardi* mitogenome and pseudogene characterisation provides new perspectives on filarial parasite systematics and CO-1 barcoding. *Scientific Reports* 8:1-11.

- da Rosa, J. F. T., W. M. de Souza, F. D. Pinheiro, M. L. Figueiredo, J. F. Cardoso, G. O. Acrani, and M. R. T. Nunes. 2017. Oropouche Virus: Clinical, Epidemiological, and Molecular Aspects of a Neglected Orthobunyavirus. *American Journal of Tropical Medicine and Hygiene* 96(5): 1019-1030 [Review Article – Ed].
- Dalal, A., S. Maan, N. Bansal, V. Kumar, A. Kumar, N. S. Maan, and N. K. Kakker. 2017. Molecular analysis of genome segment-3 of bluetongue virus serotype 12 isolates from Haryana. *Veterinary World* 10: 1389-1393.
- de Almeida Basano, S., J. de Souza Almeida Aranha Camargo, G. Fontes, A. R. Pereira, J. F. Medeiros, M. C. de Oliveira Laudisse, R. de Godoi Mattos Ferreira, and L. M. A. Camargo. 2018. Phase III Clinical Trial to Evaluate Ivermectin in the Reduction of *Mansonella ozzardi* infection in the Brazilian Amazon. *American Journal of Tropical Medicine and Hygiene* 98(3): 786-790 ([Read Abstract](#)).
- Dennis, S. J., A. E. Meyers, A. J. Guthrie, I. I. Hitzeroth, and E. P. Rybicki. 2018. Immunogenicity of plant-produced African horse sickness virus-like particles: implications for a novel vaccine. *Plant Biotechnology Journal* 16: 442-450.
- Diaz, F., C. Mangudo, G. R. Spinelli, R. M. Gleiser, and M. M. Ronderos. 2018. The Immatures of *Culicoides trilineatus* (Diptera: Ceratopogonidae) Potential Vector of the Bluetongue Virus. *Journal of Medical Entomology* [Early View -[Read Abstract](#)].
- Dubovi, E. J. 2017a. Chapter 3 - Pathogenesis of Viral Infections and Diseases A2 - MacLachlan, N. James, pp. 47-78, *Fenner's Veterinary Virology* (Fifth Edition). Academic Press, Boston.
- Dubovi, E. J. 2017b. Chapter 6 - Epidemiology and Control of Viral Diseases A2 - MacLachlan, N. James, pp. 131-153, *Fenner's Veterinary Virology* (Fifth Edition). Academic Press, Boston.
- Dubovi, E. J. 2017c. Chapter 15 - Reoviridae A2 - MacLachlan, N. James, pp. 299-317, *Fenner's Veterinary Virology* (Fifth Edition). Academic Press, Boston.
- Dubovi, E. J. 2017d. Chapter 18 - Rhabdoviridae A2 - MacLachlan, N. James, pp. 357-372, *Fenner's Veterinary Virology* (Fifth Edition). Academic Press, Boston.
- Dubovi, E. J. 2017e. Chapter 22 - Bunyaviridae A2 - MacLachlan, N. James, pp. 411-424, *Fenner's Veterinary Virology* (Fifth Edition). Academic Press, Boston.
- Duvallet, G., N. Boulanger, and V. Robert. 2018. Chapter 2 - Arthropods: Definition and Medical Importance, pp. 29-54, *Skin and Arthropod Vectors*. Academic Press.
- Fecchio, A., P. Silveira, J. D. Weckstein, J. H. Dispoto, M. Anciaes, M. Bosholn, V. V. Tkach, and J. A. Bell. 2018. First Record of *Leucocytozoon* (Haemosporida: Leucocytozoidae) in Amazonia: Evidence for Rarity in Neotropical Lowlands or Lack of Sampling for This Parasite Genus? *Journal of Parasitology* 104(2): 168-172 ([Read Abstract](#)).

- Feher, E., S. Marton, A. G. Toth, K. Ursu, K. Wernike, M. Beer, A. Dan, and K. Banyai. 2017.** Sequence analysis of Schmallenberg virus genomes detected in Hungary. *Acta Microbiologica Et Immunologica Hungarica* 64(4): 373-384 ([Read Abstract](#)).
- Fernandez-Carrion, E., B. Ivorra, A. M. Ramos, B. Martinez-Lopez, C. Aguilar-Vega, and J. M. Sanchez-Vizcaino. 2018.** An advection-deposition-survival model to assess the risk of introduction of vector-borne diseases through the wind: Application to bluetongue outbreaks in Spain. *PLoS One* 13: e0194573(1-16).
- Flannery, J., P. Rajko-Nenow, H. Hicks, H. Hill, S. Gubbins, and C. Batten. 2018.** Evaluating the most appropriate pooling ratio for EDTA blood samples to detect Bluetongue virus using real-time RT-PCR. *Veterinary Microbiology* 217: 58-63.
- Fleta Zaragoza, J. 2018.** Schmallenberg disease: Can it involve human beings? *Medicina Clinica (Barcelona)* 150(5): 205 [Letter].
- Foster, J. E. 2018.** Chapter 8 - Viruses as Pathogens: Animal Viruses Affecting Wild and Domesticated Species, pp. 189-216, *Viruses*. Academic Press.
- Gache, K., A. Touratier, L. Bournez, S. Zientara, A. Bronner, F. Dion, E. Garin, and D. Calavas. 2017.** Detection of Schmallenberg virus in France since 2012. *Veterinary Record* 180(1): 24-24 [Letter].
- Haider, N., A. C. Cuellar, L. J. Kjaer, J. H. Sorensen, and R. Bodker. 2018.** Microclimatic temperatures at Danish cattle farms, 2000-2016: quantifying the temporal and spatial variation in the transmission potential of Schmallenberg virus. *Parasites & Vectors* 11: 128 (1-14).
- Han, Z., Z. Mingxin, L. Xuechun, X. Yigang, Q. Xinyuan, W. Li, C. Wen, J. Yanping, L. Yijing, and T. Lijie. 2018.** Development of Competitive Enzyme-Linked Immunosorbent Assays for Antibody Detection Based on Bluetongue Virus Monoclonal Antibodies. *Viral Immunology* 31: 264-271 ([Read Abstract](#)).
- Hemida, M., M. Alhammadi, A. Daleb, and A. Alnaeem. 2017.** Molecular and serological surveillance of African horse sickness virus in eastern and central Saudi Arabia. *Revue Scientifique et Technique Office International des Epizooties* 36: 889-898.
- Ivanova, K., P. Zehindjiev, J. Mariaux, D. Dimitrov, and B. B. Georgiev. 2018.** Avian haemosporidians from rain forests in Madagascar: Molecular and morphological data of the genera *Plasmodium*, *Haemoproteus* and *Leucocytozoon*. *Infection Genetics and Evolution* 58: 115-124 ([Read Abstract](#)).
- Kamomae, Y., M. Kamomae, Y. Ohta, M. Nabe, Y. Kagawa, Y. Ogura, T. Kato, S. Tanaka, T. Yanase, and H. Shirafuji. 2018.** Epizootic Hemorrhagic Disease Virus Serotype 6 Infection in Cattle, Japan, 2015. *Emerging Infectious Diseases* 24(5): 902-905.

- Kawanami, A. E., J. P. de Oliveira, A. Arenales, B. Crossley, L. W. Woods, J. M. B. Duarte, and K. Werther. 2018.** Detection of bluetongue virus in Brazilian cervids in Sao Paulo. [\*Pesquisa Veterinaria Brasileira\* 38\(1\): 137-142.](#)
- Kesik-Maliszewska, J., M. K. Krzysiak, M. Grochowska, L. Lechowski, C. Chase, and M. Larska. 2018.** Epidemiology of Schmallenberg virus in European bison (*Bison bonasus*) in Poland. *Journal of Wildlife Diseases* 54(2): 272-282 ([Read Abstract](#)).
- Kraatz, F., K. Wernike, S. Reiche, A. Aebischer, I. Reimann, and M. Beer. 2018.** Schmallenberg virus non-structural protein NSm: Intracellular distribution and role of non-hydrophobic domains. [\*Virology\* 516: 46-54.](#)
- Kumar, P., K. K. Rajak, S. Jegaveera-Pandian, D. Mahto, R. R. Kumari, R. K. Roy, and A. Kumar. 2018.** Sero-epidemiology of Bluetongue and Caprine arthritis-encephalitis in goats of middle Indo-Gangetic plains. *Indian Journal of Animal Sciences* 88: 26-29 ([Read Abstract](#)).
- Lastuti, N. D. R., E. Suprihati, D. Chrismanto, and A. Ma'ruf. 2017.** Antigenic Protein of *Leucocytozoon caulleryi* schizont Inducing Cellular Immune Response: TLR-2 and CD4 as Marker, pp. 67-70. In Iswati, A. Maruf, D. Sunyowati and I. N. Sutirto (eds.), *Proceedings of the 1st International Conference Postgraduate School of Universitas Airlangga: Implementation of Climate Change Agreement to Meet Sustainable Development Goals*, vol. 98 ([Read Abstract & Download PDF](#)).
- Liebenberg, D., P. Warnich, S. Piketh, and H. van Hamburg. 2017.** A historical perspective on the prevalence, distribution and influence of African Horse Sickness in Namibia. [\*New Contree\* 79: 18-38.](#)
- Lima, N. F., R. M. Goncalves-Lopes, Y. C. M. Kruize, M. Yazdanbakhsh, and M. U. Ferreira. 2018.** CD39 and immune regulation in a chronic helminth infection: The puzzling case of *Mansonella ozzardi*. [\*PLoS Neglected Tropical Diseases\* 12: e0006327.](#)
- Liu, F., J. M. Li, F. L. Zeng, Y. Zong, X. Leng, K. Shi, N. C. Diao, D. Li, B. Y. Li, Q. Zhao, and R. Du. 2018.** Prevalence and Risk Factors of Brucellosis, Chlamydiosis, and Bluetongue among Sika Deer in Jilin Province in China. *Vector-Borne and Zoonotic Diseases* 18: 226-230 ([Read Abstract](#)).
- Lorusso, A., A. Guercio, G. Purpari, C. Camma, P. Calistri, N. D'Alterio, S. Hammami, S. Sghaier, and G. Savini. 2017.** Bluetongue virus serotype 3 in Western Sicily, November 2017. [\*Veterinaria Italiana\* 53: 273-275.](#)
- Lorusso, A., S. Sghaier, M. Di Domenico, M. E. Barbria, G. Zaccaria, A. Megdich, O. Portanti, I. Ben Seliman, M. Spedicato, F. Pizzurro, I. Carmine, L. Teodori, M. Mahjoub, I. Mangone, A. Leone, S. Hammami, M. Marcacci, and G. Savini. 2018.** Analysis of bluetongue serotype 3 spread in Tunisia and discovery of a novel strain related to the bluetongue virus isolated from a commercial sheep pox vaccine. [\*Infection Genetics and Evolution\* 59: 63-71.](#)



- Maan, S., A. Tiwari, D. Chaudhary, A. Dalal, N. Bansal, V. Kumar, K. Batra, A. Kumar, N. K. Kakker, and N. S. Maan. 2017.** A comprehensive study on seroprevalence of bluetongue virus in Haryana state of India. [Veterinary World 10: 1464-1470.](#)
- Maan, S., A. Kumar, A. K. Gupta, A. Dalal, D. Chaudhary, T. K. Gupta, N. Bansal, V. Kumar, K. Batra, N. Sindhu, N. K. Mahajan, N. S. Maan, and P. P. C. Mertens. 2018.** Concurrent infection of Bluetongue and Peste-des-petits-ruminants virus in small ruminants in Haryana State of India. *Transboundary and Emerging Diseases* 65(1): 235-239 ([Read Abstract](#)).
- Magliano, A., P. Scaramozzino, S. Ravagnan, F. Montarsi, G. Da Rold, G. Cincinelli, A. Moni, P. Silvestri, A. Carvelli, and C. De Liberato. 2018.** Indoor and outdoor winter activity of *Culicoides* biting midges, vectors of bluetongue virus, in Italy. [Medical and Veterinary Entomology 32: 70-77.](#)
- Malik, A. I., M. Ijaz, T. Yaqub, M. Avais, M. Z. Shabbir, H. B. Aslam, A. I. Aqib, S. H. Farooqi, T. Sohail, A. Ghaffar, A. Ali, and A. Khan. 2018.** Sero-epidemiology of bluetongue virus (BTV) infection in sheep and goats of Khyber Pakhtunkhwa province of Pakistan. *Acta Tropica* 182: 207-211 ([Read Abstract](#)).
- Marcacci, M., S. Sant, I. Mangone, M. Gorla, A. Dondo, S. Zoppi, R. G. P. van Gennip, M. C. Radaelli, C. Camma, P. A. van Rijn, G. Savini, and A. Lorusso. 2018.** One after the other: A novel Bluetongue virus strain related to Toggenburg virus detected in the Piedmont region (North-western Italy), extends the panel of novel atypical BTV strains. *Transboundary and Emerging Diseases* 65: 370-374 ([Read Abstract](#)).
- Matsuo, E., K. Yamazaki, H. Tsuruta, and P. Roy. 2018.** Interaction between a Unique Minor Protein and a Major Capsid Protein of Bluetongue Virus Controls Virus Infectivity. [Journal of Virology 92\(10\):1-49.](#)
- McGowan, S. L., S. A. La Rocca, S. S. Grierson, A. Dastjerdi, B. Choudhury, and F. Steinbach. 2018.** Incursion of Schmallenberg virus into Great Britain in 2011 and emergence of variant sequences in 2016. *The Veterinary Journal* 234: 77-84 ([Read Abstract](#)).
- McGrath, G., S. J. More, and R. O'Neill. 2018.** Hypothetical route of the introduction of Schmallenberg virus into Ireland using two complementary analyses. [Veterinary Record 182\(8\):1-7.](#)
- Medeiros, J. F., G. Fontes, V. L. do Nascimento, M. Rodrigues, J. Cohen, E. V. de Andrade, F. A. C. Pessoa, and M. Martins. 2018.** Sensitivity of diagnostic methods for *Mansonella ozzardi* microfilariae detection in the Brazilian Amazon Region. [Memorias Do Instituto Oswaldo Cruz 113\(3\): 173-177.](#)
- Minke, J. M. inventor. 2017 Jan 31 2017.** Reverse genetics Schmallenberg virus vaccine compositions, and methods of use thereof. US 09556419 [Patent].

- Murillo, J. L., A. D. Cabral, M. Uehara, V. M. da Silva, J. V. Dos Santos, J. R. C. Muniz, L. F. Estrozi, D. Fenel, W. Garcia, and M. A. Speranca. 2018.** Nucleoprotein from the unique human infecting Orthobunyavirus of Simbu serogroup (Oropouche virus) forms higher order oligomers in complex with nucleic acids in vitro. *Amino Acids* 50(6):711-721 ([Read Abstract & References](#)).
- Nikolin, V., K. Stadler, A. Lischewski, A. Brix, J. P. Knittel, and K. H. Toepfer inventors. 2018 Jan 23 2018.** Schmallenberg virus (SBV) vaccine, methods of production, and uses thereof. US 09872897[Patent].
- O'Dell, N., L. Arnot, C. E. Janisch, and J. C. Steyl. 2018.** Clinical presentation and pathology of suspected vector transmitted African horse sickness in South African domestic dogs from 2006 to 2017. *Veterinary Record* [Early view – [Read Abstract](#)]
- Orlowska, A., J. F. Zmudzinski, M. Smreczak, P. Trebas, and A. Marzec. 2017.** Diagnostic reliability of different RT-PCR protocols for the detection of bluetongue virus serotype 14 (BTV-14). *Journal of Veterinary Research* 61: 391-395.
- Pages, N., S. Talavera, M. Verdun, N. Pujol, M. Valle, A. Bensaid, and J. Pujols. 2018.** Schmallenberg virus detection in *Culicoides* biting midges in Spain: First laboratory evidence for highly efficient infection of *Culicoides* of the *Obsoletus* complex and *Culicoides imicola*. *Transboundary and Emerging Diseases* 65(1): e1-e6.
- Pejakovic, S., L. Wiggers, D. Coupeau, N. Kirschvink, J. Mason, and B. Muylkens. 2018.** Test selection for antibody detection according to the seroprevalence level of Schmallenberg virus in sheep. *PLoS One* 13: e0196532.
- Pinior, B., C. L. Firth, A. Loitsch, S. Stockreiter, S. Hutter, V. Richter, K. Lebl, H. Schwermer, and A. Kabohrer. 2018.** Cost distribution of bluetongue surveillance and vaccination programmes in Austria and Switzerland (2007-2016). *Veterinary Record* 182(9): 257 (1-9).
- Qin, S., H. Yang, Y. Zhang, Z. Li, J. Lin, L. Gao, D. Liao, Y. Cao, P. Ren, H. Li, and J. Wu. 2018.** Full genome sequence of the first bluetongue virus serotype 21 (BTV-21) isolated from China: evidence for genetic reassortment between BTV-21 and bluetongue virus serotype 16 (BTV-16). *Archives of Virology* 163(5): 1379-1382 ([Read Abstract](#)).
- Rasekh, M., A. Sarani, and S. H. Hashemi. 2018.** Detection of Schmallenberg virus antibody in equine population of Northern and Northeast of Iran. *Veterinary World* 11(1): 30-33.
- Reddy, Y. V., B. Susmitha, S. Patil, Y. Krishnajyothi, K. Putty, K. V. Ramakrishna, G. Sunitha, B. V. Devi, K. Kavitha, B. Deepthi, S. Krovvidi, Y. N. Reddy, G. H. Reddy, K. P. Singh, N. S. Maan, D. Hemadri, S. Maan, P. P. Mertens, N. R. Hegde, and P. P. Rao. 2018.** Isolation and evolutionary analysis of Australasian topotype of bluetongue virus serotype 4 from India. *Transboundary and Emerging Diseases* 65(2): 547-556 ([Read Summary](#)).

- Ritter, M., W. P. C. Ndongmo, A. J. Njouendou, N. N. Nghochuzie, L. C. Nchang, D. B. Tayong, K. Arndts, N. Nausch, M. Jacobsen, S. Wanji, L. E. Layland, and A. Hoerauf. 2018. *Mansonella perstans* microfilaremic individuals are characterized by enhanced type 2 helper T and regulatory T and B cell subsets and dampened systemic innate and adaptive immune responses. [PloS Neglected Tropical Diseases 12: e0006184](#).
- Romero-Alvarez, D., and L. E. Escobar. 2018. Oropouche fever, an emergent disease from the Americas. *Microbes and Infection* 20(3): 135-146 ([Read Abstract](#)).
- Ruegg, S. R., S. Welby, H. Yassin, Y. Van der Stede, R. Nafzger, H. Saatkamp, G. Schupbach-Regula, and K. D. C. Stark. 2018. Optimising cost-effectiveness of freedom from disease surveillance-Bluetongue Virus Serotype 8 as an example. *Preventive Veterinary Medicine* [Early View – [Read Abstract](#)].
- Russell, B. L., and S. Gildenhuis. 2018. Solubilisation and purification of recombinant bluetongue virus VP7 expressed in a bacterial system. *Protein Expression and Purification* 147: 85-93 ([Read Abstract](#)).
- Sailleau, C., E. Breard, C. Viarouge, A. Gorlier, H. Quenault, E. Hirschaud, F. Touzain, Y. Blanchard, D. Vitour, and S. Zientara. 2018. Complete genome sequence of bluetongue virus serotype 4 that emerged on the French island of Corsica in December 2016. [Transboundary and Emerging Diseases 65\(1\): e194-e197](#).
- Sakkas, H., P. Bozidis, A. Franks, and C. Papadopoulou. 2018. Oropouche Fever: A Review. [Viruses 10\(4\):175 \(1-16\)](#).
- Schirtzinger, E. E., D. C. Jaspersen, E. N. Ostlund, D. J. Johnson, and W. C. Wilson. 2018. Recent US bluetongue virus serotype 3 isolates found outside of Florida indicate evidence of reassortment with co-circulating endemic serotypes. [Journal of General Virology 99: 157-168](#).
- Schulz, C., C. Sailleau, E. Breard, J. Flannery, C. Viarouge, S. Zientara, M. Beer, C. Batten, and B. Hoffmann. 2018. Experimental infection of sheep, goats and cattle with a bluetongue virus serotype 4 field strain from Bulgaria, 2014. *Transboundary and Emerging Diseases* 65(2): e243-e250 ([Read Abstract](#)).
- Segard, A., L. Gardes, E. Jacquier, C. Grillet, B. Mathieu, I. Rakotoarivony, M. L. Setier-Rio, D. Chavernac, C. Cetre-Sossah, T. Balenghien, and C. Garros. 2018. Schmallenberg virus in *Culicoides* Latreille (Diptera: Ceratopogonidae) populations in France during 2011-2012 outbreak. [Transboundary and Emerging Diseases 65\(1\): e94-e103](#).
- Sghaier, S., S. Hammami, M. Goffredo, M. Hammami, O. Portanti, A. Lorusso, G. Savini, and J. C. Delecolle. 2017. New species of the genus *Culicoides* (Diptera Ceratopogonidae) for Tunisia, with detection of Bluetongue viruses in vectors. [Veterinaria Italiana 53\(4\): 357-366](#).

- Shah, J. D., B. S. Chandel, H. C. Chauhan, M. Rajgor, S. S. Patel, M. D. Shrimali, A. C. Patel, K. B. Patel, R. P. Pandya, A. N. Modi, J. K. Kala, M. G. Patel, B. K. Patel, and M. A. Patel. 2017.** Seroprevalence of bluetongue in dromedaries. *Journal of Camel Practice and Research* 24: 291-293.
- Silva, T. I. B., L. A. K. Melchior, L. C. F. Baptista, A. C. C. Fernandes, L. G. Silva, K. F. Vasconcelos, R. G. Revoredo, D. D. Silva, and L. E. H. Melo. 2017.** Allergic dermatitis due to bite of *Culicoides* in muar (mule): case report. [Arquivo Brasileiro De Medicina Veterinaria E Zootecnia 69: 1407-1412](#) [in Portuguese].
- Sohail, T., T. Yaqub, M. Shafee, T. Abbas, J. Nazir, N. Ullah, M. Rabbani, M. H. Chaudhary, N. Mukhtar, M. Habib, A. Ul Rahman, A. I. Malik, A. Ghafoor, M. Y. Zahoor, and M. Z. Shabbir. 2018.** Seroprevalence of Bluetongue Virus in small ruminants in Balochistan province, Pakistan. *Transboundary and Emerging Diseases* [Early View - <https://doi.org/10.1111/tbed.12871>]
- Sohier, C., I. Deblauwe, T. Van Loo, J. B. Hanon, A. B. Cay, and N. De Regge. 2017.** Evidence of extensive renewed Schmallenberg virus circulation in Belgium during summer of 2016-increase in arthrogryposis-hydranencephaly cases expected. *Transboundary and Emerging Diseases* 64(4): 1015-1019 ([Read Abstract](#)).
- Sok, J., H. Hogeveen, A. R. W. Elbers, and A. Lansink. 2018.** Perceived risk and personality traits explaining heterogeneity in Dutch dairy farmers' beliefs about vaccination against Bluetongue. [Journal of Risk Research 21\(5\): 562-578.](#)
- Song, S., Y. Li, S. Fu, W. Lei, X. Guo, Y. Feng, X. Gao, X. Li, Z. Yang, Z. Xu, Y. He, H. Wang, H. Zhou, B. Wang, X. Lu, and G. Liang. 2017.** Genome sequencing and phylogenetic analysis of Banna virus (genus Seadornavirus, family Reoviridae) isolated from *Culicoides*. *Science China-Life Sciences* 60(12): 1372-1382 ([Read Abstract](#)).
- Suprihati, E., and W. M. Yuniarti. 2017.** The phylogenetics of *Leucocytozoon caulleryi* infecting broiler chickens in endemic areas in Indonesia. [Veterinary World 10\(11\): 1324-1328.](#)
- Talavera, S., F. Munoz-Munoz, M. Verdun, N. Pujol, and N. Pages. 2018.** Revealing potential bridge vectors for BTV and SBV: a study on *Culicoides* blood feeding preferences in natural ecosystems in Spain. [Medical and Veterinary Entomology 32\(1\): 35-40.](#)
- Thompson, B. S., E. L. Goodrich, and T. J. Divers. 2018.** 16 - Miscellaneous Infectious Diseases A2 - Peek, Simon F, pp. 737-783, [Rebhun's Diseases of Dairy Cattle](#) (Third Edition). Elsevier.
- Van Der Saag, M. R., M. P. Ward, and P. D. Kirkland. 2017.** Application of an embryonated chicken egg model to assess the vector competence of Australian *Culicoides* midges for bluetongue viruses. *Medical and Veterinary Entomology* 31(3): 263-271 ([Read Abstract](#)).

- van Rijn, P. A., M. A. Maris-Veldhuis, C. A. Potgieter, and R. G. P. van Gennip. 2018.** African horse sickness virus (AHSV) with a deletion of 77 amino acids in NS3/NS3a protein is not virulent and a safe promising AHS Disabled Infectious Single Animal (DISA) vaccine platform. [\*Vaccine\* 36\(15\): 1925-1933.](#)
- Verdezoto, J., E. Breard, C. Viarouge, H. Quenault, P. Lucas, C. Sailleau, S. Zientara, D. Augot, and S. Zapata. 2018.** Novel serotype of bluetongue virus in South America and first report of epizootic haemorrhagic disease virus in Ecuador. [\*Transboundary and Emerging Diseases\* 65\(1\): 244-247.](#)
- Wise, E. L., S. T. Pullan, S. Marquez, V. Paz, J. D. Mosquera, S. Zapata, S. K. Jackson, G. Fejer, G. Trueba, and C. H. Logue. 2018.** Isolation of Oropouche Virus from Febrile Patient, Ecuador. [\*Emerging Infectious Diseases\* 24\(5\): 935-937.](#)
- Yeh, J. Y., J. G. Kim, J. Choi, J. K. Kim, and K. W. Kim. 2018.** Bluetongue Virus Antibodies in Domestic Goats: A Countrywide and Retrospective Study in the Republic of Korea. *Vector Borne Zoonotic Diseases* [Abstract Online Ahead of Print: <https://doi.org/10.1089/vbz.2017.2181>]
- Zaragozano, J. F. 2018.** Schmallenberg disease: Can it involve human beings? *Medicina Clinica* 150: 205 [Letter].
- Zhai, S.-L., D.-H. Lv, X.-H. Wen, X.-L. Zhu, Y.-Q. Yang, Q.-L. Chen, and W.-K. Wei. 2018.** Preliminary serological evidence for Schmallenberg virus infection in China. *Tropical Animal Health and Production* 50(2): 449-453 ([Read Abstract](#)).
- Zhou, H., M. X. Zang, X. C. Li, Y. G. Xu, X. Y. Qiao, L. Wang, W. Cui, Y. P. Jiang, Y. J. Li, and L. J. Tang. 2018.** Development of Competitive Enzyme-Linked Immunosorbent Assays for Antibody Detection Based on Bluetongue Virus Monoclonal Antibodies. *Viral Immunology* 31(3): 264-271 ([Read Abstract](#)).
- Ziegler, A., E. Hamza, S. Jonsdottir, C. Rhyner, B. Wagner, G. Schupbach, V. Svansson, S. Torsteinsdottir, and E. Marti. 2018.** Longitudinal analysis of allergen-specific IgE and IgG subclasses as potential predictors of insect bite hypersensitivity following first exposure to *Culicoides* in Icelandic horses. [\*Veterinary Dermatology\* 29\(1\): 51-e22.](#)

[Back to Summary of Contents](#)



Figure 4. A, females of *Forcipomyia* sp. visiting *T. reflexa*. B, *Forcipomyia* female dead in *T. blaisdellii*. C, fruit of *T. blaisdellii*. D, fruit of *T. reflexa*. Both fruits developed under greenhouse conditions after midge visitation. Photographs by D. Bogarin.

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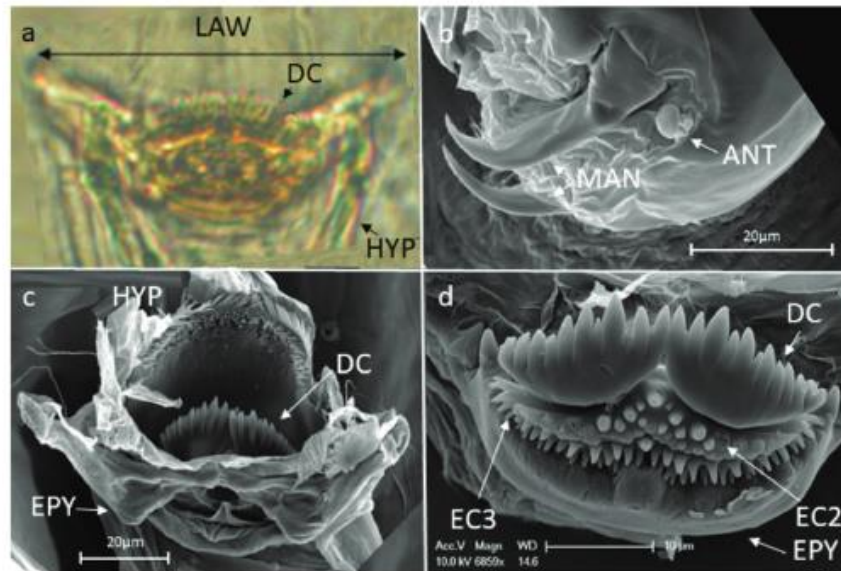


Fig. 4. Third instar of *Culicoides sonorensis*, showing dorsal view of epipharynx in head capsule (a) with lateral arm width (LAW), dorsal comb (DC) and hypopharynx (HYP), (b) lateral head capsule view showing mandibles (MAN) and antenna (ANT), (c and d) structure of the combs of the epipharynx, with hypopharynx (HYP), epipharynx (EPY), and note hypostomal fringe, (d) close up of the comb structure including epipharyngeal combs 2 and 3 (EC2, EC3).

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