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. 7th.

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

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## New CIE Subscribers, Address Updates

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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].
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

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**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
- Palaeoecological 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 palaeodipterology

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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

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http://icd9.co.za/
Ashley Kirk-Spriggs, ICD9 chair
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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) – 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.

Recent Literature:

**Taxonomy and Morphology**


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**Ecology and Methodology**


Bluetongue Virus and Other Pathogens


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](#)).


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Figure 4. A. females of *Periplocaea* cp. visiting *P. reflexa*. B. *Periplocaea* female dead on *Z. madagascariensis*. C. fruit of *Z. reflexa*. Both fruits developed under greenhouse conditions after wedge vitrification. Photographs by D. Beaucour.

From: **Bogarin et al. 2018**

![Figure 4](image)

**Fig. 4.** Third instar of *Culicoides monoceros*, 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 hypertorial fringes. (e) close up of the comb structures including epipharyngeal comb 2 and 3 (EC2, EC3).


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