

CURRICULUM VITAE

Jon Kevin Gelhaus

PRESENT POSITION AND ADDRESS

Professor, Biodiversity, Earth and Environmental Sciences (BEES)
Curator, Department of Entomology
Academy of Natural Sciences (ANSP) of Drexel University
Philadelphia, PA 19103-1195

BEES: <http://www.drexel.edu/bees/contact/facultyDirectory/Gelhaus/>
Mongolian research http://clade.ansp.org/entomology/mongolia/mais_home.html
Entomology Dept. <http://symbiont.ansp.org/entomology/index.php>
Research Gate: <https://www.researchgate.net/profile/Jon-Gelhaus/research>
iNaturalist: <https://www.inaturalist.org/people/jongelhaus>

PROFESSIONAL EXPERIENCE

Professor (2012-present), Biodiversity, Earth and Environmental Sciences, Drexel University
Chair (2015-present), Entomology Dept., Academy of Natural Sciences of Drexel University.
Curator (2008- present), Department of Entomology, Academy of Natural Sciences.
Associate Curator (1996-2008), Department of Entomology, Academy of Natural Sciences.
Acting Vice President (1996-1999), Biodiversity Group, Academy of Natural Sciences.
Assistant Curator (1990-1996), Department of Entomology, Academy of Natural Sciences.
Postdoctoral Fellow (1989), Dept. of Entomology, Smithsonian Institution, Washington D.C.;

PRE-DOCTORAL WORK EXPERIENCE

Curatorial Assistant (1986-1988), Snow Entomological Museum, The University of Kansas
Dissertation Fellow (1985-1986), Department of Entomology, The University of Kansas
Research Assistant (1979-1985), State Biological Survey of Kansas, Lawrence, Kansas
Teaching Assistant (1979), Division of Biological Sciences, , The University of Kansas.
Curatorial Internship (Summer 1977), Dept. of Entomology, California Academy of Sciences.
Seasonal Technician (summers 1974-1976), Plant Pathology Section, California Department of Food and Agriculture, Sacramento.

EDUCATION

B.S., 1978, Entomology, The University of California at Davis;
M.A., 1983, Entomology, The University of Kansas.
Ph.D., 1989, Entomology, The University of Kansas.

GRANTS AND AWARDS

(over \$5,000,000 in grants awarded as Principal Investigator since 1991, including \$3,000,000 as Primary PI.)

Khubilai Khan gold medal, highest award from Mongolian Academy of Sciences, March 2013
<http://www.ansp.org/about/press-room/releases/2013/mongolia-awards/>

Best Scientist in Nature and Environment, awarded 2011, from Ministry of Nature and Environment, Mongolia.

The Digitization of the Otte Grasshopper and Cricket Song Archives. Submitted to Institute of Museum and Library Services (IMLS) Museums for America program. J. Gelhaus, P.I. (Greg Cowper collaborator) \$389,647 (\$194,292 IMLS request). 2021-2024. FUNDED Sept 2021-August 2024.

Catalog Invertebrate Specimens from Two National Historical Parks (Hopewell Furnace HOFU and Valley Forge VAFO). PMIS # 306203 Submitted through National Park Service Budget Request, 12/2020, J. Gelhaus, \$240,487. PENDING

Collaborative Research: Digitization TCN: iDigBees Network, Towards Complete Digitization of US Bee Collections to Promote Ecological and Evolutionary Research in a Keystone Clade. Collaborative proposal from the Academy of Natural Sciences. J. Gelhaus, PI., (Jason Weintraub, collaborator) \$167,687. NSF Proposal Number #2101871. 2021-2025. Submitted Oct. 9 2020. NSF Advancing Digitization of Biological Collections. (N. Cobb, Lead Institution PI, Northern Arizona University, total budget \$4,221,021. 37 institutions, 33 of these museum collections) Not funded Sept 2021 but to be resubmitted.

Integrating Pest Management, and Morpho-Molecular Tools to Study a New Leatherjacket Pest and Cryptic Crane Flies in Alfalfa. Collaborative proposal from Univ of Kentucky and Academy of Natural Sciences to Alfalfa Forage Research Program USDA. \$298,437 for Year 1. Villanueva, R.T.(UK), J. Dupuis (UK) and Jon Gelhaus (ANSP). Submitted April 18, 2021. DECLINED July 2021.

Collaborative Research: Hierarchical Functioning of River Macrosystems in Temperate Steppes: From Continental to Hydrogeomorphic Patch Scales. Collaborative proposal from The Academy of Natural Sciences, J. Gelhaus, A. Maasri, P.I., \$456,735. NSF-Macrosystems Program. (J, Thorp, Univ of Kansas Lead PI, \$4.2 million total request). 2015-2021. FUNDED

Subaward PG20-66326-01 to Gelhaus for Macroinvertebrate Processing from Univ. of Montana, \$29,029, 06/1/2020-8/31/2021. FUNDED

Digitization TCN: Collaborative Research: Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores. SUBAWARD to ANSP, J.

Gelhaus. \$104,669. (N. Cobb, No. Arizona Univ., Lead PI, \$3.2 million total award) 2016-2021. FUNDED

Strengthening our knowledge of Mongolia's aquatic insect fauna and its use in water quality monitoring and predicting impacts from climate change. J. Gelhaus, PI. \$20,000. Trust for Mutual Understanding, NY. Awarded 2017-2018. FUNDED

Digitization PEN: The addition of OrthopNet to SCAN. J. Gelhaus, PI, \$174,861. NSF: DBI-Digitization Program. July 2016-June 2019. FUNDED

Terrestrial Invertebrate Bioblitz at Valley Forge National Historical Park. . \$11,183. J. Gelhaus, P.I., National Park Service. FUNDED. April 2014-Dec 2015.

Aquatic crane fly diversity and seasonality in the Chesapeake Watershed: sampling along a transect from estuarine to freshwater. \$26,610. ERC Fund (internal), Academy of Natural Sciences. FUNDED. 2014-2015.

Cooperative research on impacts to insect diversity by overgrazing in Hovsgol Lake National Park, Mongolia. J. Gelhaus, PI, Cotswold Foundation, \$84,886. 2012. (Part of larger funded project).

A digital species index to The Academy of Natural Sciences' Entomology Collection. \$150,000. IMLS-Museums for America, MA-05-10-0001-10. FUNDED Oct. 2010-Sept. 2013. Additional Academy match of \$150,000.

Renovation of the Academy of Natural Sciences' Entomology Department Research Collection & Associated Lab. \$1,051,265. (with D. Otte). NSF: DEB: Academic Research Infrastructure (ARI). DBI-0963474. FUNDED Oct 2010-Sept. 2013. Additional Academy contribution of \$170,400.

Survey and Inventory of the Aquatic Insects of the Altai and Hangai Mountains' drainages, Mongolia. \$720,000. (with J. Morse, C. R. Nelson), NSF: Biodiversity Inventories (DEB-0743732), Awarded for 2008-2011.

http://clade.ansp.org/entomology/mongolia/mais_about.html

Development of an identification guide to crane fly pest adults of turfgrass in eastern North America. \$8,000. Northeastern Integrated Pest Management (IPM) Program, USDA. Awarded June-Dec. 2007.

http://www.discoverlife.org/mp/20q?guide=Crane_Fly_Pest_Adult and
<http://paul.rhine.googlepages.com/craneflyguide>

Collaborative Research: Tardigrades of the LTER sites: A Framework for the Distribution and Phylogeny of North American Tardigrada. \$15,974. NSF: Systematics. Assumed ANSP administration of grant for 2007-2012.

Curation of Aquatic Survey Collections at The Academy of Natural Sciences. \$499,972 (Lead PI: G. Rosenberg, also R. McCourt). Biological Research Collections program at NSF (#0448256). Awarded 2005-2008. <http://streamsurvey.ansp.org/>

Collection Based Research Experiences for Undergraduates at The Academy of Natural Sciences \$355,409 (with D. Didier-Dagit, also R. McCourt, E. Daeshcler, 2005-), NSF-REU-BIO # 0353930, awarded 2004-2008. <http://www.ansp.org/research/opportunities/reu.php>

Survey and Inventory of the Aquatic Macroinvertebrates of the Selenge River drainage basin, Mongolia. \$350,000. (with J. Morse, B. Hayford) NSF: Biotic Survey (DEB-0206674), awarded August 1, 2002 - May 31, 2005. Also Research Experiences for Undergraduate Supplement, \$12,000. <http://clade.acnatsci.org/mongolia/>

Re-housing and Database Development of the Primary Type Specimens in the Entomological Collection of the Academy of Natural Sciences. \$92,432. NSF: Biological Research Collections, awarded April 1, 2002 - March 31, 2004 (http://data.acnatsci.org/biodiversity_databases/insects.php)

The conservation, re-housing and databasing of the Titian R. Peale Historic Moth and Butterfly Collection, \$96,700. *Save America's Treasures Program*, National Park Service/National Endowment for the Arts. Awarded February 1, 2002 - January 31, 2003. Additional funding of \$10,000 from the Lattner Foundation. (http://data.acnatsci.org/biodiversity_databases/insects.php)

Field Exploration of Desert Crane Fly Evolution in the Hidalgo Desert, Mexico, \$1000, (collaborative research with A. Contreras-Ramos, Universidad Autonoma Estado Hidalgo). Geographical Society of Philadelphia, awarded January 1, 2002 - January 1, 2003.

Acquisition of Digital Imaging Instrumentation for Light Microscopy and Scanning Electron Microscopy, \$65,883, (With D. Didier-Dagit) NSF-DBI - Major Research Instrumentation, Awarded 2001-2004.

Research Experiences for Undergraduate Site Program, "Collection Based Research Experiences" \$156,612 (with D. Didier-Dagit and R. McCourt), NSF-Systematic Biology, Awarded June 1, 2001 - May 30, 2004

Research Experiences for Undergraduate Site Award, "Collection Based Research Experiences" \$150,000 (with D. Didier-Dagit and R. McCourt), NSF-Systematic Biology, awarded 1998-2001

Enhancement of the ANSP Orthoptera and Diptera Collections, \$175,000 (with Daniel Otte), NSF: DEB Long Term Projects #9420188, awarded for 1995-1997. *Research Experiences for Undergraduate* supplement to "EnhancementCollections", \$9744,

NSF: DEB, awarded 1996. (Supported 2 undergraduates, one who is now an Asst Professor of Biology).

Aquatic Crane Flies of Pennsylvania: Database Development and Preliminary Surveying, \$15,610 (with Chen Young), Pennsylvania Wild Resource Conservation Fund, awarded for 1996-1997.

Aquatic Crane Flies of Pennsylvania: Preliminary Checklist and Database Development, \$13,203 (with Chen Young), Pennsylvania Wild Resource Conservation Fund, awarded for 1995-1996.

Travel Support for Cooperative Systematic and Ecological Research in Northern Mongolia, 1995-1998, \$219,995 (Primary PI=C. Goulden, with D. Didier), NSF: International Programs/E. Asia.

Systematics and Biogeography of the Desert Crane Flies of Western North America, \$135,000, NSF Systematic Biology, awarded for 1992-1995.

Pew Scholarships in Systematics Program: 1992-1994, \$56,000 (with F. Sheldon, S. Schaefer, G. Rosenberg, E. Schuyler) mentor of 4 students 1992-1995, administrator 1994-1995.

Inter-academy Exchange Scientist (Poland), project development visit, NAS Eastern European Program, travel funds, September 1991.

Aquatic Macroinvertebrate Diversity in Ecuador, \$13,550 (with P. Spangler, O. Flint, R. Bouchard, M. Pescador). BIOLAT, Smithsonian Institution, 1990.

Postdoctoral Fellow, Smithsonian Institution, Department of Entomology, 1989.

Hungerford Fellowship, Department of Entomology, The University of Kansas, Summer 1988.

Dissertation Fellowship, Office of Graduate Studies, The University of Kansas, 1985-1986.

Theodore Roosevelt memorial Fund Travel Grant, American Museum of Natural History, 1986.

Dissertation Travel Fund Award, Office of Graduate Studies, The University of Kansas, 1986.

Beamer Fund Travel Award, Department of Entomology, The University of Kansas, 1979.

Ph.D. Advisory Committee: George Byers (chair), Charles Michener, Edward Wiley

Postdoctoral Advisor: Wayne Mathis

Collaborators (last 48 months): B. Boldgiv, A. Borkent, B. Brown, W. Bouchard, S. Chandra, R. Conrow, B. Erdenee, C. Goulden, B. Hayford, N. Cobb, J. Dupuis, M. Hauser, H. de Jong, D. Kato, L. Knutson, Q. Liu, A. Maasri, S. Mason, C. R. Nelson, Y. Oyunchuluun, S. Podenas, J. Thorpe, M. Peyron, V. Podeniene, R. Rozkosny, R. Villanueva, C. Young

FIELD EXPERIENCE

Asia: Mongolia: (1996, 1997, 2002, 2003, 2004, 2005, 2006, 2009, 2010, 2012). China: (2018).

Neotropical: Ecuador (1990), Mexico (1990, 2003, 2004), Peru (1989), Costa Rica (2013)

North America: Western United States - numerous expeditions (1979, 1981, 1983, 1985, 1986, 1990, 1991, particularly west Texas & New Mexico 1992-1993, California, Nevada 1995, 2019) Central Plains, particularly Kansas (1979-1988), New Jersey (Pine Barrens) 1992-present, Pennsylvania 1997-present).

Europe: Poland (1991).

Africa: South Africa (2020)

RESEARCH INTERESTS

I am a systematist with research interests ranging from phylogenetic reconstruction, historical and ecological biogeography, biodiversity measures and evolution of morphological character systems. My systematic expertise is in aquatic nematoceran Diptera, specifically crane flies (Tipuloidea), an insect group of nearly 16,000 described species worldwide found in a wide range of aquatic and terrestrial habitats. Current Gelhaus-led research projects include inventory and endemism of aquatic insects in Mongolia, endemism of crane flies of the Atlantic coastal plain, the evolution of crane flies in the deserts of western North America and its application to understanding the historical biogeography of these regions; development of identification keys for larval and adult crane flies in the New World; and taxonomic revisions of selected crane fly genera in the New World.

The projects of the graduate students in my lab are: fire impacts on insect communities in the New Jersey Pine Barrens (Stephen Mason Jr, Ph.D. granted Aug 2021), flow alteration impacts on freshwater macroinvertebrate communities at multiple scales from river reach to continental in temperate steppe biome (Bolortsetseg Erdenee) and phylogeny of the long-palped crane flies, Tipulidae s.s., and analysis of transitions between freshwater and terrestrial habitat use (Robert Conrow). One undergraduate, Maddie Worth, is working with me in describing an extraordinary diversity (24 species) of a nectar feeding crane fly *Geranomyia* in Zurqui, Costa Rica.

PUBLICATIONS : 90+ published or in press articles, books and other publications

PEER REVIEWED = (*)

1. Arnaud, Jr., P. H. and **J. K. Gelhaus**. 1980. A new *Trypetisoma* from Mexico (Diptera: Lauxaniidae). *Proceedings of the Entomological Society of Washington* 82(3): 488-492. (*)
2. **Gelhaus, J. K.** and S. W. Hamilton. 1981. Trichoptera (caddisflies), Chapter 21. Pp. 167-183 In: Huggins, D. G., P. M. Liechti and L. C. Ferrington, eds., Guide to the freshwater invertebrates of the Midwest. *Technical Publications of the State Biological Survey of Kansas* no. 11.
3. **Gelhaus, J. K.** 1982. New records and distributional notes for Kansas crane flies, excluding *Limonia* (Diptera: Tipulidae). *Technical Publications of the State Biological Survey of Kansas* 12: 70-88.
4. **Gelhaus, J. K.** and E. M. May. 1983. New records and distributional notes for Kansas crane flies, (Diptera: Tipulidae), II. *Technical Publications of the State Biological Survey of Kansas* 13: 42-47.
5. Teale, S. A. and **J. K. Gelhaus**. 1984. Natural history and synonymy of *Tipula (Vestiplex) platymera* Walker (Diptera: Tipulidae) with description of the larvae and pupae. *Journal of the Kansas Entomological Society* 57(3): 423-429. (*)
6. **Gelhaus, J. K.** 1986. *Tipula (Platytipula) hugginsi*, n. sp. from Kansas (Diptera: Tipulidae). *Journal of the Kansas Entomological Society* 59(2): 378-383. (*)
7. **Gelhaus, J. K.** 1986. Larvae of the crane fly genus *Tipula* in North America (Diptera: Tipulidae). *University of Kansas Science Bulletin* 53: 121-182. (*)
8. **Gelhaus, J. K.** 1987. A detritivore *Tipula* (Diptera: Tipulidae) as a secondary host of *Poecilogonalos costalis* (Hymenoptera: Trigonolidae). *Entomological News* 98(4): 161-162. (*)
9. **Gelhaus, J. K.** 1991. The zoogeography of the crane flies (Diptera: Tipulidae) of Mexico: An exercise in futility? Abstract in Symposium: Zoogeographic affinities of the aquatic fauna of Mexico. *Bulletin of the North American Benthological Society* 8(1): 72.
10. **Gelhaus, J. K.** and C. W. Young. 1991. The immature instars and biology of the crane fly genus *Brachypremna* Osten Sacken (Diptera: Tipulidae). *Proceedings of the Entomological Society of Washington* 93(3): 613-621. (*)
11. Young, C. W and **J. K. Gelhaus**. 1992. *Leptotarsus (Longurio) byersi*, a new flightless crane fly from Ecuador (Diptera: Tipulidae). In: Proceedings of the First International Symposium on Tipulomorpha. *Acta zool. Cracov.* 35(1): 97-105.

12. **Gelhaus, J. K.**, E. C. Masteller and K. M. Buzby 1993. Emergence composition and phenology of Tipulidae (Diptera) from a tropical rainforest stream at El Verde, Puerto Rico. *Journal of the Kansas Entomological Society*. 66(2): 160-166. (*)
13. **Gelhaus, J. K.** 1993. Book review of *Life in Amber* and *Les fantomes de l'ambre insectes fossiles dans l'ambre de la Baltique*. *Entomological News* 104(4): 214-215.
14. Darlington, J. P. E. C. and **J. K. Gelhaus**. 1993. Crane flies (Diptera: Tipulidae) in Trinidad caves. *Living World, Journal of The Trinidad & Tobago Field Naturalists' Club* 1993-1994: 38-41.
15. Livingstone, M. E. and **Gelhaus, J. K.**. 1994. Further observations of the emergence composition and phenology of crane flies (Diptera: Tipulidae) from a tropical rain forest stream at El Verde, Puerto Rico. *Journal of the Kansas Entomological Society*. 66(4): 405-410. (*) (with undergraduate student)
16. Welch, N. and **J. K. Gelhaus**. 1994. A new species of *Helius* crane fly (Diptera: Tipulidae) with reduced antennae, from Aripo Caves, Trinidad. *Entomological News* 105(3): 125-132. (*) (with undergraduate student)
17. **Gelhaus, J. K.** and G. Byers. 1994. Tipulidae, Chapter 19, pp. 438-458, *IN* J. Morse, Lixin T., and Yang L., eds., *The aquatic insects of China useful for detecting water pollution*, Nanjing Agricultural University Press.
18. **Gelhaus, J. K.** 1994. Systematics and biogeography of the *Tipula (Lunatipula) tergata* species group (Diptera: Tipulidae), a desert inhabiting crane fly group in western North America. Abstract. *Proceedings of the Third International Congress of Dipterology*, Guelph, Ontario, pp. 72-73.
19. **Gelhaus, J. K.** and C. W. Young. 1995. Pupae of the crane fly genus *Leptotarsus* (Diptera: Tipulidae) in the New World, with discussion of the monophyly of the genus. *Annals of the Carnegie Museum* 64(2): 135-145. (*)
20. **Gelhaus, J. K.** and R. Johnson. 1996. First record of crane flies (Tipulidae: Limoniinae) in Upper Cretaceous amber from New Jersey, U.S.A. *Transactions of the American Entomological Society* 122(1): 55-65. (*)
21. Louton, J., **J. Gelhaus** and R. Bouchard 1996. The aquatic macrofauna of water-filled bamboo (Poaceae: Bambusoideae: *Guadua*) internodes in a Peruvian lowland tropical forest. *Biotropica* 28(2): 228-242. (*)
22. **Gelhaus, J.**, S. Podenas and F. Brodo. 2000. New and poorly known species of long-palped crane flies (Diptera: Tipulidae) from Mongolia. *Proceedings of the Academy of Natural Sciences* 150: 145-157. (*)

23. Podenas, S. and **J. Gelhaus**. 2000. A new species of long-palped crane fly in the subgenus *Tipula (Odonatisca)* [Diptera: Tipulidae] from Mongolia. *Transactions of the American Entomological Society* 126(1): 109-115. (*)
24. Young, C. W. and **J. Gelhaus**. 2000. Crane flies of Pennsylvania: Preliminary checklist and database development with emphasis on aquatic species. *Report submitted to Pennsylvania Wild Resource Conservation Fund*. 256 pp. Available from authors.
25. **Gelhaus, J.** 2000. Manual for the identification of aquatic crane fly larvae of Northwest North America. *Manual for Northwest Biological Assessment Workgroup's Taxonomic Workshop*, Ellensburg, WA. 147pp.
26. **Gelhaus, J.** 2001. A biological inventory of the aquatic insects of Lake Hovsgol and its watershed, particularly focusing on the crane flies (Insecta: Diptera: Tipuloidea), pp. 83-86. IN: Jacoby, G. and N. Pederson, eds., *Proceedings of the Conference on Mongolian Paleoclimatology and Environmental Research November 3-4, 2000*, Lamont-Doherty Earth Observatory, Palisades, N.Y.
27. Podenas, S. and **J. Gelhaus**. 2001. New species of short-palped crane flies (Diptera: Limoniidae) from Mongolia. *Proceedings of the Academy of Natural Sciences* 151: 41-59. (*)
28. **Gelhaus, J.** 2001. European Crane Flies – *Tipula* spp., pp. 13-17 IN: *FY2002 Eastern Region Cooperative Agriculture Pest Survey (CAPS) Guidelines*, Animal and Plant Health Inspection Service (APHIS) and National Plant Board.
29. Contreras-Ramos, A. and **J. Gelhaus**. 2002. Tipulidae (Diptera), chapter 34, pp. 583-595, IN: Bousquets, J. L. and J. J. Morrone, eds., *Biodiversidad, Taxonomía y Biogeografía de Artrópodos de México: Hacia una Síntesis de su Conocimiento*. Vol III. Universidad Nacional Autónoma México, México D. F.
30. **Gelhaus, J.** 2002. Manual for the identification of aquatic crane fly larvae for Southeastern United States. Prepared for the Carolina Area Benthological Workshop, Durham, N. C.. 215 pp. Available from author.
31. Podeniene, V. and **J. K. Gelhaus**. 2002. The first description of the larva of the crane fly genus *Gonempeda* Alexander, 1924 (Limoniidae: Chioneinae), with new information for understanding the phylogenetic relationships of the genus. *Proceedings of the Academy of Natural Sciences* 152: 67-73. (*)
32. Goulden, C. E., **J. Gelhaus**, C. Hession and B. Boldgiv. 2002. Lake Khovsgol. The blue pearl of Mongolia. *Focus on Geography* 47(1): 14-19

33. Poinar, G. and **J. Gelhaus**. 2004. Larval development of *Cylindrotoma distinctissima americana* Osten Sacken, 1865 (Tipulidae: Cylindrotominae) on *Maianthemum dilatatum* (Liliaceae) in California. *Proceedings of the Entomological Society of Washington*.106(2): 478-480. (*)
34. Rao, S. and **J. Gelhaus**. 2004. Peppermint, a new host record for crane flies (Diptera: Tipulidae). *Pan-Pacific Entomologist* 79 (3/4): 252-253. (volume of 2003) (*)
35. Podeniene, V., S. Podenas and **J. K. Gelhaus**. 2004. First record of a Crane Fly Larva (Diptera, Limoniidae: Chioneinae) from Baltic Amber. *Annals of the Entomological Society of America* 97(6): 1126-1128. (*)
36. Petersen, M. J. and **J. K. Gelhaus** and E. C. Bernard. 2004. New species and records of crane flies (Diptera, Tipuloidea) from Great Smoky Mountains National Park, Tennessee and North Carolina, U.S.A. *Transactions of the American Entomological Society* 130(4): 439-455. (*)
37. **Gelhaus, J.**, J. Morse, B. Hayford, E. Sanaa, Y. Oyunchuluun, C. Suvdtsetseg, B. Zagas. 2004. Survey and Inventory of the Aquatic Macroinvertebrates of the Selenge River drainage basin, Mongolia. Abstract IN: Munkhbayar, Kh, editor, International Conference on Biodiversity of Euro-Asia Continental Wetlands, Ulaanbataar, Mongolia, pp. 38-39.
38. **Gelhaus, J. K.** 2005. Systematics and biogeography of the desert crane fly subgenus *Tipula (Eremotipula)* Alexander (Diptera: Tipulidae). *Memoirs of the American Entomological Society* no. 46, 235 pp. (*)
39. **Gelhaus, J.** and S. Podenas. 2006. The diversity and distribution of crane flies (Insecta: Diptera: Tipuloidea) in the Hovsgol lake watershed, northern Mongolia, Chapter 18, pp. 279-303, In: C. Goulden, J. Gelhaus, T. Sitnikova and B. Boldgiv (eds.), *The Geology, Biodiversity and Ecology of Lake Hovsgol, Mongolia*, Backhuys Publishers, Leiden.
40. Held, D. and **J. Gelhaus**. 2006. Damage in centipede sod associated with crane fly and march fly larvae (Diptera: Tipulidae, Bibionidae) in Mississippi. *Florida Entomologist* 89(1): 89-90. (*)
41. **Gelhaus, J.** 2006. The crane fly *Tipula (Tipula) oleracea* (Diptera, Tipulidae) reported from Michigan: a new pest of turfgrass in eastern North America. *Great Lakes Entomologist* 38(1/2): 97-99. (volume for 2005) (*)
42. Podeniene, V., **J. K. Gelhaus** and Y. Oyunchuluun. 2006. The last instar larvae and pupae of *Tipula (Arctotipula)* (Diptera, Tipulidae) from Mongolia. *Proceedings of the Academy of Natural Sciences of Philadelphia* 155: 79-105. (*)

43. Simard, L., J. Brodeur, **J. Gelhaus**, E. Taschereau and J. Dionne. 2006. Emergence of a new turfgrass insect pest on golf courses in Québec, the European crane fly (Diptera: Tipulidae). *Phytoprotection* 87:43-45. (*)
44. Amat, E. and **J. Gelhaus**. 2006. Tipúlidos de Colombia (Diptera: Tipulidae), abstract, pg. 504, *IN*: Andrade, C. et al. (editors), *Segundo congreso colombiano de zoología. Libro de resúmenes*. Editorial Panamericana Formas e Impresos S.A.
45. **Gelhaus, J. S.** Podenas, Y. Oyunchuluun, and V. Podeniene. 2007. The crane fly family Cylindrotomidae (Diptera): newly recorded for Mongolia. *Proceedings of the Academy of Natural Sciences of Philadelphia* 156: 59-69. (*)
46. Byers, G. W. and **J. K. Gelhaus**. 2008. Tipulidae, chapter 23 (763-790), *IN*: Merritt, R. W., K. Cummins and M. Berg, eds., *An introduction to the aquatic insects of North America*, 4th ed., Kendall-Hunt Publ., Dubuque IA.
47. Podenas, S. and **J. Gelhaus**. 2007. Identification keys for Limoniinae (Diptera, Limoniidae) of Mongolia and adjacent territories. Vilnius University, Vilnius. 84 pp.
48. De Jong, H., P. Oosterbroek, **J. Gelhaus**, H. Reusch and C. Young. 2008. Global diversity of crane flies (Insecta, Diptera: Tipuloidea or Tipulidae sensu lato) in freshwater. *Hydrobiology* 595: 457-467.
49. **Gelhaus, J.** 2008. Manual for the Identification of Aquatic Crane Fly Larvae for North America. Prepared for the North American Benthological Society Workshop, May 2008, Salt Lake City UT. 212 pp. Available from author.
50. **Gelhaus, J.**, B. Hayford, J. Morse, C. R. Nelson, Ch. Suvdtsetseg, Y. Oyunchuluun, E. Sanaa. 2008. The Mongolian Aquatic Insect Survey (MAIS): Progress and future projects, pp. 53-60 *IN* B. Boldgiv, ed. *Proceedings of the International Conference, Fundamental and Applied Issues of Ecology and Evolutionary Biology*. National University, Ulaanbaatar, Mongolia.
51. Taschereau, E., L. Simard, J. Brodeur, **J. Gelhaus**, G. Bélair and J. Dionne. 2009. Seasonal ecology of the European Crane Fly (*Tipula paludosa*) and species diversity of the family Tipulidae on golf courses in Québec, Canada. *International Turfgrass Society Research Journal* 11: 681- 693 (*)
52. **Gelhaus, J.** 2009. Tipulidae (crane flies, tipúlidos) Chapter 8, pp. 193-236, *IN*: Brown, B.V. et al. (editors) *Manual of Central American Diptera: Volume 1*. National Research Council Research Press, Ottawa, Ontario, Canada(*)
53. Eberhard, W. G. and **J. K. Gelhaus**. 2009. Genitalic stridulation during copulation in a species of crane fly, *Tipula (Bellardina)* sp. (Diptera: Tipulidae). *Revista de Biología Tropical (International Journal of Tropical Biology) Supplement* 57: 251-256. (*)

54. **Gelhaus, J.** 2010. The census of aquatic biodiversity in Mongolia: Results from the Mongolian Aquatic Insect Survey 2002-2010. Abstract,, pg. 37. First International Conference “Survey of Mongolian aquatic ecosystems in a changing climate: Results, new approaches and future outlook. 7-10 April 2010. Ulaanbaatar, Mongolia” Water Research Center, National University of Mongolia, Ulaanbaatar
55. Hayford, B. and **J. Gelhaus.** 2010. The relationship between Grazing, Erosion and Adult Aquatic Insects in Streams in Mongolia. *Mongolian Journal of Biological Sciences* 8(1): 27-39. (pdf received 10/15/2010) (*)
56. Podeniene, V. and **J. K. Gelhaus.** 2010. The last instar larvae and pupae of Mongolian Limnophilinae from genera *Eloephila*, *Limnophila* and *Phylidorea* (Diptera, Limoniidae). *Proceedings of the Academy of Natural Sciences* 159: 185-204. (published 10/26/2010) (*)
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58. Maasri, A., **J. K. Gelhaus,** B. Hayford and S. Chuluunbat. 2010. Chemical and Biological status of waterbodies of the Uvs Province, Mongolia. Report to Aimag officials, 21 pp. Available from authors.
59. Maasri, A., and J. K. **Gelhaus.** 2011. The new era of livestock production in Mongolia: Consequences on streams of the Great Lakes Depression. *Science of the Total Environment* 409: 4841-4846. [doi:10.1016/j.scitotenv.2011.08.005](https://doi.org/10.1016/j.scitotenv.2011.08.005) publ. 9/1/2011 (*)
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62. **Gelhaus, J.** 2012. The census of aquatic insect biodiversity and water quality in Mongolia: Results from the Mongolian Aquatic Insect Survey 2002-2011, pp. 89-90 *IN:* A. Stubbe, ed. International Symposium “*Biodiversity Research in Mongolia*”. Martin-Luther-Universitat Halle Wittenberg, Halle (Saale), Germany, 25-29 March 2012
63. Maasri, A., and J. K. **Gelhaus.** 2012. Stream invertebrate communities of Mongolia: current structure and expected changes due to climate change. *Aquatic Biosystems* 8 (18): 1-13. (*)

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65. Podenas, S., J. K. **Gelhaus**, and V. Podeniene. 2013. An overview of the Tipulomorpha and Ptychopteromorpha crane flies (Diptera) of Mongolia. *Proceedings of the Academy of Natural Sciences* 162: 111-123. (*)
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- Charles E. Harp, Rachel L. Hawkins, Steve L. Heydon, Geena M. Hill, Stacey Huber, Norman Johnson, Akito Y. Kawahara, Lynn S. Kimsey, Boris C. Kondratieff, Frank-Thorsten Krell, Luc Leblanc, Sangmi Lee, Christopher J. Marshall, Lindsie M. McCabe, Joseph V. Mchugh, Katrina L. Menard, Paul A. Opler, Nicole Palffy-Muhoray, Nick Pardikes, Merrill A. Peterson, Naomi E. Pierce, Andre Poremski, Derek S. Sikes, Jason D. Weintraub, David Wikle, Jennifer M. Zaspel, Gregory Zolnerowich. **2017**. LepNet: The Lepidoptera of North America Network. *Zootaxa* 4247 (1): 073-077. (*)
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85. Yadamsuren, Oyunchuluun, John C. Morse, Barbara Hayford, Jon K. **Gelhaus**, Peter H. Adler. 2020. Macroinvertebrate Community Responses to Land Use: Trait-Based Approach for Freshwater Biomonitoring in Mongolia. *Hydrobiologia* DOI <https://doi.org/10.1007/s10750-020-04220-2> (online March 20, 2020, Open access) *
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89. Gelhaus, J. Oyunchuluun Yadamsuren, Sigitas Podenas and Virginija Podeniene. 2021. The impact of an intensive freshwater sampling and research program in Mongolia: uncovering the large diversity of crane flies (Diptera: Tipuloidea) through the Mongolian Aquatic Insect Survey, pp. 74-76, in "AQUATIC BIODIVERSITY OF MONGOLIA, SURFACE WATER QUALITY ASSESSMENT: CURRENT STATUS AND CHALLENGES" Dr. O.Yadamsuren (organizer), Department of Biology, Mongolian National University of Education (MNUE), Mongolia. Abstract.
89. Mason Jr, Stephen C, Vaughn Shirey, Lauren C Ponisio and Jon K **Gelhaus**. 2021. Responses from bees, butterflies, and ground beetles to different fire and site characteristics: A global meta-analysis *Biological Conservation* 261 (2021) 1-16. <https://doi.org/10.1016/j.biocon.2021.109265> (July 30 2021). Supplemental data files 1-4, Appendix files A and B.
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91. Conrow, R. T. and J. K. **Gelhaus**. (2022) Wing interference patterns are consistent and sexually dimorphic in the four families of crane flies (Diptera, Tipuloidea). *ZooKeys* 1080: 135-163. <https://doi.org/10.3897/zookeys.1080.69060>

BOOKS (as Editor)

C. Goulden, **J. Gelhaus**, T. Sitnikova and B. Boldgiv (eds.). 2006. *The Geology, Biodiversity and Ecology of Lake Hövsgöl, Mongolia*, Backhuys Publishers, Leiden, Netherlands.

WEBSITES and BLOG POSTS

Gelhaus, J. K., Drexel University Library Project Class. 2001. Tipulidae research site. Resource Guides for Mongolia, Biodiversity, C. P. Alexander. <http://www.acnatsci.org/~gelhaus> (not current)

Gelhaus, J.K., A. Phillips-Iverson. 2002. The aquatic invertebrates of the watershed of Lake Hovsgol in northern Mongolia. <http://www.acnatsci.org/~mongolia> (not current) –
→ now incorporated into Hayford, Iverson and Gelhaus, 2005 site.
(see http://www.acnatsci.org/%7Egelhaus/chapters/lake_hovsgol.htm)

J.K. Gelhaus, J.D. Weintraub, P.J. Morris, and E. Benamy. 2004. An illustrated online catalog of the Titian Peale Butterfly and Moth Collection (version 1.0: 2004-Sept-20).

<http://clade.ansp.org/entomology/collections/peale/>

Hayford, B., A. Phillips-Iverson, **J. Gelhaus**. 2005. Mongolian Aquatic Insect Survey website. <http://clade.acnatsci.org/mongolia/>

Rhine, P. and **J. Gelhaus**. 2007a. Identification guide to crane fly pest adults of turfgrass in eastern North America. http://www.discoverlife.org/mp/20q?guide=Crane_Fly_Pest_Adult and <http://paul.rhine.googlepages.com/craneflyguide>

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A. Phillips-Iverson and **J. Gelhaus**. 2010. Mongolian Altai Survey Project, Mongolian Aquatic Insect Survey website. <http://clade.ansp.org/entomology/mongolia/>

Mason, S., I. Betancourt, S. Dilliplane, and J. Gelhaus. 2013-2014. The Entomology Collection at the Academy of Natural Sciences; online search portal. <http://symbiont.ansp.org/entomology/>

Shirey, V. and **J. Gelhaus**, and G. Cowper. 2014-2015. Database to the insects of the Franklin Parker Preserve, New Jersey. http://symbiont.ansp.org/ent_symbiota/index.php (Shirey developed this while a Drexel undergraduate student and this was his co-op project with me).

Gelhaus, J., J. Weintraub and I. Betancourt. Spring Butterfly Guide. Blog product, Academy of Natural Sciences of Drexel University. April 10, 2020. <https://www.anspblog.org/spring-butterfly-guide/> 110 Zoom registrants participated.

Pdf Printable Guide: https://mcusercontent.com/f0c2a2a1df06108df67936af1/files/bc896e96-efc1-436d-b25e-e35968ee4460/Butterfly_Guide_Printable_Early_Spring.pdf

Gelhaus, J., J. Weintraub and I. Betancourt. Late Spring Butterfly Guide. Blog product, Academy of Natural Sciences of Drexel University. May 26, 2020. <https://www.anspblog.org/late-spring-butterfly-guide/>

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Gelhaus, J., J. Weintraub and I. Betancourt. Summer Butterfly Guide. Blog product, Academy of Natural Sciences of Drexel University. July 21, 2020. <https://www.anspblog.org/summer-butterfly-guide/>

Gelhaus, J., J. Hutelmeyer, G. Cowper, J. Weintraub. Academy Entomologists Collection Trip to the Pine Barrens. Aug. 4 2020. 243 views as of Oct. 12 2020. https://www.youtube.com/watch?v=jEeFraYhhAs&fbclid=IwAR3mQyf0TF_EDY11v3hN24AGgVgM4QOt29vWKQXdP3a0HbxwTxp_Cd82a4o

Gelhaus, J. . Is Philly being snubbed again? (periodical cicadas)
<https://www.anspblog.org/is-philly-being-snubbed-again/> Published April 21, 2021

Gelhaus, J. Brood X Cicadas, Part 1. (periodical cicadas)
<https://www.anspblog.org/brood-x-cicadas-part-1/> Published April 20, 2021

Gelhaus, J. Brood X Cicadas, Part 2. (periodical cicadas)
<https://www.anspblog.org/brood-x-cicadas-pt-2/> Published April 20, 2021

J. Hutelmeyer, Gelhaus, J. Specimen: From the field to the collection. https://drexel0-my.sharepoint.com/:v:/r/personal/jah536_drexel_edu/Documents/RENDERS/BugFest-Jon-with-aspirator-Final.mp4?csf=1&web=1&e=jhXchQ 12 min video. Now playing in Academy auditorium for all visitors. Shot in the field and in the lab tracing how one samples insects, prepares the specimens and preserve in the collection. Aug. 2021

OTHER REPORTS AND WRITINGS:

Gelhaus, J. K. American Entomological Society Meeting Summaries - numerous 25+, published in Entomological News 1991-2005:

Gelhaus, J. K. and D. Koenig. 1994. Insects, Bayside Environmental Assessment, PSE&G, Cumberland Co., NJ. Submitted October 1994. 11pp.

Gelhaus, J. K. 1999. Report on the inventory of crane fly species in the Fairmount Park system, Philadelphia, during 1998, pgs. I-67-I-78, pgs. III-111-139. *IN:* Fairmount Park System: Natural Land Restoration Master Plan Vol. I-III. Available as pdf from:
<http://www.ansp.org/research/pcer/projects/fairmont/index.php>

Gelhaus, J. K. 2000. Assessment of the Wagner Free Institute's Entomological Collections (Diptera, Aquatic Insect Orders, Homoptera, Neuroptera). Submitted May 2000, 16 pp.

Online article and video on my research:

<http://the-scientist.com/2012/02/01/swarming-mongolia/>

PRESENTATIONS (over 70 total career, including 33 invited, also symposium organizer) (only 2002-present shown (50+)):

Gelhaus, J. Taxonomic Workshop, The Tipulidae of the Southeastern U.S. with emphasis on the identification of aquatic larval stages." **Invited workshop** given at the Carolina Area Benthological Workshop, Durham, North Carolina, March 22, 2002.

Gelhaus, J. The bugs all around us. Wagner Free Institute of Science, Philadelphia, PA April 13, 2002. **Invited Talk.**

Gelhaus, J. "Bug Hunting" in Mongolia: entomological research at Hovsgol Nuur, an ancient lake. The Entomological Society of Washington, Smithsonian Institution, Washington, D.C. May 2, 2002. **Invited Talk.**

Gelhaus, J. Identification of Tipulidae larvae, Taxonomic Fair participant, North American Benthological Society, Pittsburgh, PA. May 29 2002. **Invited Presentation.**

Gelhaus, J. and S. Podenas. The crane flies (Insecta: Diptera: Tipuloidea) of the watershed of Hovsgol Nuur, an ancient lake in northern Mongolia. North American Benthological Society, Pittsburgh, PA. May 31 2002.

Gelhaus, J. Biodiversity research on crane flies (Diptera; Tipulidae) : from the steppes of Mongolia to the deserts of North America. Universidad Autonoma de Estado Hidalgo, Pachuca, Mexico, Oct. 4, 2002. **Invited Talk.**

Gelhaus, J and C. Young. The results of a survey of the crane fly species in Pennsylvania. Entomological Society of Pennsylvania annual meeting, Tuscarora St. Park, Oct. 25, 2002. **Invited Talk.**

Gelhaus, J. The re-discovery in New Jersey of the crane fly *Leptotarusus rivertonensis*. Newark Entomological Society annual meeting, Rutgers University, October 26, 2002.

Gelhaus, J. Status of our knowledge of the systematics, biology and ecology of the aquatic crane flies of North America. **Invited talk**, IN symposium: Aquatic insects of North America: Status of our knowledge of systematics, biology and ecology, C. Covell, Jr. and W, Lamp, co-organizers. Entomological Society of America Annual Meeting, Ft. Lauderdale, FL, Nov. 19, 2002.

Gelhaus, J. 2003. Never on a Saturday: Setting out on a Mongolian Insect Expedition. **Invited talk**, Fall 2003 Explorer Lecture, The Academy of Natural Sciences, Philadelphia, PA. Nov. 18, 2003.

Gelhaus, J. 2004. Meet Academy scientist Jon Gelhaus, Mexican research program. Geographical Society of Philadelphia lobby program, Feb, 18, 2004.

Gelhaus, J., J. Morse, B. Hayford, E. Sanaa, Y. Oyunchuluun, C. Suvdtsetseg, B. Zagas. 2004. Survey and Inventory of the Aquatic Macroinvertebrates of the Selenge River drainage basin, Mongolia. International Conference on Biodiversity of Euro-Asia Continental Wetlands, Ulanbataar, Mongolia, Sept. 6-9, 2004. Given by Oyunchuluun.

Gelhaus, J. 2004. Pleasures and pitfalls of insect expeditions in Mongolia. Joint Meeting: **Invited talk**, Entomological Society of Pennsylvania/American Entomological Society, Oct 20-22, 2004, Avondale, PA.

Gelhaus, J. 2004 . Biodiversity survey of the aquatic insects of the Selenge River Basin in northern Mongolia. Beijing Agricultural University, Beijing, China, June 2004. **Invited Talk.**

Gelhaus, J. 2004. Biodiversity survey of the aquatic insects of the Selenge River Basin in northern Mongolia. US Embassy, Ulaanbaatar, Mongolia. August 2004. **Invited Talk.**

Gelhaus, J. 2004. The Titian Ramsey Peale Butterfly and Moth Collection. The Academy of Natural Sciences, Dec. 3, 2004.

Gelhaus, J. 2005. Never on a Saturday: Setting out on a Mongolian Insect Expedition. Clemson University, Clemson, SC. April 21, 2005. **Invited Talk.**

Gelhaus, J. 2005. Issues in Conducting Scientific Research Abroad: Mongolia. Research Experiences for Undergraduates, Program, The Academy of Natural Sciences, June 14, 2005

Gelhaus, J. 2006, 2007. Issues in Conducting Scientific Research Abroad: Mongolia. Research Experiences for Undergraduates, Program, The Academy of Natural Sciences, June 2006, June 2007.

Gelhaus, J. 2006. Never on a Saturday: Setting out on a Mongolian Insect Expedition. Brigham Young University, Provo, UT. Dec. 14, 2006, **Invited talk.**

Gelhaus, J., E. Daeschler, A. Farrell and R. Thomas. 2007. Diverse research experiences for undergraduates at The Academy of Natural Sciences of Philadelphia, an urban natural history museum. Poster presentation, REU Site Directors Conference, NSF, Washington, D.C.

Rhine P. and **J. Gelhaus.** 2007. Online Identification Guide to Crane Fly (Insecta: Diptera: Tipulidae) Pests of Turfgrass and Pastures in eastern North America. Paper presentation at Annual Meeting of the Entomological Society of Pennsylvania, Parker Dam, PA Nov. 10, 2007.

Gelhaus, J., P. Rhine. 2007. Online identification guide to crane fly (Insecta: Diptera: Tipulidae) pests of turfgrass and pastures in eastern North America. Poster Presentation, Annual Meeting of the Entomological Society of America, San Diego, CA. Dec 12, 2007.

Gelhaus, J. 2007, The Academy of Natural Sciences Research Program in Mongolia, Board of Directors Meeting, The Academy of Natural Sciences, June 1, 2007, Jun-07

Gelhaus, J. 2007, Issues in Conducting Scientific Research Abroad: Mongolia., Research Experiences for Undergraduates, Program, The Academy of Natural Sciences, June 22, 2006, Jun-07

Gelhaus, J. Hayford, B., J. Morse, C. R. Nelson, Ch. Suvdtsetseg, Y. Oyunchuluun, E. Sanaa, 2008, Invited Talk, The Mongolian Aquatic Insect Survey (MAIS): progress and future projects, Fundamental and Applied Issues of Ecology and Evolutionary Biology, 20th Anniversary of Ecology Department, National University of Mongolia ,Ulaanbaatar., April 25 2008. **Invited talk**

Gelhaus, J. 2008, Bug collecting in the land of Genghis Khan: The Academy's research in the rivers and streams of Mongolia, Public Presentation (2), Bugfest Weekend, The Academy of Natural Sciences, Philadelphia, Aug-08

Gelhaus, J. 2008, The Mongolian Aquatic Insect Survey (MAIS), Presentation for Member's Night Out, The Academy of Natural Sciences, Sept. 26, 2008

Gelhaus, J. 2009. Bug collecting in the land of Genghis Khan: The Academy's research in the rivers and streams of Mongolia, Public Presentation, Lehigh Valley colleges ecological and environmental scientific meeting, Cedar Crest College, Allentown, PA, **Invited talk**, banquet, April 19, 2009.

Gelhaus, J. 2009, Mongolian Expedition 2009 - First Impressions, Academy of Natural Science, Entomology Department, Philadelphia, 6-Aug-09

Gelhaus, J. 2009. Philip Haimbach: Diaries of a Promising Young Naturalist. 150th

Anniversary meeting, The American Entomological Society, Feb.25, 2009. Philadelphia, PA, also Bugfest, August 15, 2009

Gelhaus, J. 2009, The Mongolian Aquatic Insect Survey (MAIS), Presentation for Member's Night Out, The Academy of Natural Sciences, Oct. 23, 2009

Gelhaus, J. 2009, Conducting research in Mongolia, Entomology Class, Towson State University, Oct. 9, 2009. **Invited talk**

Gelhaus, J. 2009. *Sampling methods for the Insect Survey of the Franklin Parker Preserve 2006- 2009.* American Entomological Society December, 2009 meeting (Academy of Natural Sciences, Philadelphia, PA).

Gelhaus, J. 2009. *A brachypterous crane fly from the Parker Preserve = new species?* American Entomological Society December, 2009 meeting (Academy of Natural Sciences, Philadelphia, PA).

Gelhaus, J. 2010. The census of aquatic biodiversity in Mongolia: results from the Mongolian Aquatic Insect Survey 2002-2010. First International Conference "Survey of Mongolia aquatic ecosystems in a changing climate: Results, new approaches and future outlook", 7-10 April 2010, Ulaanbaatar, Mongolia. Keynote Speaker.

Gelhaus, J. K. and B. L. Hayford. 2010. Relationship between the variation of adult aquatic insects to stream condition in streams from Mongolia. Poster Presentation, Annual Meeting, North American Benthological Society, Sante Fe, NM USA, June 6-11, 2010

Gelhaus, J. 2011. Developing entomological science while chasing bugs: 15 years of exploration in Mongolia Invited Tanner Lecturer by M. L. Bean Life Science Museum, Brigham Young University, Provo, UT. Invited for March 24, 2011. Also Franklin In Club, Philadelphia, October 4, 2012

Gelhaus, J., R. W. Bouchard, Jr. 2011. First record of a skating crane fly. North American Dipterist Society annual meeting, Mt. Timpanogos Lodge, M. T., Utah. June 7-10, 2011. Also, Entomological Society of Pennsylvania Annual Meeting, Harrisburg, Pennsylvania, October 20, 2012.

Gelhaus, J. 2012. The census of aquatic insect biodiversity and water quality in Mongolia: Results from the Mongolian Aquatic Insect Survey 2002-2011. International Symposium "Biodiversity Research in Mongolia". Martin-Luther-Universitat Halle Wittenberg, Halle (Saale), Germany, 25-29 March 2012.. Also Dept of Biodiversity, Earth and Environmental Sciences, Drexel University, Oct 4, 2012.

Gelhaus, J. 2014. Developing entomological science while chasing bugs: nearly two decades of exploration in Mongolia Invited Dean's Lecture College of Arts and Sciences, Drexel University. Invited for April 9, 2014.

Gelhaus, J. 2015 Developing entomological science while chasing aquatic insects: two decades of exploration in Mongolia. Entomological Society of Washington, Washington DC, Nov 5 2015.

Gelhaus, J. 2016 Developing entomological science while chasing aquatic insects: two decades of exploration in Mongolia. Maryland Entomological Society, Baltimore, MD, Feb. 19 2016.

Gelhaus, J., V. Shirey and Y. Li. 2016. *Tipula (Nippotipula) abdominalis* (Diptera: Tipulidae), a common eastern Nearctic shredder crane fly, is actually three species. Society of Freshwater Science Annual Meeting, Sacramento, CA. May 24, 2016.

Gelhaus, J., V. Shirey and Y. Li. 2016. *Tipula (Nippotipula) abdominalis* (Diptera: Tipulidae), a common eastern Nearctic shredder crane fly, is actually three species. International Congress of Entomology, Orlando, FL. September 30, 2016

Gelhaus, J., V. Shirey and Y. Li. 2017. The beautiful iconic aquatic crane fly *Tipula abdominalis* is actually three species: the intersection of taxonomy, aquatic ecology and citizen science. North American Dipterists Society, Annual Meeting, Missoula MT. June 27 2017.

Gelhaus, J. and G. Cowper. 2018. Grasshoppers, Covered Wagons & the Wild West: Connecting Historical Field Notes to Specimens in the Academy's Entomology Collection. The American Entomological Society, Philadelphia, PA Feb. 28, 2018

Gelhaus, J. 2018 Workshop on Identification of Aquatic Larval Crane Flies, Carolina Area Benthological Workshop, Hot Spring North Carolina, April 17, 2018,

Gelhaus, J. 2018. Developing entomological science while chasing aquatic insects: over two decades of exploration in Mongolia. Invited presentations at Fujian Agricultural and Forestry University (Fuzhou), Chinese Agricultural University (Beijing), and Shenyang Agricultural University (Shenyang), July 1-14, 2018. Presented also on new initiatives in entomological collection digitization and on the Drexel BEES program.

Gelhaus, J. and Virginija Podeniene. 2018. Workshop on Identification of Aquatic Larval Crane Flies, Southwest Area Freshwater Invertebrate Taxonomists (SAFIT, <http://www.safit.org/>), Univ. of California at Davis, October 20-21, 2018.

Gelhaus, J., V. Shirey and Y. Li. 2018. The beautiful iconic aquatic crane fly *Tipula abdominalis* is actually three species: the intersection of taxonomy, aquatic ecology and citizen science. Entomological Society of Pennsylvania, Annual Meeting, Millersville University, Millersville, PA. November 3 2018.

Sabo, Madeline M., Stephen C. Mason, Jr., and Jon K. **Gelhaus.** How the Fierce Ground Beetle *Pasimachus depressus* (Fabricius, 1787) (Coleoptera: Carabidae) Responds to Different Fire Severities in the New Jersey Pine Barrens. Entomological Society of Pennsylvania, Annual

Meeting, Millersville University, Millersville, PA. November 3 2018. Undergraduate Poster Presentation (Sabo).

Betancourt, Isa & **Gelhaus, Jon**. Does your entomology collection have a species index? Entomological Collections Network annual meeting, Poster Presentation, St. Louis, Missouri, U.S., 16 November 2019. (Betancourt presented, Drexel Masters student)

Conrow, R. T.* and **Gelhaus, J. K.** Wing interference patterns in the four families of crane flies (Diptera: Tipuloidea). Entomological Society of America annual meeting, St. Louis, MO. 17-20 November, 2019. (Conrow Presented, Drexel Ph.D. student)

Mason, Jr. S.C., Vaughn M. Shirey, Lauren Ponisio, and **Jon K. Gelhaus**. “A Meta-analysis of fire effects on bees”. Entomological Society of America. St. Louis, Missouri United States. November 2019. *Invited Speaker*. (Mason presented, Drexel Ph.D. student)

Gelhaus, J., J. Weintraub and I. Betancourt. Spring Butterfly Guide. Online Presentation, Academy of Natural Sciences of Drexel University. May 1, 2020.

Gelhaus, J., J. Weintraub and I. Betancourt. Late Spring Butterfly Guide. Online Presentation, Academy of Natural Sciences of Drexel University. June 11, 2020. 50 Academy members and their families joined via Zoom and over 60 watched via Facebook Live.

Gelhaus, Jon and Karen Verderame. Academy Conversations: Spotted Lantern Fly. July 22, 2020. The Zoom audience 181 and 163 peak on Facebook Live (2000 views).

Gelhaus, J., J. Weintraub and I. Betancourt. Summer Butterfly Guide. Online Presentation, Academy of Natural Sciences of Drexel University. August 6, 2020. This program had 30 Zoom participants and 1400 views on Facebook.

Entomology AMA (Ask Me Anything). This program featured all Entomology staff (Weintraub, Betancourt, Cowper and Gelhaus) with **Gelhaus** as moderator. August 5, 8, 9, 2020.

7 p.m. Wednesday, August 5: 7 participants (27 registrations), 2.1k FB

3 p.m. Saturday, August 8: 2 participants (15 registrations), 1.6k FB

3 p.m. Sunday, August 9: 3 participants (25 registrations), 1.7k FB

Entomology Fieldwork Video. Entomology staff recorded video of field collecting with the help of videographer John Hutelmeyer of the Academy’s Exhibits. **Gelhaus** provided the on-screen explanations and commentary. These were available during Bugfest and received 18,100 views on Facebook for the light trapping event in the Pine Barrens with Weintraub, Cowper and Gelhaus (plus 4k page views)

Gelhaus, J., I. Betancourt, J. Weintraub and G. Cowper. Virtual Collection Tours: Entomology Collection Recollections. Zoom event, Members’ Week. October 8, 2020.

Gelhaus, J. Podeniene, V. 2021 Workshop on Identification of Aquatic Larval Crane Flies, Association of Mid-Atlantic Aquatic Biologists, Annual Meeting, April 1, 2021, Remote. Reached approximately 70 aquatic professionals representing all mid-Atlantic state natural resource agencies (DE, MD, NJ, PA, VA, WV) monitoring water quality, also county level, environmental consulting firms, university researchers. Recordings and pdf files: <https://drive.google.com/drive/folders/16dosqfBYKqaTgw4BvjiTQDW-0v3ATJiu?usp=sharing>

Gelhaus, J. Oyunchuluun Yadamsuren, Sigitas Podenas and Virginija Podeniene. The impact of an intensive freshwater sampling and research program in Mongolia: uncovering the large diversity of crane flies (Diptera: Tipuloidea) through the Mongolian Aquatic Insect Survey. "AQUATIC BIODIVERSITY OF MONGOLIA, SURFACE WATER QUALITY ASSESSMENT: CURRENT STATUS AND CHALLENGES" Dr. O.Yadamsuren, organizer. May 12, 2021 Remote.

Gelhaus, J., Podeniene, V. 2021 Workshop on Identification of Aquatic Larval Crane Flies, Society of Freshwater Scientists, Annual Meeting, May 28, 2021, Remote.

Jon Gelhaus, Karen Verderame and Jason Weintraub were the experts running the Science in the Wild Program at Rushton Woods Preserve, Newtown Square, PA on August 6. Nocturnal insects were observed by the 40 Academy visitors that evening, through guided twilight walks, and two light trapping setups. Jon Gelhaus gave a short presentation on the importance of insects in the natural environment.

Jon Gelhaus provided a live online tour of the Entomology Collection on August 12 for the Atlas Obscura audience which reaches worldwide. Jen Sontchi was the moderator and John Hutelmyer the videographer.

Jon Gelhaus, Isa Betancourt, Tanya Dapkey and guest Akito Kawahara (Univ of Florida) were the panelists for Academy Conversations "Insect in Decline" August 14 during Bugfest focusing on the Insect Apocolypse and Climate Change. Karen Verderame served as moderator.

Recording: https://drexel.zoom.us/rec/play/0EcMwgGvBj_h9Leboqzsc4jgVp7BQCPkHLwzhmXOsS06jSU5b5ETc8DJUF4PPtMj-ZJfwvkbpagSYiXm.RxSHufIPib69DFF8

Jon Gelhaus, Isa Betancourt, Jason Weintraub Greg Cowper and Karen Verderame were live panelists on Ask a Scientist "Summer Bugging" auditorium show during Bugfest, August 13, 14, 15.

Jon Gelhaus, Betancourt, Cowper, Weintraub, and Karen Verderame participated in an insect-themed A Shaker of Science happy hour event on August 19th at 5:30pm with Sean Stallworth and Mike Kaczmarczik. Each participant shared a five-minute story about adventures in the field. <https://www.eventbrite.com/e/a-shaker-of-science-adventures-in-entomology-tickets-162599350033#>

Jon Gelhaus, Bolortsetseg Erdene 2021. Panelists in the online *Secrets of the Diorama* | Adult Program hosted by the Academy of Natural Sciences of Drexel University, *Thursday, October 7, 7:30 p.m.* Topic explored the Academy's renowned dioramas, including those from Central Asia, comparing these unique time capsules from the 1930s and 1950s to modern day habitats. Discussion focused on environmental conditions in Mongolia from a century ago until today.

Jon Gelhaus participated in the Back from the Field event for Academy members on Thursday Nov 18, coinciding also with the opening of the World of Water exhibit. His display focused on the year of pandemic fieldwork carried out in 2020 in the headwaters of the Cooper River and surrounding pine barrens forest habitat near his home. This work was prompted by a 120-year-old specimen of a rare aquatic crane fly collected in Lucaston New Jersey (now part of Lindenwold) and the yearlong fieldwork resulted in 86 species of crane flies sampled, 3 species apparently new to science, and another 5 species are the first records for New Jersey.

Worth, Maddie and Jon Gelhaus. Extraordinary high diversity of *Geranomyia* crane flies (Diptera: Limoniidae) in a small forest fragment in Costa Rica. Presentation (By Worth) at Entomological Society of Pennsylvania annual meeting Nov 20 2021 (via zoom) with 50 people attending. (Worth is Drexel University undergraduate)

SELECTED PROFESSIONAL AFFILIATIONS

President, American Entomological Society, 1997-2003, Vice President 1995-1997, Corresponding Secretary 1991-1995, 2017-2021, Executive Council 1991- **present**;

Adjunct Faculty/Research Assoc., Smithsonian Institution (2009-), University of Delaware (Dept. Entomol. & Applied Ecol.), (1994 -); Clemson University (2005-); Villanova University (1995-2000); Pennsylvania State University (1995-2000)

Teaching (outside of Drexel): Faculty, Wagner Free Institute, Philadelphia, 2002, 2005, 2007, 2008.

Other Societies: Entomological Society of America, Society of Freshwater Science (North American Benthological Society), Entomological Society of Pennsylvania, Entomological Society of Washington, Kansas Entomological Society, North American Dipterists Society, Newark Entomological Society, Sigma Xi, Society of Systematic Biology, Willi Hennig Society (Fellow)

Other: Vice President, Voorhees Environmental and Recreation Alliance. Founding Committee Member, SAVE, Voorhees. Advisory Committee, Voorhees Environmental and Cultural Education Foundation (VECEF) 2006-

SERVICE AND CONSULTANT:

ANSP Internal Service:

Vice President, Biodiversity Research Group and Library, included directing approximately 40 staff (11 curators and other scientists), 12 research departments. Sept. 1996- Aug 1999. Managed budget of \$2.5 million/year for Biodiversity and Library (in 1997 & 1998 exceeded Board targets, \$77,000 - 160,000). Implemented Performance Plans for all scientific and management staff under my direction (1997-1999), implemented incentive and bonus plans (1997-1999, \$25,000 in 1998), and implemented salary enhancement plan for Curators (1999) after completing benchmarking with other comparable institutions. Main staff liaison for Board Collection and Science Committees. Initiated smooth transition of leadership with VP Meredith Lane (1999).

Led strategic planning for Biodiversity Research Group and Library (integrating with overall ANSP plan) focusing on strengthening research excellence and impact, improving collections care and service and expanding outreach and training programs (1997). As VP, hired library director (C. Danial Elliott), administrative director (M. Isaksen), 3 curators: in Botany fulltime (1998, R. McCourt), Ornithology (1997, L. Joseph) and Vertebrate Biology (1998, E. Daeschler). I supervised successful searches for Biodiversity Information Manager, Museum Intern, Ornithology Collection Manager, and my successor as Vice President. These positions were all goals of the Biodiversity strategic planning process. With Board support, initiated drive to hire a senior curator in Ichthyology and Associate curator in Botany (1998-1999).

As VP developed goals, case statement, and was participant and supervisor of 6 mini-campaigns within Biodiversity and the Library as part of the Academy's Partners in Discover endowment campaign, including fully endowing Ornithology (1997-1999). Development of successful fundraising for setting up Greenfield Imaging Center serving the Library and Systematic collections, and shepherded the successful effort to fund the renovation of the Vertebrate Paleontology lab and Arctic Devonian research (1998). Exhibitions developed while VP included at the Philadelphia Flower Show (1998), Dancing to the Fossil Record (1998) and Dinosaur Hall renovation (1999).

VP Supervision over Save America's Treasures funded project to conserve and re-house Lewis and Clark collections and exhibition with National Geographic Society. Supervised the completion of transfer of ownership of anthropological/archaeological holdings (covered by NAGPRA) to University of Pennsylvania and Bryn Mawr University (1997). Developed a formal Behind the Scenes tour program for collection areas. Developed with Board member Gordon Hattersley the goals of the newly developed Board Collections Committee which oversaw care and use of the collections; in 2000 he gave funding to develop the Collections Care Upgrade Fund which has now matched numerous collection improvement grants.

Developed with colleagues at Drexel University a cooperative agreement forming a Center for Biodiversity and Conservation, a focus for teaching, graduate students and research signed by both Presidents, part of Biodiversity's (and the Academy's) strategic plan (May 1998). Initiation of Academy wide project conducting survey of biodiversity of the urban Philadelphia Fairmount Park system and also led insect survey section (1997-1999).

These efforts resulted from the hard work and team oriented efforts of all the staff, but I feel my leadership was instrumental in moving from a period of low morale, budget cutbacks and key staff departures when I assumed office to one of relative stability and positive growth when I left the VP position.

Internal Representative:

Research Initiatives:

Administrative Advisor to Library, 2010

Collection Policy Committee, Chair. 2008-present.

Collection Policy Review Committee, chair, 2007-2008; New Policy approved by Board, 2009.

ANSP Asia Initiative working group, Development of White Paper in conjunction with ANS President Brown, also C. Goulden, 2007.

ANSP Science Council (advisory), The Academy of Natural Sciences, 2003-2004.

ANSP Board Biodiversity Task Force, 1998-1999.

ANSP Watershed Committee, Biodiversity and Evolution representative, 1995-1997.

ANSP Schuylkill River Initiative Taskforce, Biodiversity and Evolution representative, 1995-1997.

Promotion Review and Position Search:

Chair, ANSP 3 year Curatorial Review, Marina Potapova, 2011.

Chair, Search Committee, Postdoctoral Scientist, Mongolian Altai Project (2009-2010)

ANSP Search Committee, Archivist, Library (2009)

Search Committee, Botany Curator (2008)

Search Committee, Office Manager, PCER/CSBE (2008)

ANSP Promotional Review Committee, Richard McCourt, Botany (2004)

Chair, ANSP 3 year Curatorial Review, Ted Daeschler, Vertebrate Paleontology, 2001.

ANSP Promotional Review committee, John Jackson, Stroud WRC, ANSP (1998)

ANSP Curator Promotion Policies Review Committee, 2001-2002.

Chair, Search Committee, Entomology Collection Manager, 2001.

Exhibit and Education

Members class, “The Bugs behind Bugfest: Exploring the Diversity of Insects” Aug. 3, 2010 (3 hours)

Organizing public exhibit/presentations – Bugfest – Aug weekend in 2008-2019 (~2-3000 visitors to museum each year)

Organizing public exhibit/presentation Members Night, Sept/Oct. 2008-2018 (~700-1000 visitors to museum each year) an example of temporary exhibit “Insect Collecting in Mongolia: display of specimens, identification activities.

ANSP Exhibit Representative, “In the Dark”, 2001.

ANSP SEEC Advisory Panel, 1999-2001. Served as mentor for SEEC high school student, Fall 1999.

Co-leader (with D. Otte), Jan-March 1999, ANSP exhibition, Insects: Jewels of Nature (exhibition of 1000+ drawers of the Academy’s entomology collection), 23-25 April 1999.

Advisory Committee, Spiders! Exhibit, 1996.

Scientific Lead, Butterflies Alive! Exhibit, also on-camera spokesperson, donor events, tours. 1995.

ANSP Library Committee 1993 – present (includes selecting books and journals for purchase by AES dedicated funds, now at about \$11,000/year).

Organizer, ANSP Naturalist Forum lecture series, bi-weekly lectures, 1992-1995.

Organizer BEES department speaker series (30 seminars /year) 2017-2019

External Representative and Service:

Executive Council, American Entomological Society 1991- present. Offices served: President (6 years, 1997-2003), Vice President (2 years, 1995-1997), Corresponding Secretary (4 years, 1991-1995). Supervised the office manager position and handled searches for 4 staff filling this post during my tenure at ANSP. Also AES Library committee, (1995-present). Organization has an endowment of over \$2,000,000, publishes 3 journal series, membership of 500+

Co-Chair (with Greg Cowper), 150th anniversary year celebration for 2009, The American Entomological Society (2007-2009)

ANSP Representative, Pennsylvania Biological Survey, 2003-present.

Valley Forge National Park, advisory committee, Meadow Management Plan, 2016-present

REU Site Directors' Meeting (2), National Science Foundation, Arlington, VA, March 8-9, 2007, and Aug. 17-18, 2000.

External Reviewer, Promotional Committee, Natural History Museum of LA County (2005)

External Reviewer, Promotional Committee, Mississippi State University (2020)

Invertebrate Technical Committee, Pennsylvania Biological Survey, 1996-current

(Inaugural) Committee, Pennsylvania Biodiversity of Invertebrates (PINBIOP), November 2000- (K.C.Kim, chair).

ANSP Representative, Conservation Science Form, Natural Lands Trust, 1998-2000.

BioBlitz participant, Leader of Insect Group, Fairmount Park, Philadelphia 1998;
Diptera coordinator Pennypack Park, Philadelphia 1999;
Diptera, Forest BioBlitz, State Game Lands, Lebanon Co. PA June 4-5, 1999.

Invited panelist, NSF sponsored workshop, "Research opportunities for Mongolia" Seabrook, SC, Oct 1995.

Species Selection Committee (Invertebrates), Landscape Ecology Project, Endangered and Nongame Species Program, New Jersey Dept. of Environmental protection and Energy, 1993-1996

Entomology Panel, Conservation of Natural History Collections Survey, C. Hawks, coord., National Institute of Conservation of Cultural Properties. 1993.

Other Education Service (see also Teaching, Advising and Presentations sections)

Mosquito Identification Course, Mid-Atlantic Mosquito Control Association, Feb. 20, 2006, Harrisburg, PA

Scientific Consultant (Aquatic Entomology), ANSP/School District of Philadelphia scientific enrichment project, 2006.

Organized American Entomological Society Insect Field Day over several years; Sept 16, 2000, Stroud Water Research Center, attended by over 100 people, mostly families with children; in Sept. 2004, Pennypack Park, Philadelphia.

Chancellor Park-ANSP Lecture Series, organizer, 12 talks, 2001.

Scientific Consultant (Entomology), *Pre-School Science and Math Resource Project 1995-1999*, NSF award to Please Touch Museum, Philadelphia, PA

Science Fair Judge, numerous years for AES award at Delaware Valley Science Fair (Philadelphia region). Also International Science Fair, Philadelphia, 1999.

Student Competition Judge, Entomological Society of America annual meeting. 1991, 1994.

Collection Consultant:

Research Associate, Smithsonian Institution. (2009- present) Maintain access to Alexander Collection of Crane flies, the most important collection in the world for this group of flies.

Collection Consultant, Wagner Free Institute of Science entomological collection, conservation and renovation of collection, 2007

Collection Consultant contract, curation of C.P. Alexander collection of crane flies, National Museum of Natural History (Smithsonian). Nov. 1999- March 2000 (15 days on-site work), \$1500.

Collection Consultant, Wagner Free Institute of Science entomological collection, conservation and use recommendations, 2000, \$1500. (see Report)

Taxonomic Sorting Specialist, California Academy of Sciences, San Francisco, CA, August 1995.

Taxonomic Sorting Specialist, Bernice P. Bishop Museum, Honolulu, HI, November 1993.

Manuscript and Grant Proposal Reviewer: Numerous over my career, recent shown

Editorial Board, *Acta Zoologica Lituanica*, January 2012-present
2017-2018 – Four manuscript reviews *Zootaxa*, *Freshwater Science*, *Aquatic Insects*

2018-2019- nine manuscript reviews for *Zootaxa*, *Entomological News*, *Zoosystema*, *Acta Zoologica Cracovienska*, *ZooKeys*, *Cretaceous Research*

2020 (through Sept.) -four reviews, *Zookeys*, *Zootaxa*, *European Journal of Taxonomy*

IDENTIFICATION SERVICES:

Holston River Project, TN, Chironomidae (Diptera) – for ANSP – PCER Contract, 1990.

Bog Turtle study, macroinvertebrates from turtle guts, D. Gemmell, Rutgers University, 1991.

Savannah River Environmental Survey, SC, Chironomidae, for ANSP - PCER contract, six contracts 1991-1996.

Guadalupe River Environmental Survey, TX, Chironomidae, – for ANSP - PCER contract, 1992, 1993.

State of Arizona watershed survey, Tipulidae ID, Aquatic Biology Associates, 1993, 1994.

Victoria Barge Canal Environmental Survey, TX, Chironomidae, – for ANSP - PCER contract, 1994.

Bayside Environmental Assessment, Insect Survey section, for New Jersey Public Service Electricity and Gas (PSE&G), Cumberland Co., NJ (see report). October 1994.

Bricksboro Environmental Assessment, Insect Survey section, for New Jersey Public Service Electricity and Gas (PSE&G), Cumberland Co., NJ (see report). 1995.

Philadelphia Park system (Fairmount Park Commission) biodiversity survey, chair of insect survey, carried out fieldwork, identified 150 spp. of insects (crane flies) from several thousand specimens from sweeping, malaise and light traps. Oversight of Lepidoptera survey conducted by Jason Weintraub. 1998-1999. (see Report)

Sabine River Environmental Survey, TX, Chironomidae (Diptera) – for PCER contract, March 2001.

Smoky Mountain National Park Survey, Tipulidae, for Clemson University, December 2001. \$1800.

Editor, Tipulidae type database, Museum of Comparative Zoology, Harvard University, 2001.

Sabine River Environmental Survey, Chironomidae (Diptera) – for PCER contract, 2006.

I trained several PCER staff on preparation and identification of Chironomidae including Eric Sildorff, Kevin Wolbach, Camille McNeely and Brett Marshall.

In recent years, I handle about 15 requests for identification of crane flies or crane fly information and other insects, ranging from pest species, voucher specimens, and identifications made from specimens and photographs. These come from professional colleagues, students, Drexel staff, and the general public.

I have verified Tipuloidea (crane fly) identifications for specimens intercepted at ports and entry point by the USDA

Adult Level Teaching

Drexel University:

BEES 201. Practical Identification of Plants and Animals, Fall Quarter 2012-present. Taught every year. Fall 2020 entirely remote/online.

BEES 328/528 Conservation Biology, Winter Quarter 2014-present. Winter 2021 entirely remote/online.

BEES 335/535. Aquatic Insects and Water Quality Assessment, (co-taught with S. Kroll). Taught usually every other year (2014-).

BEES 393/593 Entomology (lecture), Winter Quarter 2022

BEES 394/594. Entomology Lab Fall 2019

BEES 864 Graduate Research Seminar 2017-2019

Technical Workshops:

Gelhaus, J. Podeniene, V. 2021 Workshop on Identification of Aquatic Larval Crane Flies, Association of Mid-Atlantic Aquatic Biologists, Annual Meeting, April 1, 2021, Remote. Reached approximately 70 aquatic professionals representing all mid-Atlantic state natural resource agencies (DE, MD, NJ, PA, VA, WV) monitoring water quality, also county level, environmental consulting firms, university researchers. Recordings and pdf files: <https://drive.google.com/drive/folders/16dosqfBYKqaTgw4BvjiTQDW-0v3ATJiu?usp=sharing>

Gelhaus, J., Podeniene, V. 2021 Workshop on Identification of Aquatic Larval Crane Flies, Society of Freshwater Scientists, Annual Meeting, May 28, 2021, Remote.

J. Gelhaus and Virginija Podeniene. Taught Workshop on Identification of Aquatic Larval Crane Flies, Southwest Area Freshwater Invertebrate Taxonomists (SAFIT, <http://www.safit.org/>), Univ. of California at Davis, October 20-21, 2018, Workshop included about 30 professional participants (B.S. Level and above) from primarily private industry water quality consultants.

J. Gelhaus. Taught Workshop on Identification of Aquatic Larval Crane Flies, Carolina Area Benthological Workshop, Hot Spring North Carolina, April 17, 2018, Workshop included about 40 professional participants (B.S. Level and above) from academic, government, private industry and non-profit organizations..

J. Gelhaus. Taught Workshop on Identification of Aquatic Larval Crane Flies, Association of MidAtlantic Aquatic Biologists, April 2, 2009, Capacon St. Park, West Virginia. Workshop

included about 30 professional participants (B.S. Level and above) from academic, government, private industry and non-profit organizations..

J. Gelhaus. Taught Workshop on Identification of Aquatic Larval Crane Flies, North American Benthological Society, May 25, 2008, Salt Lake City. Workshop included about 50 professional participants (B.S. Level and above) from academic, government, private industry and non-profit organizations.. Also Taxonomy Fair (Consult, Verify, Identify Crane fly Specimens brought to table), May 27, SLC.

J. Gelhaus. Aquatic Crane fly Identification Workshop for the Southeast (Invited). Carolina Area Benthological Workshop, Durham, N. C.. March 2002. Workshop included about 50 professional participants (B.S. Level and above) from academic, government, private industry and non-profit organizations.

J. Gelhaus. Aquatic Crane fly Identification Workshop for the Pacific Northwest, *Northwest Biological Assessment Workgroup's Taxonomic Workshop*, Ellensburg, WA. April 28-29, 2000. (Invited). Workshop included about 30 professional participants (B.S. Level and above) from academic, government, private industry and non-profit organizations.

Adult Entomology Classes

J. Gelhaus. An Introduction to Insects and Related Arthropods. Eight week course held through Wagner Free Institute (course meets in The Academy of Natural Sciences). Sept-Nov, 2008.

J. Gelhaus, Allen, R. T.,. An Introduction to Insects and Related Arthropods. Eight week course held through Wagner Free Institute (course meets in The Academy of Natural Sciences). Sept-Nov, 2003, Sept-Dec 2005, Sept.-Nov. 2007.

J. Gelhaus, Allen, R. T., J. Weintraub and D. Otte. An Introduction to Insects and Related Arthropods. Eighth week course held through Wagner Free Institute (course met in The Academy of Natural Sciences). Sept-Nov, 2002

Elementary Level Teaching

Gelhaus, J. and L. Strain. Insect study. All day workshop given to 60 students and 4-5 teachers in Insect study and Special Education programs, Osage Elementary School, Voorhees, NJ, Sept. 29, 2000.

Gelhaus, J. and L. Strain Wetlands study. All day workshop given to students in Academic Enhancement program, Osage Elementary School, Voorhees, NJ, May 30, 2000.

Gelhaus, J. and L. Strain Pond insect study. All day workshop given to students in Insect study program, Osage Elementary School, Voorhees, NJ, June 16, 2000.

Gelhaus, J. Member of Osage Schoolyard Habitat committee, development of habitat learning garden for enrichment program, Osage School, Spring 1999. Quoted, Phil. Inquirer newspaper article, May 31, 1999.

Gelhaus, J. Stream monitoring field classes,, ANSP Watershed Program, 2000.

Gelhaus, J. Development of Stream Insect Reference Collections for ANSP Watershed Program. 2001.

Gelhaus, J. Entomologist visit and presentation, 3rd grade science classes, part of Wagner Free Institute scientific outreach program, Kearny Elementary, Philadelphia, PA. June 6, 2002.

Gelhaus, J. Aquatic Entomology and Collection Tour, SDP Project, School District of Philadelphia and ANSP, Vare School, 5th Grade, March 10, 2006; additional school, April 27, 2006

ADVISOR:

Actively managed high school Pew Fellowships in Systematics program (1994-1995) and college level Research Experience for Undergraduates Site Program (2005-present). Students I have advised are:

Undergraduate – non-Drexel (20):

Livingstone, Margot 1992. Crane fly emergence from a Puerto Rican stream. Rhode Island School of Design/Brown University. ANSP Pew Scholar in Systematics Program. [Formerly an admissions officer at RISD, now an elementary educator in arts)

Ruggeri, Anthony 1992. Revision of the North American species of the crane fly genus *Epiphragma* (Tipulidae). Princeton University, ANSP Pew Scholar in Systematics Program. {Manager in technology firm]

Livingstone, Margot 1993. Crane fly diversity of a New Jersey pine barrens site. Rhode Island School of Design/Brown University. ANSP Pew Scholar in Systematics Program.

Welch, Nathan. 1993. A new species of cave inhabiting crane fly in the genus *Helius*, with extraordinary reduction in antenna. Brown University. ANSP Pew Scholar in Systematics Program.

Bouchard, William 1994. Aquatic insects of west Texas. Franklin & Marshall College. ANSP Pew Scholar in Systematics Program.

Bouchard, William 1995. Insects of isolated mountains of the northern Great Basin. Franklin & Marshall College. ANSP Pew Scholar in Systematics Program.

Completed his Ph.D. at University of Minnesota studying aquatic insect ecology, now working with the State Of Minnesota developing water quality standards.

LaPolla, John. 1996-1997. Special studies on ants – as REU student on supplement for summer, and as Bradley Fund supported student work to re-curate Formicidae collection. Went on to complete Ph.D. in systematic entomology at Rutgers, postdoc at Smithsonian, and now Assistant Professor in Biology and systematic ant specialist at Towson State University, Maryland..

Ridge, Chris. 1998-1999. Comparison of the crane fly fauna of selected sites in York Co., Pennsylvania. Messiah College, Grantham, PA

Short, Andrew 2000. Review of the Nearctic species of *Enochrus (Methydrus)* (Coleoptera: Hydrophilidae). (University of Delaware). REU student at Academy of Natural Sciences. Completed a Ph.D. in systematic entomology at Cornell University, now Assistant Professor in systematic entomology at University of Kansas.

Compher, Kevin 1999-2000. Chemical Characterization of Stiletto Fly Larval Venom (Diptera, Therevidae). Undergraduate senior thesis, University of Pennsylvania.

Manchaca, Imelda. 2002-2004. The crane fly fauna of a central Mexican mountain stream. Undergraduate senior thesis, Universidad Autonoma de Estado Hidalgo, Pachuca, Mexico. Faculty advisor Atilano Contreras-Ramos.

Bachmann, Jamie 2003. Mongolian Aquatic Insect Survey: Grazing Impact and Impairment of Aquatic Insects of the Selenge River Drainage Basin, Mongolia . (Wayne State College, Wayne, NE) Co-Mentor with Barbara Hayford. REU student. Now employed as field biologist.

Kucera, Erin 2004. Mongolian Aquatic Insect Survey: Grazing Impact and Impairment of Aquatic Insects of the Selenge River Drainage Basin, Mongolia . (Wayne State College, Wayne, NE) Co-Mentor with Barbara Hayford. REU student. Now a graduate student in wildlife ecology at University of Nebraska.

Hopp, Katie Jo 2005. Mongolian Aquatic Insect Survey: Grazing Impact and Impairment of Aquatic Insects of the Selenge River Drainage Basin, Mongolia. (Luther College, Decorah, Iowa) Co-Mentor with Barbara Hayford. REU student. Now completed Masters in Entomology at Montana State University.

Torres, Phillip Juan 2006. Mongolian Aquatic Insect Survey: The Haliplidae (Coleoptera) aquatic beetles of Mongolia. (Cornell University, Ithaca, NY) Now TV and internet educator in nature and biodiversity.

Rhine, Paul. 2007. Identification guide to crane fly pest adults of turfgrass in eastern North America. (Temple University, Philadelphia, PA). Now a graduate student at Texas A & M.

Frandsen, Paul. 2009. The Dance Flies (Diptera: Empidoidea) of Western Mongolia and the Selenge River Basin (Brigham Young University, Provo, UT) Co-mentor with C. R. Nelson. Graduate student in systematic entomology at Rutgers University.

Thomas, Ira. 2009. Cataloging the Otte Type specimens of Orthoptera in the collection of The Academy of Natural Sciences. (Temple University, Philadelphia, PA). Now coordinator in mentor program at local university hospital, also volunteer in entomology department.

Mason, Stephen. 2009. Survey of the Butterflies and Skippers (Lepidoptera) of the Franklin Parker Preserve, New Jersey (Stockton State University, Pomona NJ). Was employed as curatorial assistant in Entomology department. Now Ph.D. student, Drexel University.

Isa Betancourt, 2011. Cataloging the Odonate Collection at the Academy of Natural Sciences. (Cornell University). Graduated Spring 2012 in entomology at Cornell. Later employed in the Entomology Department 2014-present. Completed Masters degree in Communications at Drexel University.

Cummons, Hannah. 2011. The effects of grazing on benthic communities in northern Mongolia (University of Pennsylvania) Employed as curatorial assistant in Entomology department following this for a year.

Drexel University Undergraduates:

Co-ops

Feeney, Michaela. 2013-2014. Crane fly diversity assessment at Zurqui, Costa Rica as part of the Zurqui All Diptera Biodiversity Inventory project (ZADBI). Co-op Project.

Shirey, Vaughn. 2014. Development of an online database for the insect records of the New Jersey Pine Barrens (Franklin Parker Preserve). Co-op project.

Bronder, Eric 2015. Crane fly diversity assessment at Zurqui, Costa Rica as part of the Zurqui All Diptera Biodiversity Inventory project (ZADBI). Co-op Project.

Homiak, Allison. 2015. Specimen image capture and additions to the online database for the insect records of the New Jersey Pine Barrens (Franklin Parker Preserve). Co-op project.

Hang, Tina. 2018. Comparison of diversity of crane flies at sites pre- and post burn sites in the New Jersey Pine Barrens, and over a 10 year span

Worth, Madeline 2020, 2021, 2022 -. Crane fly diversity assessment at Zurqui, Costa Rica as part of the Zurqui All Diptera Biodiversity Inventory project (ZADBI). Co-op Project.

Otruba, Liz 2022. Survey of the native bee fauna of John Heinz National Wildlife Refuge,

Pennsylvania. Co-op Project

Research Credits:

Ball, Chris. Winter 2015. Insect diversity of the New Jersey Pine Barrens.

Kantner, Zachary Winter 2015. Insect diversity under different fire regimes in the New Jersey Pine Barrens (Warren Grove) as sampled by Malaise traps.

Serajfar, Yasmin Winter 2015. Insect diversity under different fire regimes in the New Jersey Pine Barrens (Warren Grove) as sampled by Malaise traps. (Non thesis Masters student).

Gourlay, Anna. Spring 2015. Aquatic insect diversity in pools of streams.

Shirey, Vaughn. Fall 2015. Ecological Niche Modeling of the aquatic crane fly group *Tipula* (*Nippotipula*), including development of identification tools for the larvae.

Jacquelyn Davis. Summer 2017. Independent Study. Forensic Entomology.

Madeline Sabo. Fall 2019. Independent Study, Riparian Insect study.

Graduate – non-Drexel:

Yeakel, Amy. 1995-1997. Masters Committee, External Member, Villanova University. Population genetics of a widespread species of Notonectidae.

Enkhtaivan, S, 2004-2006. Masters Committee, External Member, State Pedagogical University, Mongolia. Completed graduate program at Japan Agricultural University studying stream biomonitoring. Now government policy advisor for Mongolian government

Chuluunbat, S. 2005-2008 Masters committee, External Member. Clemson University, Clemson, SC. Her thesis topic is a revision and phylogenetic analysis of the caddisfly family Apateniidae, a group diverse in Mongolia. Faculty member, State teaching University.

Boldgiv, B. 2004-2006. Ph.D. committee, External member. University of Pennsylvania, Philadelphia, PA. Bold finished his Ph.D. on the population genetics of four crane fly species in 6 drainage valleys of Lake Hovsgol, Mongolia. He is now a professor of Ecology at National University of Mongolia.

Enkhnasan, D. 2008-2011-- Ph.D. committee, external member, National University of Mongolia. Her dissertation topic is on aquatic ecology of Dytiscidae. Scientists, Mongolian Academy of Sciences.

Oyunchuluun, Y. 2010-2015- Ph. D. committee, external member, Clemson University, Clemson, SC. I have mentored Oyunaa since 2002, and her research interests have been in my taxonomic group, the crane flies. Faculty member, State teaching University

LI, Yan. 2011-2013. Ph.D. candidate. Chinese Agricultural University, Beijing. He was in residence at ANSP for 18 months to work on Chinese crane flies. Now faculty member, Shenyang Agricultural College, China.

Kato, Daichi. 2016-2017. Ph.D. Candidate. Japan. He was in residence at ANSP for 12 months to work on Japanese crane flies. Now

Drexel Graduate Students (I am major advisor) (2 current):

1. Mr. Robert Conrow (2017-) Thesis topic: A molecular phylogeny of the crane fly family Tipulidae s.s. and the evolution of their larval morphology and habitat preferences
2. Ms. Solange Akimana (2022-) Thesis topic to be determined.
3. Ms. Bolortsetseg Erdenee (2014- 2022) Thesis topic: Response of macroinvertebrate community to flow regime in temperate steppe rivers. Defended PhD successfully May11 2022.
4. Mr. Stephen Mason Jr. (2014-2021) Thesis topic: Using Fire Severity as a Predictor for Ground Active Insect Communities in the New Jersey Pine Barrens. Defended PhD successfully July 30 2021.
5. Mr. Joseph Sweeney (2018- 2020) Thesis topic: A taxonomic and phylogenetic reanalysis of *Ceuthophilus* cave crickets using morphologic, chemical, and molecular approaches. Left program.

Postdoctoral (1):

Maasri, Alain. 2010-2012. Mongolian Aquatic Insect Survey Macroinvertebrate Ecologist Postdoctoral Scientist. The Academy of Natural Sciences.

Other Advising and Training – non-Drexel:

Amat, E. 2004-present. Advised Colombian student and Jessup Fellow on studies of the crane fly fauna of Colombia.

Oyunchuluun, Y. (Oyunaa). 2002-2009. Advised Mongolian student and Jessup Fellow on studies of the crane fly fauna of Mongolia. She entered Ph.D. program at Clemson University in Jan. 2010 (see above).

Enkhnasan, D. 2005-present. Advised Mongolian graduate student, arrange training in Austria (2006); defended Masters thesis March 2007.

Other Advising and Training – Drexel Graduate Students (4):

McHone, Elizabeth 2015-2019 Ph.D. Committee Chair.

Venditti, Dana 2018- Ph.D. Committee

Bi, Wenli 2018-2020 Ph.D. Committee, Physiological Ecology of Soft-released Giant Pandas (*Ailuropoda melanoleuca*)

Kuabara, Kamilla. 2020- PhD. Committee Chair

HOSTED VISITORS (extended stays, mostly Jessup Fellows):

Eduardo Amat, Bogota, Colombia 2 training visits (Nov 2003-Jan 2004, August to October 2005)

Yadamsuren Oyunchuluun, Mongolia, 4 training visits (2003, 2004, 2005, 2009).

Matt Petersen, Univ. of Tennessee, 2001.

Atilano Contreras Ramos, Universidad A. E. Hidalgo, Mexico, June 2006

Sigitas Podenas, Vilnius University, Lithuania, 6 stays (Feb-May 1998; October 11-December 12 1999; Feb 18-March 20, 2000; July 29-Sept. 28, 2000; Aug 1-Sept 16 2001; Feb-March 2006, April 2009, March-April 2010, July-September 2017, April 2018, May 2022)

Virginija Podeniene, Vilnius University, Lithuania, 3 stays (October 11-December 12 1999; Aug 1-Sept 16, 2001; Feb-March 2006, March 2010, July 2017, Jan 2018, May 2022)

Sanaa Enkhtaivan, Mongolia, 2 training visits (2003, 2005)

Fabio Laurindo da Silva, Universidade Federal de São Carlos, São Paulo, Brasil –August 2009-January 2010

Alexey Reshikov, St. Petersburg University, Russia – November 2009-January 2010

Tadeusz Zatwarnicki, Poland, August 2010, December 2011.

Yan Li, Chinese Agricultural University, Beijing – November 2011-June 2013.

Qifei LIU, Fujian Agricultural and Forest University, Fuzhou, CHINA December 2016-
December 2017.

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