FLEA NEWS is a biannual newsletter devoted to matters involving insects belonging to the order Siphonaptera (fleas) and related subjects. It is compiled and distributed free of charge by Robert E. Lewis in cooperation with the Department of Entomology at Iowa State University, Ames, IA.

Flea News is mainly bibliographic in nature. Many of the sources are abstracting journals and title pages and not all citations have been checked for completeness or accuracy. Additional information will be provided upon written or e-mail request. Further, recipients are urged to contribute items of interest to the professor for inclusion herein.

This newsletter is now available in electronic format. The preferred method of accessing the electronic version is through the World Wide Web at the following URL: <http://www.public.iastate.edu/~entomology/FleaNews/AboutFleaNews.html> or through either Gopher or anonymous FTP: <gopher.ent.iastate.edu> in the "Publications" directory. Electronic versions are available for No. 46, July, 1993; No. 47, December, 1993; No. 48, July, 1994; No. 49, December, 1994; No. 50, June, 1995; No. 51, December, 1995; No. 52, June, 1996; No. 53, December, 1996; No. 54, June, 1997; No. 55, January, 1998; No. 56, August, 1998; No. 57, January, 1999; No. 58, June 1999; and this number.

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Obituary

Li Kuei Chen
6-January-1911 • 21-October-1999

I am saddened to report that a recent letter from Professor Chin Ta Hsiung of the Guiyang Medical College informed me of the death of his wife, Li Kuei Chen.

She was born in Shandong Province to a Christian family and received her early education in missionary schools. She graduated from Cheeloo University (which is where she met Ta Hsiung) with a Bachelor of Science degree in Biology. When the Guiyang Medical College was established in 1938 she joined the staff as an Assistant in Biology. By 1947 she had been promoted to the rank of Professor. She began her studies of ectoparasites in 1940 and her first publication dealt with those of the local rats, with emphasis on fleas. During this period she sent material to and corresponded with Dr. Karl Jordan who was working at the Rothschild Museum at Tring, Hertfordshire, England. He encouraged her to pursue the study of the fleas of China in addition to her teaching duties.

Shortly after the formation of the new government in China after World War II administrators in each province were inst-
ucted to develop an Institute for Disease Prevention charged with studying the epidemiology and control of diseases endemic to the area. Foremost among these was plague, and where this disease was endemic extensive vector surveys were conducted. There were few Chinese who knew much about the fleas of China at this time and Kuei Chen and a few other biologists such as Liu Chi Ying became pioneers in studies of the indigenous flea fauna. By virtue of her position with the University she was able to attract a number of students who assisted her in her studies. Between 1943 and 1998 she authored or coauthored 93 papers, erected 5 new genera or subgenera and described approximately 90 new species or subspecies.

In 1985 and 1986 she was invited to collaborate with the late Robert Traub in studies on the genus Macrostylophora in China and the islands of South East Asia. Specimens were exchanged and preliminary studies begun, but for various reasons the projects did not come to fruition. In addition to the time spent by her and her husband in Washington, D. C., the couple also visited my laboratory here in Ames and Dr. Cluff Hopla's laboratory in Norman, Oklahoma.

Following is an inventory of the taxa described by Li, and a partial list of her publications. Due to changes in the transliteration system, the latter probably contains a number of errors and any titles taken from it for use elsewhere should be checked against the originals if possible. It should also be noted that after approximately 1980, Kuei Chen sometimes appeared as Gui Zhen.

**Genera & Subgenera**

Brevictenidia Liu & Li, 1965

Typhlomyopsyllus Li & Huang, 1980

Spuropsylla Li, Xie & Gong, 1982

(Angustus) Li, Xie & Liao, 1980

s. gen. of Cratynius

(Songshupsylla) Li & Traub, 1998

s. gen of Macrostylophora

**Species & Subspecies**

passerinus Li, 1952. Ceratophyllus =C. tribulus Jordan, 1926

ochotona Li, 1957.

callida Li & Chin, 1957. Tunga bispiniformis (Li & Wang, 1958)

ssp. of Aviostivalius klossi

rectodigitus Li & Wang, 1958

ssp. of Stivalius aperus

sinica Li & Wang, 1959.

ssp of Peromyscopsylla himalaica


minipiensi s Li & Wang, 1964.

ssp. of Neopsylla specialis

rhipisoides Li & Wang, 1964. Megabothris female = Ceratophyllus garé


ssp. of Macrostylophora hastatus

=Vermipsylla alarkurt

gigantea Li, 1964. Vermipsylla

=Vermipsylla alarkurt


aeretesites Li, Chen & Wei, 1974. Macrostylophora


longiprojectus Hsieh, Yang & Li, 1978. Paradoxopsyllus

intermedius Hsieh, Yang & Li, 1978. Paradoxopsyllus

bijiangensis Li, Hsieh & Yang, 1978. ssp. of Xenodaeria telios =Xenodaeria telios

zhongdianensis Lie, Yang & Li, 1979 ssp. of Amphipsylla quadratoides

chaliensis Jie, Yang & Li, 1979 ssp. of Amphipsylla tuta
deqinensis Jie, Yang & Li, 1979 ssp. of Amphipsylla tuta

longidigita Chen, Wei & Li, 1979. Palaeopsylla
obtuspina Chen, Wei & Li, 1979. Palaeopsylla
congjiangensis Li & Huang, 1979. Macrostylophora
jiangkouensis Li & Huang, 1979. ssp. of Macrostylophora cuii
brivimanubrium Li & Huang, 1979. Paraceras
a projectus Li, 1979. Ctenopthalmus
stenosinuata Li, 1979. Geusibia
manosus Li, 1979. Amphalius
paoshanensis Li & Yan, 1980. Macrostylophora
yunnanus Li, Xie & Liao, 1980. Cratynius
rotundisinuata Li & Hsieh, 1980. Hystricho-
pylla
fimbriciata Li & Hsieh, 1980. Neopsylla
elesina Li, 1980. Neopsylla biseta
megaloba Li, 1980. Neopsylla
schismatosa Li, 1980. Neopsylla
ssp Neopsylla specialis
eothemus Li & Huang, 1980. Ctenopthal-
mbus
breviprojectus Li & Huang, 1980. Ctenopthal-
mbus
cavaticus Li & Huang, 1980. Typhlomyop-
pylla
di qingensis Li, Xie & Yang, 1980.
ssp of Amphalius spirataeni us
qinghaiensis Li, Xie & Yang, 1980.
ssp of Amphalius spirataeni us
laxinus Xie, He & Li, 1980. Paraceras
me nesus Xie, Chen & Li, 1980. Paraceras
occidentayunnanus Li, Xie & Gong, 1981.
Lentistivalius
laxilobulus Li, Xie & Gong, 1981. Stivialus
hylomys Li, Xie & Gong, 1981. Aviostivalius
mono seta Li, Xie & Gong, 1982.
Spuropsylla
quad rasetis Xie, Yang & Li, 1983.
Ischnopsyllus
quint uesetis Xie, Yang & Li, 1983.
Ischnopsyllus
magnabulga Xie, Yang & Li, 1983.
Ischnopsyllus
rhinopithec a Li, 1985. Vermipsylla parallela
affinis Li, 1986. Lentistivalius
de qinensis Xie & Li, 1986. Neopsylla affinis
yunnanensis Li & Yan, 1986. Pariodontis
riggenbachi
l eizhouensis Li, Huang & Liu, 1986.
Nosopsyllus wualis
hongyangensis Li, Bai & Chen, 1986.
Neopsylla
xiei Li, 1987. Stenischia
falsotorosa Wi, Ni. & Li, 1987. Geusibia
Macrostylophora
rhombomysus Li, Huang & Sun, 1987.
Paradoxopsyllus
angustihamulus Li, Zhang & Zeng, 1988
Macrostylophora
longiprojectus Chen, Li & Wei, 1988.
Ctenopthalmus
rongianensis Li & Huang, 1990.
Nosopsyllus wualis
boseensis Li & Pan, 1990.
Nosopsyllus wualis
diandongensis Li, Xie & Yang, 1990.
Nosopsyllus wualis
longchuanensis Li, Xie & Wu, 1990.
Nosopsyllus elongatus
puerensis Li, Xie & Yu, 1990.
Nosopsyllus elongatus
yanshanensis Li, Xie & Liao, 1990.
Nosopsyllus elongatus
Chaetopsylla
Syngenopsyllus calceatus
laxiprojectus Li, 1992. Ctenopthalmus
weiningensis Li, 1992. Amphipsylla
guinanensis Wu & Li, 1992. Ceratophyllus
heishuiensis Li & Liu, 1994.
Hystriropsylla

dbursiforma Liu, Cai & Li, 1994. Callopsylla
heishuiensis Li, 1996. Macrostylophora
jingdongensis Li, 1996. Macrostylophora

Publications

NOTE. I regret that I have not seen the
descriptions for the taxa given in boldface
above so cannot include the citations in the
list given below.
Also, this is not a complete list of Li’s
publications on fleas. There was a period
when communications with Chinese colleague-
was not possible. And, as was the case
with Liu C.-Y., some publications may have
been in organs that were unavailable for
circulation.

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1982. Description of a new genus and species of ceratophyllid flea from western Yunnan, China (Siphonaptera). Entomotaxonomia 4: 23-26. (Li K.-C., Xie B.-Q. & Gong Z.-D.)


1996.  Description of three new subspecies of Ctenophthalmini (Sinoctenophthalmus) and discussion (Siphonaptera: Hystrichopsyllidae) Animal Taxology 2: 110-117. (Li K.-C., Ceng Y.-C. & Ceng F.-Z.)


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MISCELLANEA

Ms Amoret Brandt, M.Sc. has been appointed as Assistant Entomologist in the Department of Entomology of the Natural History Museum in London. Her main assignment is to update the "Handbook of British Fleas" originally written by F. G. A. M. Smit in 1957. She will include distribution data for the British fauna and produce an identification key on CD rom as well as engage in some curation and indexing activities. Ms. Theresa Howard will continue to look after loans and visitors to the collection. Both can be reached at:

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E-mail <A.Brandt@nhm.ac.uk>
and <T.Howard@nhm.ac.uk>

I have just received word of the passing of Mrs. Caroline Ernestine Smit, wife of Mr. F.G.A.M. Smit. Con- dolences may be addressed to Mr. Smit at: 4 Glamis Gardens Longthorpe, Peterborough PE3 9PQ England

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Dr. Robert Pilgrim has asked that the following be included in this issue. "SIPHOTROL 10"

I am anxious to examine a copy of a publication entitled "Technical Bulletin on Siphotol 10: Vet-Kem, Dallas, TX 1981". This was cited as a reference in Bledsoe, Fadok and Bledsoe (1982 J. Am. Animal Hospital Assn. 18: 415-422.), in which the authors state (p. 418) "Methoprene acts on the fourth instar larvae;..."

Because reference to fourth instar larvae in fleas is extraordinary I wish to review the source of the statement. Correspondence to the authors, and to Dr. Linda Medleau, who subsequently cited the statement (1983 Internat. J. Dermatol. 22: 378-379) has all been unanswered. Numerous attempts to source the bulletin have failed, as the original manufacturers and/or their associates (Novartis, Sandoz, Zoecn, Ciba-Geigy) are unable to locate a copy.

This is an appeal to anyone who has access to a copy of the 1981 Bulletin to lend it to me to photocopy the relevant pages. The copy will be returned promptly.

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Flea Identification from DNA Sequences

We are developing a DNA-based method of flea identification to make it possible for a public health worker or PCR technician to make unambiguous identifications without help from an entomologist. The method also should be helpful for identifying damaged adults or larvae which are hard to identify by their morphology. Recent advances in PCR technology, inexpensive automated DNA sequencing, and web databases should make this goal attainable. We are combining the experience of a veteran flea entomologist with a few tricks from a modern molecular biologist.

So far we have examined 14 flea species which we collected or which were furnished to us by collaborators. Adults or larvae were collected in 98% ethanol or 70% isopropyl and were stored at room temperature. Single insects removed from alcohol were incubated overnight in a mixture of KOH and Joy dishwashing detergent, then extracted once with phenolchloroform. This method preserves the extracted flea exoskeleton for morphological identification. The aqueous phase of the phenol-chloroform extract was alcohol precipitated and redissolved in a small volume of low salt buffer. This very crude flea DNA preparation was then used without further purification as a template for PCR. The primers were ITS 3 & 4 which recognize ribosomal DNA in nearly all eukaryotes and bracket the ITS 2 region which codes for nonconserved spacer RNA between 5.8S and 28S RNA. The Gen-EMBL DNA sequence database has several ITS 2 entries from insects, but as yet none from fleas.

We found that the ITS 3 & 4 products of fleas were 350-600 nucleotides long with some length variations between species in low resolution agarose gel electrophoresis. PCR products were gel-purified and sequenced with the primer ITS 3 by the University of Utah Sequencing Facility using ABI automated equipment (at $10 per sequence). The ITS 3 & 4 products had, as expected, conserved sequences (of 107 and 50 nucleotides) at the two ends, in 5.8S and 28S RNA sequences respectively. The conserved sequences had almost no variation between species but fortunately the same PCR products had ample variation in the remaining internal nonconserved sequences, so that the 14 flea species examined were distinguishable by DNA sequence of ITS DNA.

The internal nonconserved ITS sequences had weak similarities with other insects but had strong similarities among fleas. One flea species had two sizes of ITS 3 & 4 products which were identical except for internal deletions in the smaller product. In
another instance we recovered two ITS 3 & 4 products from larvae but one of the two products was not flea DNA since unlike flea DNA it matched yeast sequences in the Gen-EMBL DNA sequence database. Flea larvae have internal fungi which yield their own ITS products but so far the fungal products have been easy to separate by electrophoresis.

Using DNA sequence as a criterion, we found that fleas from the canyon mouse, Peromyscus crinitus, collected at one site in southern Utah were different from fleas from the same species of rodent at two other sites, one in southern Utah and one in eastern Nevada.

We are grateful to the University of Utah Research Committee for financial support.
Theodore Gurney, Jr. & Robert Elbel
Department of Biology
University of Utah
Salt Lake City, UT 84112-0840

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BOOK REVIEWS

Dr. Eustorgio Méndez has informed me that his book, entitled "Insectos y otros artrópodos de importancia médica y veterinaria" is now available. Following is the author's description.

"Este libro constituye una modesta pero razonable fuente de información sobre diversos grupos de insectos, arácnidos y otros artrópodos que en alguna forma están relacionados con problemas sanitarios del ser humano y de muchos animales domésticos y silvestres. Por consiguiente, su objetivo es proporcionar una adecuada comprensión de los invertebrados tratados, sus cualidades anatómicas generales, ecológia y hábitos, mencionando también someramente ciertas enfermedades que son transmitidas por un número de ellos. Además, entre otras facetas relevantes conti-ene un glosario, un índice general y una lista de casi todos los trabajos consultados, así como 160 ilustraciones a pluma, la mayoría de las cuales son totalmente originales. Puede servir como un marco de referencia para algunos profesionales de la medicina humana, veterinarios, entomólogos, zoólogos, parasitólogos, ingenieros sanitarios, biólogos de vida silv-estre y naturalistas del Continente Americano y de otros territorios del mundo.

"El contenido de esta obra no es rigurosamente técnico, por lo que, asimismo, es apropiado y de utilidad para aquellos lectores aficionados que se sientan atraídos por un tema transcendental que requiere una amplia difusión."

Its price is $30.00 US, plus $5.50 Air Mail postage. Interested parties may contact Dr. Méndez at Apartado 870317, Zona 7, Panamá República de Panamá.


As an aspiring young mammalogist in the late 1940's the first edition of this book, published in 1943 and authored solely by W. J. Hamilton became the nucleus of what grew to be my relatively large mammalogical library. Although primitive by today's standards it was on the cutting edge of the science at the time, forming a firm foundation for a subsequent edition in 1979 co-authored by Hamilton and Whitaker. In this third edition the content has been almost entirely rewritten, the species accounts expanded and updated and additional sections added.

The first 22 pages introduce the reader to basic concepts and techniques employed by students of mammalogy and outline the goals of the author (Whitaker, Hamilton died in
1990) in presenting the species accounts. The individual accounts are broken down into the following headings: description, measurements, distribution, habitat, habits, food and feeding, reproduction and development, population characteristics, enemies, parasites and diseases, relations to humans, areas for further work, subspecies and literature.

Taxonomically the author recognizes 11 orders, 26 families, 68 genera and 121 species as occurring in the United States east of the Mississippi River. Included in this total are feral dogs, pigs, house cats and horses, as well as small isolated populations of Rhesus monkeys in Florida. Also included are the Fallow, Sika and Sambar deer. Established populations of Fallow deer are cited in Alabama, Georgia, Maryland and Tennessee. Two small populations of Sika deer are located in Maryland and Wisconsin. Sambar occur only in St. Vincent National Wildlife Refuge, St. Vincent Island, Florida.

The book concludes with an Appendix of Endangered and Extirpated Species, including a tabular presentation, a glossary, a guide to further reading and a brief index. In addition to black and white illustrations and distribution maps, the volume includes 15 plates containing 48 color photographs of some of the species.


Since the first edition of Mammals of the World was published in 1964, with Ernest P. Walker as its senior author, this has been a work in progress. Over the years the various editions have been revised and enlarged, first by John Paradiso (2nd & 3rd) then by Nowak and Paradiso (4th) and finally by Nowak alone (5th & 6th).

The classification followed in these volumes is mainly that of Wilson and Reeder, 1993 (reviewed in FN 46: 501) and the total number of categories are: 28 orders, 146 families, 1,192 genera and 4,809 species. Five generic accounts from the 5th edition have been deleted but 81 new generic accounts have been added. This edition also includes generic accounts for extinct genera known to have lived within the last 5,000 years. The point is made that most of these inhabited the West Indies, islands in the Mediterranean and Madagascar and are thought to have been extirpated through human agencies. The point is also made that the most recent IUCN Red List of Threatened Animals (Baillie & Groombridge, 1996) lists 1,096 full species of mammals, nearly one fourth of all known species, as "critically endangered" (169) "endangered" (315) or "vulnerable" (612). The IUCN also lists an additional 220 mammal subspecies that are not components of the listed species in these categories as "conservation dependent" or "near threatened". When these are added the total is closer to one half than one fourth of the world's total.

This edition is organized in much the same way that the fifth edition was structured. After the Forward and Preface there is a 28 page table, arranged phylogenetically, in which the gross world distribution of all of the genera is presented. Volume I contains accounts for the orders Monotremata through the Carnivora. Volume II includes the remaining orders from the Pinnipedia through the Macroscelidea, followed by 172 pages of Literature Cited, averaging ~50
citations per page, and 15 pages of index. Literature coverage extends to approximately 1995, although many references were published as recently as 1997.

Each generic account includes the name of the order, family, genus, author and date of description. This is followed by the common name of the group, if it has one, and a list of recognized species arranged by subgenera where these have been erected. Following each species name is an abridged distribution. Individual generic accounts vary in length and organization depending upon the amount of information available. Large, well-known genera are treated quite extensively. This is particularly the case with large game animals.

In 1992 (F.N. 44: 455) I ended my review of the fifth edition with the following: "All in all, these volumes constitute a superbe exposition and it is difficult to imagine how they could be improved short of printing the photographs in color. The cost of publications has been accelerating at an alarming rate recently, and against this melancholy landscape these volumes constitute one of the best values in publication today." The fifth edition was priced at $89.95 plus shipping. With 307 additional pages, this is still "one of the best values in publication today" and Dr. Nowak is to be congratulated for the fruits of his labors. REL

SIPHONAPTERA LITERATURE

Although it may not be obvious from the titles, citations included here pertain to fleas and the zoonoses associated with them. No particular effort has been made to search the medical and veterinary literature and the emphasis here is on the taxonomy, systematics and general biology of the order.

It should be understood that all Russian and Chinese citations listed here are in Russian or Chinese, although they may have summaries or abstracts in English or some other language. Additional information is available upon request (including e-mail) and recipients are urged to report citations of articles on Siphonaptera, particularly those published in rare sources or those in journals peripheral to the field of Entomology.

1993 (List 10)


1994 (List 9)


1995 (List 8)


1996 (List 8)

1997 (List 6)


1998 (List 4)


Nemec, F. The instars of Ctenopthalmus agyrtes s.l. (Siphonaptera: Ctenopthalmidae) in the nests and hair of species of small wild animals. Erica (Plzen) 1998: 64-84. (in Czech)


Ratovonjato, J. Sensibilité Xenopsylla cheopis aux insecticides on milieu urbain à Madagascar. Archives de l'Institut Pasteur de Madagascar 64: 25-28


1999 (List 2)


Davis, R.M. Use of orally administered chitin inhibitor (Lufenuron) to control flea vectors of plague on ground squirrels in California. Journal of Medical Entomology 36: 562-567.


FAN Suo-ping & LIU Guo-cheng.  
Investigation of the fleas in a Meriones unguiculatus focus of plague in the Dinbian area of Shanbei.  Endemic Diseases Bulletin 14: 31-34.

Farkas, R.  
The cat flea (Ctenocephalides felis Bouché).  Review Article.  Magyar Állatorvosok Lapja 121: 414-419. (in Hungarian)

Fenner, F. & B. Fantini.  

Franc, M. & M.C. Cadiergues.  
Activity of a deltamethrin shampoo against Ctenocephalides felis and Rhipicephalus sanguineus in dogs.  Veterinary Parasitology 81: 341-346.

Gómez, M.S., J.C. Beaucournu & A. Arrizabalaga.  


Guaguère, E., A. Limet & C. Feve.  


Horak, I.G., F. Chaparro, J.C. Beaucournu & J.P. Louw.  

Jameson, E.W., Jr.  

Jarvis, W.  

Fipronil as a systemic insecticide in a rodenticide bait for flea and rat control.  Danish Pest Infestation Laboratory, Annual Report 1998: 70.

Palatability and toxicity tests of fipronil as a systemic insecticide in a rodenticide bait for rat and flea control.  Danish Pest Infestation Laboratory, Annual Report 1998: 90.


Clinical and histological evaluation of immediate and delayed flea antigen intradermal skin test and flea bite sites in normal and flea-allergic cats.  Veterinary Dermatology 10: 29-37.


Steele, M.A. Tamiasciurus douglasi. Mammalian Species 630: 1-8.


Yeruham, I., S. Rosin, A Hadani & Y Braverman. Arthropod parasites of Nubian ibexes (Capra ibex nubiana) and gazelles (Gazella gazella) in Israel. Veterinary Parasitology 83: 167-173.


YU Xin, LIAO Li-fu & YE Rui-yu. A new subspecies of the genus Coptopsylla from Xinjiang, China (Siphonaptera: Coptopsyllidae). Endemic Diseases Bulletin 14: 47-49. (C. lamellifer tulufanensis)

SEASONS
GREETINGS