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12-1999

Flea News 59 (December 1999)

Robert E. Lewis

Iowa State University

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Parasitology, Harold W. Manter Laboratory of

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flea --- NEWS

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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 profession for inclusion herein.

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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-

ructed 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 aporus*

sinica Li & Wang, 1959.

 ssp. of *Peromyscopsylla himalaica*
elongatus Li & Shen, 1963. *Nosopsyllus*
affinis Li & Hsieh, 1964. *Neopsylla*
biseta Li & Hsieh, 1964. *Neopsylla*
kweiyangensis Li, 1964. *Neopsylla*
 = *Neopsylla specialis*
minipiensis Li & Wang, 1964.
 ssp. of *Neopsylla specialis*
rhipisoides Li & Wang, 1964. *Megabothris*
 female = *Ceratophyllus garei*
polyspina Li & Wang, 1964. *Stenoponia*
exilia Li, Wang & Hsieh, 1964. *Macrostylo-*
phora
menghaiensis Li, Wang & Hsieh, 1964.
 ssp. of *Macrostylophora hastatus*
geniculata Li, 1964. *Vermipsylla*.
 = *Vermipsylla alakurt*
gigantea Li, 1964. *Vermipsylla*
 = *Vermipsylla alakurt*
convexa Li, Wang & Wang, 1966. *Neopsylla*
 = *Neopsylla abagaitui*
paranoma Li, Wang & Wang, 1966. *Neop-*
sylla
microcopa Li, Chen & Wei, 1974. *Macrostylo-*
phora
aeretesites Li, Chen & Wei, 1974. *Macrosty-*
lophora
megasinus Li & Chen, 1974. *Frontopsylla*
acutus Li & Chen, 1974. *Frontopsylla*
 = *Frontopsylla megasinus*
diquengensis Li & Hsieh, 1974. *Frontopsylla*
bispiniforma Li, Hsieh & Yang, 1976. *Mac-*
rostylophora
longisetosa Li & Hsieh, 1977. *Neopsylla*
clavelia Li & Wei, 1977. *Neopsylla*
jinshajiangensis Hsieh, Yang & Li, 1978.
 Paradoxopsyllus
longiprojectus Hsieh, Yang & Li, 1978.
 Paradoxopsyllus
intermedius Hsieh, Yang & Li, 1978.
 Paradoxopsyllus
bijiangensis Li, Hsieh & Yang, 1978.
 ssp. of *Xenodaeria telios*
 = *Xenodaeria telios*
zhongdiamensis 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. *Palaeop-*
sylla

obtusipina Chen, Wei & Li, 1979. *Palaeopsylla*
conjiangensis Li & Huang, 1979. *Macrostylophora*
jiangkouensis Li & Huang, 1979.
 ssp. of *Macrostylophora cuii*
brivimanubrium Li & Huang, 1979. *Paraceras*
aprojectus Li, 1979. *Ctenophthalmus*
stenosinuata Li, 1979. *Geusibea*
manosus Li, 1979. *Amphalius*
paoshanensis Li & Yan, 1980. *Macrostylophora*
yunnanus Li, Xie & Liao, 1980. *Cratynius*
rotundisinuata Li & Hsieh, 1980. *Hystrihopsylla*
fimbriata Li & Hsieh, 1980. *Neopsylla*
elesina Li, 1980. *Neopsylla biseta*
megaloba Li, 1980. *Neopsylla*
schismatosa Li, 1980. *Neopsylla*
 ssp. of *Neopsylla specialis*
eothonomus Li & Huang, 1980. *Ctenophthalmus*
breviprojiciens Li & Huang, 1980. *Ctenophthalmus*
cavaticus Li & Huang, 1980. *Typhlomyopsyllus*
diquingensis Li, Xie & Yang, 1980.
 ssp. of *Amphalius spirataenius*
qinghaiensis Li, Xie & Yang, 1980.
 ssp. of *Amphalius spirataenius*
laxisinus Xie, He & Li, 1980. *Paraceras*
menetus Xie, Chen & Li, 1980. *Paraceras*
occidentayunnanus Li, Xie & Gong, 1981.
Lentistivalius
laxilobulus Li, Xie & Gong, 1981. *Stivalius*
hylomysus Li, Xie & Gong, 1981.
Aviostivalius
monoseta Li, Xie & Gong, 1982.
Spuropsylla
quadrasetis Xie, Yang & Li, 1983.
Ischnopsyllus
quintuesetis Xie, Yang & Li, 1983.
Ischnopsyllus
magnabulga Xie, Yang & Li, 1983.
Ischnopsyllus
rhinopithecus Li, 1985. *Vermipsylla parallela*
affinis Li, 1986. *Lentistivalius*
deqinensis Xie & Li, 1986. *Neopsylla affinis*
yunnanensis Li & Yan, 1986. *Parodontis*
riggenbachii
leizhouensis Li, Huang & Liu, 1986.
Nosopsyllus wualis
hongyangensis Li, Bai & Chen, 1986.

Neopsylla
xiei Li, 1987. *Stenischia*
falsatorosa Wi, Ni. & Li, 1987. *Geusibia*
nandensis Li, Zeng & Zeng, 1987.
Macrostylophora
rhombomysus Li, Huang & Sun, 1987.
Paradoxopsyllus
angustihamulus Li, Zhang & Zeng, 1988
Macrostylophora
longiprojiciens Chen, Li & Wei, 1988.
Ctenophthalmus
rongjianensis 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
ailuropoda Jeu, Wang & Li, 1991.
Chaetopsylla
remotus Li, Hai & Pan, 1991.
Syngenopsyllus calceatus
laxiprojectus Li, 1992. *Ctenophthalmus*
weiningensis Li, 1992. *Amphipsylla*
guinanensis Wu & Li, 1992. *Ceratophyllus*
heishuiensis Li & Liu, 1994.
Hystrihopsylla
bursiforma 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 colleagues was not possible. And, as was the case with Liu C.-Y., some publications may have been in organs that were unavailable for circulation.



1943. Note on the external parasites of rats in Kweiyang with special reference to the Siphonaptera. *Chinese Med. J.* 62: 267-272
1951. A description of the female of *Neopsylla specialis* Jordan, 1932, (Siphonaptera) with remarks on certain structures of the male. *Bull. Peking Soc. Nat. Hist.* 19: 263-265.
1952. A description of the male of *Stenischia mirabilis* Jordan, 1932, (Siphonaptera). *Bull. Peking Soc. Nat. Hist.* 20:113-116.
1952. A new flea from a sparrow nest in Kweiyang. *Bull. Peking Soc. Nat. Hist.* 20: 205-208.
1955. The discovery of *Thaumapsylla breviceps* Roths., 1907, and its significance in the fauna of China. *Acta Entomol. Sinica* 5: 305-308. **(Li K.-C. & Chin T.-H.)**
1956. General treatise on fleas. People's Health Publishing House, Peking. 152 pp.
1957. A brief survey of the fleas of insectivores and rodents in western Yunnan. *Acta Zool. Sinica*, Shanghai 9: 25-33.
1957. *Tunga callida* sp. nov., a new species of sandflea from Yunnan. *Acta Entomol. Sinica*, Peiking 7: 113-120. **(Li K.-C. & Chin T.-H.)**
1957. A new species of flea, *Echidnophaga ochotona* sp. nov. *Acta Entomol. Sinica*, Peking 7: 121-124.
1958. The fleas of the genus *Stivalius* J. et R., 1922, (Siphonaptera) from China. *Acta Entomol. Sinica* 8: 67-75. **(Li K.-C., & Wang D.-C.)**
1959. Discovery of *Peromyscopsylla himalaica* (Roths., 1915) in China and comparison of its three subspecies. *Acta Entomol. Sinica* 9: 548-553. **(Li K.-C. & Wang D.-C.)**
1961. Records of *Acropsylla girshami* Traub, 1950, (Siphonaptera) in China, with a discussion of the status of the species in the genus. *Acta Entomol. Sinica* 10: 505-512. **(Li K.-C. & Chin T.-H.)**
1963. The oriental cat flea and its relatives. *Guiyang Med. School Annual* 1963: 52-56.
1963. A new flea of the genus *Nosopsyllus* Jordan, 1933, (Siphonaptera). *Acta Entomol. Sinica* 12: 354-356. **(Li K.-C. & Shen D.-Y.)**
1964. The study of the worm-like flea in northwest China. *Acta Parasitol. Sinica* 1: 91-100.
1964. Two new records of *Palaeopsylla* Wagner in China with a description of *P. incurva* Jordan. *Acta Entomol. Sinica* 13: 768-770. **(Li K.-C. & Hsieh P.-C.)**
1964. A study on the classification of the *stevensi* group of the genus *Neopsylla* from China (Siphonaptera: Hystrichopsyllidae), with descriptions of new species and subspecies. *Acta Entomol. Sinica* 13: 212-230. **(Li K.-C., Hsieh P.-C. & Wang D.-C.)**
1964. A new species of the genus *Megabothris* Jordan, 1933, (Siphonaptera: Ceratophyllidae). *Acta Zool. Sinica* 16: 247-250. **(Li K.-C. & Wang D.-C.)**
1964. A new species of the genus *Stenoponia* J. et R., 1911, (Siphonaptera: Hystrichopsyllidae). *Acta Entomol. Sinica* 13: 615-623. **(Li K.-C. & Wang D.-C.)**
1964. A study on the genus *Macrostylophora* in China (Siphonaptera: Ceratophyllidae). *Acta Zool. Sinica* 16: 479-486. **(Li K.-C., Wang D.-C. & Hsieh P.-C.)**
1965. The discovery of *Aenigmopsylla mikulini* Schwartz in China and the establishment of *Brevictenidia* gen. nov. (Siphonaptera: Ceratophyllidae). *Acta Entomol. Sinica* 17: 414-420. **(Liu T.-S. & Li K.-C.)**
1966. Two new species of *Neopsylla* Wagner (Siphonaptera: Hystrichopsyllidae). *Acta Zootaxon. Sinica* 3: 255-259. **(Li K.-C., Wang D.-C. & Wang H.-E.)**

1974. A study on the genus *Macrostylophora* in China (Siphonaptera: Ceratophyllidae). *Acta Zool. Sinica* 16: 479-486. **(Li K.-C., Wang D.-C. & Hsieh P.-C.)**
1974. Three new species and subspecies of *Frontopsylla* (Siphonaptera: Leptopsyllidae). *Acta Entomol. Sinica* 17: 339-346. **(Li K.-C., Chen N.-Y. & Hsieh P.-C.)**
1974. On two new species of *Macrostylophora* (Siphonaptera: Ceratophyllidae). *Acta Entomol. Sinica* 17: 112-116. **(Li K.-C., Chen N.-Y. & Wei S. F.)**
1974. A study on the teratology of fleas. *Acta Entomol. Sinica* 16: 154-162. **(Li K.-C. & Wang D.-C.)**
1976. A new species of the genus *Macrostylophora* (Siphonaptera: Ceratophyllidae) *Acta Entomol. Sinica* 19: 345-347. **(Li K.-C., Hsieh P.-C. & Yang H.-T.)**
1977. On two new species of the *setosa* group of the genus *Neopsylla* Wagner, from southwest China (Siphonaptera: Hystrichopsyllidae). *Acta Entomol. Sinica* 20: 455-460. **(Li K.-C., Hsieh P.-C. & Wei S.-F.)**
1978. The first record of the genus *Xenodaeira* Jordan, 1932, from China with description of a new subspecies (Siphonaptera: Hystrichopsyllidae). *Acta Entomol. Sinica* 21: 332-334. **(Li K.-C., Hsieh P.-C. & Yang H.-T.)**
1978. Three new species of the genus *Paradoxopsyllus* Miyajima & Koidzumi, 1909, (Siphonaptera: Leptopsyllidae). *Acta Entomol. Sinica* 21: 91-98. **(Hsieh P.-C., Yang X.-S. & Li K.-C.)**
1979. Siphonaptera collected in Gongshan, Yunnan. I. *Entomotaxonomia* 1: 91-102.
1979. New species of *Palaeopsylla* Wagner, 1903, from Szechuan, with a discussion of the genus (Siphonaptera: Hystrichopsyllidae). *Acta Entomol. Sinica* 22: 349-354. **(Chen N.-Y., Wei S.-F. & Li K.-C.)**
1979. Three new subspecies of *Amphipsylla* from Yunnan (Siphonaptera: Leptopsyllidae). *Acta Zootaxon. Sinica* 4: 55-56. **(Jie B.-G., Yang X.-D. & Li K.-C.)**
1979. On some new species and new records of fleas from China (Siphonaptera). *Acta Zootaxon. Sinica* 4: 399-407. **(Li K.-C. & Huang K.-P.)**
1979. A description of the female of *Neopsylla biseta* Li et Hsieh, 1964, with remarks on certain structures of the male. *Entomotaxonomia* 1: 107-110. **(Xie B.-Q. & Li K.-C.)**
1980. Fleas of *Typhlomys cinereus* in China. *Acta Acad. Med. Guiyang* 5: 130-131.
1980. Fleas of *Hylomys suillus* in China. *Acta Acad. Med. Guiyang* 5: 128-129.
1980. Checklist of fleas from Taiwan Province. *Acta Acad. Med. Guiyang* 2: 194.
1980. Present studies on *Paradoxopsyllus* - classification, distribution, morphology and parasites. *Bull. Guiyang Med. College* 5: 1-7.
1980. On the species-groups, zoogeographical divisions and host relationships of the Chinese *Macrostylophora* Ewing, 1929, (Siphonaptera: Ceratophyllidae). *Acta Acad. Med. Guiyang* 5: 108-113.
1980. Siphonaptera collected in Gongshan, Yunnan. II. *Entomotaxonomia* 2: 177-184.
1980. A new species of the genus *Hystrichopsylla* Taschenberg, 1880, with a discussion concerning its subgenera (Siphonaptera: Hystrichopsyllidae). *Acta Entomol. Sinica* 23: 213-215. **(Li K.-C. & Hsieh P.-C.)**
1980. A survey on fleas from Kuankuoshui, a natural reserve in Guizhou Province. *Acta Acad. Med. Guiyang* 5: 114-122. **(Li K.-C. & Huang G.-P.)**
1980. A new species and subgenus of the genus *Cratynius* Jordan, 1933, (Siphonaptera: Ceratophyllidae). *Entomotaxonomia* 2: 41-45. **(Li K.-C., Xie B.-Q. & Liao H.-R.)**

1980. A new subspecies of *Amphalius spirataenius* Liu, Wu & Wu, 1966, with a discussion on its subspecies in China (Siphonaptera: Ceratophyllidae). Acta Acad. Med. Guiyang 5: 123-127. **(Li K.-C., Xie B.-Q. & Yang X.-D.)**
1980. A new *Macrostylophora* from Yunnan (Ceratophyllidae: Siphonaptera). Acta Entomol. Sinica 23: 76-78. **(Li K.-C. & Yan X.-C.)**
1980. On two new species of *Paraceras* Wagner, from southwest China (Siphonaptera: Ceratophyllidae). Acta Acad. Med. Guiyang 5: 137-144. **(Xie B.-Q., He J.-H., Chen R.-H. & Li K.-C.)**
1981. On the species-groups, zoogeographical divisions and host relationships of the Chinese *Macrostylophora* Ewing, 1929, (Siphonaptera: Ceratophyllidae). Entomotaxonomia 3: 297-303.
1981. A new genus and three new species of fleas from Kuankuoshui Natural Reserve in Guizhou Province. Acta Zootax. Sinica 6: 291-297. **(Li K.-C. & Huang G.-P.)**
1981. Three new species of the family Pygiopsyllidae from China (Siphonaptera). Acta Zootaxon. Sinica 6: 402-408. **(Li K.-C., Xie B.-Q. & Gong Z.-D.)**
1982. General description of the family Ceratophyllidae - Classification, geographic distribution and host/parasite relationships and an investigation of pathology problems. Acta Acad. Med. Guiyang 7: 1-6.
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.)**
1982. Siphonaptera. In: Insects of Xizang. Vol. II. Science Press. Beijing, PRC. pp. 283-336 in Chinese, pp. 337-340, in English. **(Liu C.-Y., Wu H.-Y., Liu Q., Li K.-c. & Wu F.-I.)**
1983. On three new species of the genus *Ischnopsyllus* Westwood and the female of *I. delectabilis* Smit (Siphonaptera: Ischnopsyllidae). Entotaxonomia 5: 113-119. **(Xie B.-Q., Yang D.-Q. & Li K.-C.)**
1984. Fleas in Guizhou Province: their host relationships and the characteristics of their zoogeography. Development of Science in Guizhou Province. pp. 205-212.
1984. An emendation of the female of *Macrostylophora paoshanensis* Li et Yan, 1980, (Siphonaptera: Ceratophyllidae). Acta Zootaxon. Sinica **(Xie B.-Q. & Li K.-C.)**
1985. A new flea from the golden monkey *Rhinopithecus bieti* Milne-Edwards from northwestern Yunnan. Zool. Res. 6: 243-248.
1986. On a new species and a new record of the genus *Lentistivalius* Traub, 1972, (Siphonaptera: Pygiopsyllidae). Entomotaxonomia 8: 9-12.
1986. A new species of the genus *Neopsylla* from Ningxia. Sichuan J. Zool. 5: 1-3. **(Li K.-C., Bai X.-L. & Chen B.-F.)**
1986. Description of a new subspecies of *Neopsylla affinis* (Siphonaptera: Hystrichopsyllidae) Acta Zootaxon. Sinica 11: 327-329. **(Xie, B.-Q. & Li K.-C.)**
1986. Fauna Sinica. Insecta. Siphonaptera. Academia Sinica Science Press, Beijing, China. 1334 pp. **(Liu C.-Y., Wu H.-Y., Liu Q., Li K.-C., Wang D.-Q. & Xie B.-Q.)**
1987. A new species of *Stenischia* (Siphonaptera: Hystrichopsyllidae). Entomotaxonomia 9: 85-89.
1987. On a new species of *Macrostylophora* Ewing from Gansu (Siphonaptera: Ceratophyllidae). Entomotaxonomia 8: 265-268. **(Li K.-C., Zhang R.-G. & Zeng Y.-C.)**
1987. A new species of *Macrostylophora* Ewing from Guangxi (Siphonaptera: Ceratophyllidae). Acta Zootaxon. Sinica 12: 415-417. **(Li K.-C., Zeng F. & Zeng Y.-C.)**

1987. A new species of the genus *Paradoxopsyllus* Miyajima & Koidzumi, 1909, from Bayannur, Inner Mongolia. Rept. Local Dis. 2: 19-21. **(Li K.-C., Huang G.-P. & Sun Q.)**

1987. A new species of *Geusibia* Jordan, 1932, from southeastern Qinghai (Siphonaptera: Leptopsyllidae). Acta Biol. Plateau Sinica 6: 93-95. **(Wu W.-z., Ni G.-x. & Li K.-C.)**

1988. A new species of *Ctenophthalmus* from Sichuan (Siphonaptera: Hystrichopsyllidae). Sichuan J. Zool. 7: 3-5. **(Chen N.-Y., Li K.-C. & Wei X.-R.)**

1990. On the Oriental *Nosopsyllus* fleas of China: descriptions of new subspecies and discussion of the classification (Siphonaptera: Ceratophyllidae). J. Guiyang Med. Coll. 15: 161-173. **(Li K.-C. & Xie B.-Q.)**

1991. A new record of *Syngenopsyllus* in China with description of a new subspecies of *S. calceatus* (Rothschild, 1905) (Siphonaptera: Ceratophyllidae). J. Guiyang Med. College 16: 237-243. **(Li K.-C., Hai B.-Q. & Pan X.-J.)**

1991. A new flea of the genus *Chaetopsylla* from the giant panda. Sichuan J. Zool. 10: 7-9. **(Jeu M.-H., Wang D.-Q. & Li K.-C.)**

1992. The anoplura and Siphonaptera of Guizhou. Guizhou Science and Technology Publishing House. **(Chin T.-H. & Li K.-C.)**

1994. A new species of *Hystrichopsylla* (Siphonaptera: Hystrichopsyllidae) from Beishui, Sichuan. Entomotaxomia 16: 269-271. **(Li K.-C. & Liu L.-Z.)**

1995. A new species of the genus *Syngenopsyllus* Traub, from Mt. Emei, Sichuan (Siphonaptera: Ceratophyllidae). Acta Zootax. Sinica 20: 102-106.

1995. On the geographical distribution, host preferences and diagnostic characters of *Neopsylla hongyangensis* Li, Bai & Chen (Siphonaptera: Hystrichopsyllidae) 38: 161-165. **(Li K.-C., Wu W.-Z. & Zhang R.-Q.)**

1996. Two new species of the genus *Macrostylophora* (Siphonaptera: Ceratophyllidae) Acta Zootax. Sinica 21: 239-243.

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.)**

1998. Description of *Songshupsylla*, a new subgenus of *Macrostylophora* (Siphonaptera: Ceratophyllidae), with a discussion of it species groups. J. Med. Entomol. 35: 396-398. **(Li K.-C. & R. Traub)**

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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The Natural History Museum
Cromwell Road, London SW7 5bd
Tel. (020) 7942 5036
Fax. (020) 7942 5229
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. Condolences 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 Siphotrol 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, Zoecon, 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.

Dr. R. L. C. Pilgrim
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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.

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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, ecología y hábitos, mencionando también someramente ciertas enfermedades que son transmitidas por un número de ellos. Además, entre otras facetas relevantes contiene 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 silvestre 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

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Mammals of the Eastern United States. Third Edition. John O. Whitaker, Jr & W. J. Hamilton, Jr., 1998. i-xi, 583 pp. Comstock Publishing Associates, Cornell University Press, Ithaca & London. ISBN 0-8014-3475-0.

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. REL

Walker's Mammals of the World. Sixth Edition. Ronald M. Nowak. 1999. Volume I, i-li, 1-836, index lv-lxx. Volume II, i-x, 837-1936. Johns Hopkins University Press. Baltimore and London. ISBN 0-8081-5989-9. US \$99.95 plus postage.

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 superb 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.

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