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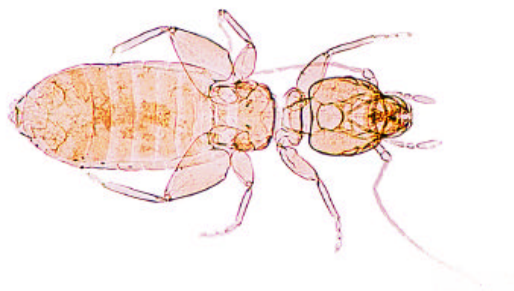
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Psocid News

The Psocidologists' Newsletter

No. 2 (Feb. 22, 2002)



Liposcelis sp.

STUDY ON THE MANAGEMENT OF LIPOSCOLIDIDS IN AUSTRALIA

Manoj K. Nayak (Food Protection Team, Department of Primary Industries, Australia)

I have been working on these 'Little Monsters' for the last five years with my senior colleague Dr. Patrick J. Collins. We are mostly focussing on the management of liposcelidid pests that infest stored commodities.

Psocids have established themselves as major stored grain pests in Australia in recent years and different species have shown different levels of resistance to registered chemicals. It is a continuous challenge for us to control these insects. Please find our research interests and a list of publication from our team on Psocids.

CURRENT RESEARCH

- Resistance Monitoring [National, funded by the Grain Research and Development Corporation (GRDC)]
- Characterising High-level Phosphine Resistance (GRDC)
- Control protocols for the Strongly Phosphine Resistant Psocids at different Fumigation Temperatures (GRDC)
- Key Factors Preventing Effective Control of Psocids with Phosphine [International collaborative project with China and Vietnam, funded by the Australian Centre for International Agricultural Research (ACIAR)]
- Effectiveness of Grain Protectants (GRDC)

RESEARCH HIGHLIGHTS

- Increase in Frequency of Strong Resistance to Phosphine by *L. bostrychophila*
- Higher Fumigation Temperature (35°C) Enhances the Effectiveness of Phosphine Significantly
- Low Concentrations of Phosphine over a Longer Exposure Period are more Effective
- Phosphine Delays the Development of Psocid Eggs
- *L. entomophila* is difficult to control with Grain Protectants

LIST OF PUBLICATION:

M. K. Nayak, P. J. Collins, and R. A. Kopittke (2002): Comparative residual toxicities of carbaryl, deltamethrin and permethrin as structural treatments against three liposcelidid psocid species (Psocoptera: Liposcelididae) infesting stored commodities. Journal of Stored Products

Research, 38 (3): 247-258.

Nayak, M. K. and P. J. Collins (2001): An improved method for mass rearing of three Liposcelidid psocids (Psocoptera: Liposcelididae) infesting stored commodities. Journal of Stored Products Research, 37 (4): 323-328.

Collins, P. J., M. K. Nayak, and R. Kopittke (2000): Residual efficacy of four organophosphates on concrete and galvanized steel surfaces against three Liposcelid psocid species (Psocoptera: Liposcelididae) infesting stored products. Journal of Economic Entomology, 93 (4): 1357-1363.

Nayak, M. K., P. J. Collins, and S. R. Reid (1998): Efficacy of grain protectants and phosphine against *Liposcelis bostrychophila*, *L. entomophila*, and *L. paeta* (Psocoptera: Liposcelididae). Journal of Economic Entomology, 91(5): 1208-1212.

Nayak, M. K., P. J. Collins and R. A. Kopittke: Residual toxicities and persistence of organophosphorus insecticides mixed with carbaryl as structural treatments against three liposcelidid psocid species (Psocoptera: Liposcelididae) infesting stored grain. Journal of Stored Products Research. (accepted for publication)

Daglish, G. J., B. E. Wallbank, and M. K. Nayak: Synergised biofenthrin plus chlorpyrifos methyl for control of beetles and psocids in sorghum in Australia. (sent for publication in Journal of Economic Entomology)

MANUSCRIPTS IN DRAFT:

Nayak, M. K., P. J. Collins, H. Pavic and R. A. Kopittke: Inhibition of egg development by phosphine in the cosmopolitan psocid pest *Liposcelis bostrychophila* (Psocoptera: Liposcelididae). (for Bulletin of Entomological Research)

Nayak, M. K., P. J. Collins and H. Pavic: Long-term effectiveness of grain protectants and structural treatments against stored product psocid pest *Liposcelis decolor* (Pearman) (Psocoptera: Liposcelididae). (for Journal of Applied Entomology)

Nayak, M. K., P. J. Collins and H. Pavic: Baseline responses to phosphine in liposcelidid psocids (Psocoptera: Liposcelididae) in Australia and discriminating dosages for detection of resistance in different species. (for Journal of Stored Products Research)

CONFERENCE PAPERS:

Nayak, M. K. and P. J. Collins (1998): Residual effectiveness of eight insecticidal materials on concrete and galvanised steel surfaces against three *Liposcelis* species of psocids (Psocoptera: Liposcelididae). In H. J. Banks, E. J. Wright, and K. A. Damcevski [eds], Pest management in structures and food processing premises after methyl bromide. Proceedings of the 1st Australian Postharvest Technical Conference, 26-29 May 1998, Canberra, pp. 169-172.

Nayak, M. K., P. J. Collins and H. Pavic (in press): Phosphine resistance in psocids: Challenges ahead! Proceedings of the Second Australian Postharvest Technical Conference, 1-4 August, 2000, Adelaide.

Collins, P. J., G. J. Daglish, M. K. Nayak, P. R. Ebert, D. Schlipalius, W. Chen, H. Pavic, T. M. Lambkin, R. Kopittke and B. W. Bridgeman (in press): Combating Resistance to Phosphine in Australia. Proceedings of The International Conference on Controlled Atmosphere and Fumigation in Stored Products, Oct. 29-Nov. 3, 2000, Fresno, CA, USA.

BOOK CHAPTER:

Nayak, M. K. (in press): Management of psocids in Australian stored grain. Grain Handling and Storage, Kondinin Group, New South Wales, Australia.

TECHNICAL REPORTS:

- Nayak, M. K., P. J. Collins and H. Pavic (2001): Progress in research on management of psocids, I- Phosphine. In Agenda Item 3.3, National Working Party on Grain Protection 2001 (18-19 June), Melbourne, Australia. 4pp.
- Nayak, M. K., P. J. Collins and H. Pavic (2001): Progress in research on management of psocids, II- Protectants. In Agenda Item 5.8, National Working Party on Grain Protection 2001 (18-19 June), Melbourne, Australia. 5pp.
- Nayak, M. K., P. J. Collins and H. Pavic (2000): Phosphine resistance in psocids. In Agenda Item 2b, National Working Party on Grain Protection 2000 (31 July- 1 Aug), Adelaide, Australia. 5pp.
- Nayak, M. K. and P. J. Collins (1999): Control of psocids. In Agenda Item 7b, National Working Party on Grain Protection 1999 (2- 3 June), Perth, Australia. 4pp.

TOPICS IN LABORATORY MANUAL:

- Nayak, M. K. (1999): Laboratory procedure for culturing psocids. International workshop on procedures for monitoring and measuring resistance to fumigants and contact insecticides in insect pests of stored products, 9-13 August, 1999. Queensland Department of Primary Industries, Brisbane, Australia, pp. 30-32.
- Nayak, M. K. (1999): Bioassay method for testing response of adult psocids to protectants. International workshop on procedures for monitoring and measuring resistance to fumigants and contact insecticides in insect pests of stored products, 9-13 August, 1999. Queensland Department of Primary Industries, Brisbane, Australia, pp. 37-38.
- Nayak, M. K. (1999): Bioassay method for testing response of psocids to phosphine. International workshop on procedures for monitoring and measuring resistance to fumigants and contact insecticides in insect pests of stored products, 9-13 August, 1999. Queensland Department of Primary Industries, Brisbane, Australia, pp. 56-57.

SCIENTIFIC ARTICLES:

- Nayak, M. K. and G. G. White (1998): Psocids and mites in stored grain. DPI Notes.
- Nayak, M. K. and P.J. Collins (1997): Psocids- Are they a threat? Australian Grain. 7: ii-iii.

RESEARCH PROGRAMS

Edward L. Mockford (Illinois State University, USA)

I have had several projects going, and a few completed during 2001:

- 1) New species and records of Psocoptera from the Kuril Islands. This work contains records of 28 species, ten named as new in the following genera: *Bertkauia* (2 spp), *Caecilius* (1 sp), *Valenzuela* (2 spp.), *Enderleinella* (1 sp.), *Paracaecilius* (1 sp.), *Stenopsocus* (1 sp.), *Haplophallus* (1 sp.), *Symbiopsocus* (1 sp.). Keys to the known species (worldwide) in the genera *Bertkauia*, *Siniampshipsocus*, and *Longivalvus* are given. This work was completed in late June and sent to the Deutsche Entomologische Zeitschrift. Unfortunately, that journal seems to have a very large backlog, so this paper will not appear soon.
- 2) An article on Psocoptera for "Encyclopedia of Insects" being prepared by Academic Press. This was an exercise in brevity, as my entire contribution, including illustrations, was to fit into three published pages. It was submitted in late September and was accepted with small modifications. The encyclopedia will probably not be published for some time.
- 3) The *Lachesilla rena* species complex. Five species are diagnosed in the complex, four of which are new. The complex occurs throughout southern US, Mexico, Central America, with a few West Indies records. Alfonso contributed important material to this project, which I completed about two weeks ago and sent to Entomological News.
- 4) The *Blastopsocus semistriatus* species complex in the US and Canada. The complex

includes four species, three of which are new. I am currently completing the descriptions of these.

- 5) A joint project with Kevin Johnson, who is doing DNA studies on psocids and Phthiraptera in order to determine the relationships of the groups. I am determining the psocids for Kevin, and I also showed him how to collect them.
- 6) A joint project with Klaus Reinhardt on comparative reproductive capacities of macropterous and micropterous females of *Archipsocus nomas*, using a culture that I have maintained here for some seven years. This involved a large effort by both of us in counting eggs, which are carefully sequestered among faeces on the bark under the web. It appears that there is very little difference in reproductive capacity between the two forms. I have not yet found time to write up this project.
- 7) Psocid collections from Madagascar. The California Academy of Sciences has sent me several batches of psocids recently collected in Madagascar. Since *Amphipsocus* is heavily represented, I have translated into English Badonnel's keys to the species (1967). If anyone is interested in the translations, I shall send a copy. In practice, they must be used along with Badonnel's illustrations.

A BRIEF ACCOUNT OF THE LIFE OF THE LATE DR. KATHRYN SOMMERMAN

Edward L. Mockford (Illinois State University, USA)

In addition to the above projects, in May, by an agreement with the family of the late Dr. Kathryn Sommerman, I went to Moosehead Lake, Maine, to evaluate her psocid collection, pack it, and ship it to the Illinois Natural History Survey at Champaign, where she was employed while doing her doctoral work. I have promised to include here a brief obituary of Dr. Sommerman, which follows.

Kathryn Martha Sommerman passed away in October, 2000, after a long life of entomology with emphasis on psocids and biting flies.

Kathryn was born in New Haven, Connecticut, January 11, 1915. She received the BS degree from the University of Connecticut in 1937. Choosing to pursue a career in entomology, she entered the Graduate School of the University of Illinois, where she received the MS degree in 1941 and the PhD in 1945. While at the University of Illinois she worked as an artist and assistant entomologist at the Illinois Natural History Survey. There, her ability as an illustrator was recognized and utilized. While there, she illustrated a book on the native shrubs of Illinois, and provided many illustrations for entomological works published by the Survey. She also published six papers on Psocoptera during that period, including her important revision of the genus *Lachesilla* north of Mexico (1946). Also during that time, she built up a sizeable collection of Psocoptera which she kept as her own, and added many specimens to the Natural History Survey collection.

Kathryn always regarded herself as primarily an entomologist and secondarily an artist. On that account, two positions that she held in the Washington, D. C. area from 1946 to '53 (US Army Medical Center and USDA Bureau of Entomology and Plant Quarantine) were not entirely to her satisfaction. In both, her skill as an illustrator was utilized, and she found little opportunity for research. However, she illustrated an important set of keys to adult and larval mosquitoes during that time.

In 1953, she left the D. C. area and settled briefly in Orlando, Florida. I was doing graduate work at the University of Florida at that time, and we got together for several pleasant visits with much exchange of psocidological information.

In 1955, Kathryn moved to Anchorage, Alaska, to work as a research entomologist with the US Public Health Service Arctic Health Research Center. The work involved studies on black flies, mosquitoes, and snipe flies, but in her spare time, she collected psocids.

Kathryn retired from her Alaska job in 1973. She had adapted well to the Alaska climate, but she knew that she could not afford to live in Alaska in retirement. Eventually, she found a cottage on Moosehead Lake in central Maine. There she spent the rest of her life surrounded by a forest of conifers and red maples, with abundant native birds and mammals.

Although Kathryn did not publish on psocids after 1957, she continued to collect them and to make life history observations on them. Her collection now resides in the Illinois Natural History Survey, Champaign, Illinois. Edward L. Mockford, December, 2001.

Best wishes for 2002 to my colleagues in Psocidology!

THORNTON PSOCOPTERA COLLECTION

Courtenay N. Smithers (Australian Museum, Australia)

Through the generosity of Profesor Ian Thornton a large part of his collection of Psocoptera has been deposited in the Australian Museum. The wide geographical coverage of his material and the fact that much of his research on it has been published makes it an extremely important collection. For many areas his collections and work on it represents the sum total of our current knowledge of the Psocoptera for the area concerned and any future work will have his contribution as its basis. The material is in the form of microscope slides and alcohol-preserved specimens. Material which has been listed in his publications as type material to be deposited in the Australian Museum has already been received. Most of the material has now been incorporated into the extensive Australian Museum collection. The Museum Psocoptera collection is currently arranged in systematic order down to family level, with genera and species being arranged alphabetically within families. Unidentified material for each family is housed adjacent to other material of the family.

Areas from which Ian's specimens have come include: Auckland Islands, Australia, Bali, Bismarck Archipelgo, Chatham Islands, Chile, Fiji, Galapagos Islands, Hawaiian Islands, Hong Kong, Micronesia, New Britain, New Guinea, Vanuatu, New Zealand, Peru, Philippines, Rapa, Samoa, Society Islands, Sri Lanka, Tonga, Tuamotu and Vietnam.

All psocidologists will be be highly appreciative of and thank Ian for Ian's generosity.with Badonnel's illustrations.

CURRENT RESEARCH

Courtenay N. Smithers (Australian Museum, Australia)

PSILOPSOCIDAE: A second Australian species of *Psilopsocus* has been found in material from Queensland. It is not yet known whether this species is also a wood borer, as is *Psilopsocus mimulus*, the only other Australian species so far found. A search in under way for nymphs, which, if found, will probably answer that question.

MYOPSOCIDAE: I have now started work on a revision of the Australian species of Myopsocidae. Preliminary work suggests that many of the local species are probably not congeneric with *M. unduosus*.

RESEARCH PROGRAMS

Alfonso N. García Aldrete (Instituto de Biología, UNAM, Mexico)

1. With my student Arturo Casasola, the revision and phylogenetic analysis of *Goja* is about to be completed, to be published in English, hopefully next July. *Goja* now includes 45 species, distributed from Mexico (20°28'N:98°39'W) to Chile (40°05'S:73°25'W), with 23 species in Mexico, five species in Central America, and 17 species in South America (plus three additional ones that just turned out from Nicaragua and from Napo, Ecuador, too late for inclusion in the revision and cladistic analysis).

2. I am describing a species of *Cladiopsocus*, and doing an account of the Nicaraguan

Loneura, with descriptions of two, possibly three new species. The ms will probably be submitted for publication in early March, this year.

3. A colleague convinced me to compile and edit a book on the insects of Chamela, an area of dry forest in the coast of Jalisco, on the Pacific slope, also considered as a hot spot for biodiversity. A good number of entomologists are already working on that, and I committed myself to do a chapter dealing with the species of *Lithoseopsis*, *Epipsocus*, *Myopsocus* and *Lichenomima* for the book, so wish me luck on that.

4. Time allowing, I would like to deal, in broad terms, with the comparative species richness of Tambopata, Peru, and Napo, Ecuador. So far I as I have cursorily seen, the number of non shared species between the two areas could be quite high.

5. Time allowing also, I will force myself to finish yet another manuscript on alpha taxonomy of *Lachesilla*, in the *forcepeta* group. Somehow I feel that if I do not accomplish something on *Lachesilla*, I have not done much. Such is life in the tropics.

CURRENT RESEARCH

Evan Schmidt (LaTrobe University, Australia)

Presently I am doing very little active research in Psocoptera, and instead concentrating on publishing work already completed. A rough draft of the subject of my talk in Geneva (Revision of the Elipsocidae) has been sent to Prof I Thornton for comments. Some challenges remain, particularly in regard to the taxonomic placement of *Drymopsocus* Smithers. The paper initially removes some taxa from the family (three species of *Elipsocus* and three genera – *Lesneia*, *Sinelipsocus* and *Howeanum*) and describes 11 pupative new genera. A cladistic analysis suggests the family as presently known is not monophyletic, but becomes so with the exclusion of four genera – *Palmicola*, *Drymopsocus*, *Sabulopsocus* and a new genus. The end result is a monophyletic elipsocid family with an internal classification considerably different to that presently known, and the establishment of two new families. To publish this, my other PhD work on the Tasmanian Psocoptera and the southeastern Alpine work are my priorities.

When time permits I am also collecting some Psocoptera from the inland semi-arid regions of southeastern Australia. Initial results have indicated a fauna more diverse than I had expected, and makes an interesting change from collecting from lush coastal vegetation.

TYPE SPECIMENS DESCRIBED BY HANJIRO OKAMOTO

Kazunori Yoshizawa (Hokkaido University, Japan)

The Japanese fauna of Psocoptera was first investigated by G. Enderlein and H. Okamoto, and the psocid collection of the latter author is stored in the Hokkaido University Insect Collection. Most of the Okamoto's psocids specimens were accumulated in one box, but some were stored in not appropriate boxes, such as in "Neuroptera" or "Homoptera", etc. I have thoroughly explored the Hokkaido University Insect Collections since since I moved to the present position. As a result, I confirmed the type specimens of the following Okamoto's species in the collection. Here, I provide a list of the species name of which types are confirmed. Further information, such as label data or number of syntypes, will be published in the future issue of *Insecta Matsumurana*.

Amphigerontia ficivorella Okamoto, 1907

Amphipsocus formosanus Okamoto, 1910

Amphipsocus rubrostigma Okamoto, 1910

Caecilius annulicornis Okamoto, 1910 [= *Valenzuela okamotoi* (Banks, 1973)]

Caecilius gracilis Okamoto, 1910 [= *Valenzuela gracilis*]

Cerastipsocus singularis Okamoto, 1907 [syn. of *Sigmatoneura kolbei* (End., 1906)]

Copostigma hyalinum Okamoto, 1907
Copostigma subcostalis Okamoto, 1907
Epipsocus fasciicornis Okamoto, 1910
Kodamaius pilosus Okamoto, 1907
Kolbea kagoshimensis Okamoto, 1910 [= *Pseudocaecilius kagoshimensis*]
Mesocaecilius quadrimaculatus Okamoto, 1910
Psocus capitatus Okamoto, 1907
Psocus formosanus Okamoto, 1907
Psocus grandis Okamoto, 1907 [syn. of *Psococerastis nubila* (End., 1906)]
Psocus mali Okamoto, 1907 [= *Psococerastis mali*]
Psocus mitsuhashianus Okamoto, 1907 [= *Sigmatoneura mitsuhashiana*]
Psocus pellucidus Okamoto, 1907 [= *Psocidus pellucidus*]
Psocus tateokanus Okamoto, 1907 [= *Psocidus tateokanus*]
Stenopsocus nigricellus Okamoto, 1907

FYI

DR BRYAN TURNER built up a web site aimed mainly at the public with psocid pest problems. You can visit his web site via PsocoNet or from the following URL address:

<<http://www.kcl.ac.uk/psocids/>>

THE SECOND INTERNATIONAL CONGRESS ON PHTHIRAPTERA (ICP2) will be held at the University of Queensland, Australia, on July 8–12, 2002. This conference focuses on Phthiraptera and their kin. As you know, psocids are the closest kin of Phthiraptera. Furthermore, some morphological (Lyal, 1985: Syst Entomol) and molecular (see the first issue of Psocid News) studies suggested that liposcelidids are closer to Phthiraptera rather than to the other Psocoptera. Thus, ICP2 must be very interesting and informative not only for phthirapterologist but also for psocidologists! The following sessions will be held.

- Human lice: louse-borne disease, control & resistance to pediculicides
- Systematics and evolution of lice and their kin
- Molecular evolution of lice
- Coevolution and host-switching of lice and their hosts
- Ecology of lice and their hosts, the "arms race"
- Anatomy and ultrastructure of lice

The detailed information on the conference can be obtained from the following URL address:

<<http://www.imb.uq.edu.au/ICP2/index.html>>

PSOCIDOLOGISTS' DIRECTORIES – ADDITIONS AND CORRECTIONS

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EDITORIAL

Next issue

About Aug 2002. Please let me have all contributions by Jul 31 2002 if possible. I look forward to hearing from you.

Editorial address

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