

AUSTRALIAN BAT RESEARCH NEWS

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EDITORIAL

Jon Dunsmore has rightly taken me to task for implying in the last issue that Histoplasma capsulatum had been confirmed as occurring in an Australian Cave.

To be precise, the real situation is that a number of speleologists who had caved together in a specific cave, were found to be suffering from histoplasmosis; a number of other speleologists who have since been skin-tested showed a positive reaction. However, to our knowledge the actual fungus has not yet been positively isolated from an Australian cave.

An Australia-wide study of soil samples from a variety of potential habitats is now in progress. We repeat in this newsletter the request made by Dr. Frey of the Mycology Reference Laboratory, Royal North Shore Hospital, Sydney and originally published in the newsletter of the Australian Speleological Federation.

I have held this newsletter in the hope that we would be able to publish details of the 4th International Bat Research Conference, but unfortunately, these have not yet been made available. However, I do include a preliminary note which has come to me by a particularly circuitous route.

Proceedings of the third conference (Yugoslavia 1972) were published in *Periodicum Biologorum*, vol. 75.

Thanks to those who have fed information, particularly Trevor Maddock and Bill Ewers for copies of current literature. BUT this is a slim issue - what about more content for the next one?

PEOPLE AND INTERESTS

F.R. Allison, North Queensland Fauna Centre, Pallarenda, Townsville, Queensland is particularly interested in taxonomy and distribution of bats and their insect ectoparasites, including fleas, nycteribiids, streblids and polyctenids.

Bob Domrow, Queensland Institute of Medical Research, Herston Road, Herston, Queensland 4006 is still interested in mite parasites of bats (and of anything else).

Nixon Wilson (see current literature 0217) has moved to Dept. of Biology, University of Northern Iowa, Cedar Falls, Iowa 50613, U.S.A.

CONFERENCE NEWS

Fourth International Bat Research Conference: Will be held in Kenya from 22nd to 29th September 1975. The venue will be Nairobi; papers will be presented on 23-26th September, and an excursion will be held on 27-29th September. Those interested should notify the Secretary at the earliest possible date:

Dr. K.W. Turgeon
Department of Zoology
Kenyatta University College
P.O. Box 43844
Nairobi, Kenya

International Symposium on Cave Biology and Cave Palaentology: The South African Speleological Society are convening a symposium during early August 1975. This symposium will be under the auspices of the International Union of Speleology. The venue will be the Cango Caves, near Oudtshoorn, site of the well-known palaentological investigations of Broome and others.

Those interested should contact A.S. Walker, Vice President, South African Speleological Society, P.O. Box 4812, Cape Town 8000, South Africa.

INTERNATIONAL COUNCIL FOR THE PROTECTION OF ENDANGERED BATS

At the Third International Bat Research Conference in Yugoslavia in 1972, steps were taken to form this council and nine members were appointed to it: R.E. Stebbings (England (Chairman), S. Braaksma (Netherlands), E. Hamilton-Smith (Australia), A.M. Greenhall (Trinidad), A. Krzanowski (Poland), R.L. Martin (United States), F.A. Mutere (Kenya), R. Rybar (Czechoslovakia) and G.S.A. Perez (Guam).

The functions of the Council are seen as collation and dissemination of relevant information, provision of public education material, consultation to organizations and governments and formulation of research codes. Negotiations are in hand to establish organizational links with IUCN.

So far the council is still in its early stages of development, but an active information exchange between members is developing. In particular, Bob Stebbings has mailed copies of the recent pamphlet, 'Focus on Bats', produced by the Society for the Promotion of Nature Reserves in England. This is a particularly attractive little pamphlet which might serve as a useful model for similar educational material in any country.

My own view of my role as a member from Australia is partly that I keep on doing exactly as I always have; further, that I must commence a more systematic review of the extent to which any Australian species is endangered. This means that your suggestions and any information is important and will be welcomed. We need, in particular, suggestions which might help develop criteria for the assessment of status and vulnerability. In addition, even at this stage, the Council might well be invoked in respect to any submissions on the status of bats in this country. Comments, suggestions, etc. all welcome.

OPEN LETTER ON HISTOPLASMOSIS

(from A.S.F. Newsletter, 64 : 15-16, 1974)

A group of research workers at the Institute of Medical Research in the Royal North Shore Hospital of Sydney are studying the prevalence in Australian soils of a fungus called Histoplasma capsulatum. This fungus is responsible for a disease called histoplasmosis, which affects the respiratory (lung) system but which can also, in drastic cases, affect other body systems. We ask your help in obtaining soil samples to further these studies.

The disease is normally contracted when a person inhales dust containing spores of the fungus. Spores are individual microscopic cells of the fungus which resemble plant seeds in their behaviour. They can survive, without growing, in soils which lack the substances they need for growth. When suitable materials are added to the soil or when the spores settle in a suitable environment, such as the lungs of a susceptible person, they will germinate and grow.

Histoplasmosis resembles tuberculosis in many ways, particularly in the X-rays of affected lungs. Because of this and also because we have been largely ignorant of the possible importance of this infection, it is likely that some cases of histoplasmosis have been overlooked. Fortunately, histoplasmosis usually occurs in what is called the benign form where there has been an initial infection which has been dealt with by the body defences. The symptoms, in these cases, are often mild, similar to those for a short-term bout of influenza, or may not even be noticed. Benign histoplasmosis has no special dangers attached to it but any suspicion of a benign infection should be reported for checking. We can get some indication of a possible benign infection through a special skin test called a histoplasmin reactivity test.

Our interest in the prevalence of this fungus in Australian soils started when six scouts were treated at this hospital for a respiratory infection following their exploration of caves at Yass, NSW. Histoplasmin skin tests of all six patients were positive and it is suspected that soils from the Yass caves may have been the source of infection by Histoplasma capsulatum. Later histoplasmin skin tests on 80 speleologists from Australia and New Zealand showed 25 positive reactions which indicates that

the fungus is present in the local environment and that the general public might occasionally be exposed to a source of infection. We do not know how often a positive histoplasmin reaction occurs in the general Australian population.

The fungus has been found in soils from many parts of the world but we know virtually nothing about its occurrence in Australia. It is most commonly found in soil containing the manure of chickens, starlings or bats and the most concrete demonstration of its presence in an Australian soil was in the study of a case of disseminated histoplasmosis in an outer area of Adelaide where the infection was traced to dust arising from the clearing of a disused fowl run and the presence of the fungus in this soil was proved. Histoplasma capsulatum grows best in soils from areas of high humidity and with air temperatures from 20 - 30°C.

For our studies we would like to obtain and examine soil samples from as many geographical regions of this country as is possible. You are in a position to help us in this respect and for this reason we are enclosing information on the types of soil samples that are of particular interest for our survey. Unfortunately, like most research workers, our working funds are rather tight but we will be very happy to provide any necessary containers, to refund mailing expenses, and to answer any questions or provide further information to anyone who is interested in the project. Any help that we can get in the collection of material is appreciated.

Generally the soil samples desired for examination will be expected to come from rural or semi-rural areas but certain types of urban sites are also of prospective interest. Soil samples can be collected from the following kinds of sites:

- a) Caves - especially those in which birds or bats roost; soil samples should be taken both within the cave and around the entrance.
- b) Abandoned houses in rural areas - these often contain bird or bats roosts in the attic or underneath the roof.
- c) Fowl yards, including chicken houses - this can include both soil samples from runs currently in use as well as soil samples from sites which have contained fowl runs in the past; there are now many residential sites which have been developed on the lands of former poultry farms and these soils may still harbour the fungus.
- d) Underneath or within the hollows of trees used by birds or bats for roosts - such sites may be found in suburban parks as well as rural areas.

There are some procedures which we suggest for the collecting of soil samples:

- 1) For soils from temperate regions or sheltered spots, take the first two inches of topsoil from a six inch square of soil; this will yield about half a pound of soil and each individual sample of this type can conveniently be contained in a small plastic tie-up bag (Gladwrap type) which we will be happy to supply to anyone cooperating in the scheme. If the soil is in a very hot dry region, remove the top 3-4 inches of soil before taking a sample; the fungus is killed by the high soil temperatures you would expect to find near the surface of many Australian soils during the summer and yet the fungus may still survive in the cooler soil below the surface.

- 2) The soil should be free of large stony material and, if possible, dry although dryness is not absolutely essential.
- 3) If there is bird or bat manure in the soil, please make sure this is included in the sample.
- 4) From a small site, such as under a tree in a park, a pair of samples taken close together is all that is needed. When the site is fairly large, such as a cave or a fowlyard, please take at least six pairs of adjacent samples from different parts of the site.
- 5) A small pocket knife is useful for digging the soil. Make sure that you clean off the blade after each sample is collected.
- 6) In very dusty locations always wear a handkerchief, tied at the back of the neck, to cover your face and nose.
- 7) So far as is possible, include the following information on a card or piece of paper which can be placed in the bag with each individual sample:
 - i) Date of collection
 - ii) Exact location of site - district where the site is located, and additional information for identification such as the name of street, park or caves. Please indicate where the sample was collected at the site and for this a rough sketch of the site marked to show sampled areas would be most helpful.
 - iii) The approximate air temperature and general description of humidity conditions in region.
 - iv) Any climatic information you may know about the region such as average annual rainfall
 - v) Any indication of the current presence of bats or birds around a sampled site. If you know what types of birds use the site as a roost please indicate this and for bats a general indication of the roosting patterns - some species (solitary types) tend to roost individually while others (colonial types) tend to roost in large closely packed colonies, sometimes numbering hundreds at a time.

We would be grateful if you could forward the samples through your local scout, speleological or wildlife organization. It will be much easier for us to recompense the larger group for mailing expenses. If you can personally bring us samples at any time or if you have an opportunity to visit the laboratory, we will be very happy to explain our work in more detail and to show you our project in operation.

The address for mailing samples is:

Dr. D. Frey
 Mycology Reference Laboratory
 Institute of Medical Research
 The Royal North Shore Hospital
 of Sydney
 ST LEONARDS N.S.W. 2065

KEEPING BATS IN THE LABORATORY

Pteropus and Dobsonia spp are easily kept in the laboratory. I used cages made from wooden crates, and added a chicken wire front door, perch, and removable tray at bottom. They were fed on bananas and pawpaw - once daily and vitamin drops (A B D E and C) were added to their drinking water once a week. With careful handling most individuals become fairly tame within a few weeks, however, they are always capable of inflicting nasty bites and scratches. Some have been kept for up to two years.

Macroglossus can also be kept in the same way - a colleague once kept one for over a month, but I seldom kept them for longer than a week.

Insectivorous bats are difficult to keep alive, and I gave up trying. In order to get them back to the laboratory alive I found it best to put only one or two in a tin, have plenty of air holes, and wire to hang from.

W.H. Ewers.

PTEROPUS IN THE WESTERN DISTRICT OF VICTORIA

Mr Barry Searle, who runs a Zoo in Warrnambool, had two Pteropus which were caught alive in Warrnambool in 1973. One was caught at the Lady Bay Hotel (very near the beach) and the other on the Hopkins River. Both were caught near water, which may or may not be significant. The first was caught on 13th May and the second in mid June. Two dead bats were also brought to him at this time, one from Orford about 35 miles from Warrnambool and one from Koroit about 10 miles from Warrnambool. He says all bats were the "grey-headed" species.

W.H. Ewers

CURRENT LITERATURE

- 0190 AITKEN, P. (date ?), Bats of Australia, pp.17-21 in FORREST, J., (ed.), Mammals (Environmental Education no.12, published by subject consultants, Wattle Park Teachers College, South Australia)

Gives a list of Australian species, diagram illustrating general features of a bat, and an illustrated key to South Australian species. (The same volume also includes a reprint of Aitken's earlier paper (ABRNO083) re-titled, "An introduction to the Mammals of South Australia" on pp. 1-7).

- 0191 CHESSON, C. (date ?), Mammals of Mt. Remarkable National Park, pp. 19-22 in SMITH, J.H. (ed.), Mt. Remarkable National Park - Integrating Outdoor Education (Environmental Education no. 18, published by subject consultants, Wattle Park Teachers College, South Australia).

Refers to six species bat, but only Chalinolobus gouldii and C. morio are named,

- 0192 DOMROW, R. 1973, New records and species of Laelaps and allied genera from Australasia (Acari : Dermanyssidae). Proc. Linn. Soc. N.S.W., 98 : 62-85.

Specimens of Laelaps hapaloti labelled as taken from Chalinolobus gouldii were examined but this host record is considered an erroneous one (all other records are from Notomys spp.), Neolaelaps spinosus recorded from Pteropus tonganus from the New Hebrides; Bewsiella fledermaus from Hipposideros galeritus, also New Hebrides. All other records are non-chiropteran.

- 0193 DUNSMORE, J.D., HALL, L.S. & KOTTEK, K.A., 1974 DDT in the Bent-winged bat in Australia, Search, 5 : 110-111.

Seven samples of Miniopterus schreibersii collected at intervals over a period of eighteen months were analysed for DDT and its metabolites. These results are compared with two laboratory samples, one being given daily amounts of DDT and the other given a control diet without DDT. The evidence suggests that the wild population (in Central NSW) is not at present endangered, but that the levels of DDT are sufficiently high to cause concern.

- 0194 DWYER, P.D. & HARRIS, J.A., 1972, Behavioural acclimatization to temperature in pregnant Miniopterus (Chiroptera), Physiol. Zool., 45 : 14-21.

Air temperature was monitored over a 2-month period at a cave site that was occupied daily by a few thousand pregnant female bats (Miniopterus schreibersii). A gradual and cumulative increase in daytime ceiling temperature, amounting to 8°C, occurred at the site in which the bats clustered and arose from their presence there. It is argued that clustering behaviour in combination with the selection of a site appropriate to retention of warmed air served to acclimatise these bats to the temperature environment they would subsequently encounter at nursery quarters in a different cave. Reduction in body-to-ambient temperature difference concomitant upon this behaviour would prove advantageous to the bats.

- 0195 EWERS, W.H., 1974, Trypanosoma aunawa sp.n. from an insectivorous bat, Miniopterus tristis, in New Guinea, which may be transmitted by a leech. J. Parasit., 60 ; 172-178.

A new species, Trypanosoma (Herpetosoma) aunawa, is described from the insectivorous bat Miniopterus tristis (family Vespertilionidae) from a cave in New Guinea. Details are also given of trypanosomes from the gut of a terrestrial leech, Philaemon sp., which feeds on M. tristis in the cave. It is suggested that the leech might transmit the trypanosome infection. This is the first time that a non-arthropod has been suspected of being involved in the transmission of a bat trypanosome.

- 0196 FAIN, A., 1972, Les Listrophorides d'Australie et de Nouvelle Guinee (Acarina : Sarcoptiformes), Bull. Inst. r. Sci. nat. Belg., 48 (5) : 1-196.

A comprehensive review, which refers only to one species from a bat, namely, Alabidocarpus recurvus from an unidentified bat and from Rhinolophus megaphyllus.

- 0197 FINDLEY, J.S., 1972, Phenetic relationships among bats of the genus Myotis. Syst. Zool. 21 : 31-52.

A numerical taxonomic analysis of the genus Myotis which revealed the existence of three major phenetic groupings. These may correspond to feeding-foraging modalities. A number of Australasian forms are included.

- 0198 FREY, D., 1974. Open letter on Histoplasmosis, Australian Speleological Federation Newsletter, 64 : 15-17.

See reprint this news.

- 0199 HALL, L. & DUNSMORE, J.D., 1974, A survey of Cave Dwelling bats, Australian Speleological Federation Newsletter. 64 : 9-10.

The co-operation of speleologists in supplying systematic records of bats seen in caves is sought. Brief notes are given on the identification of Miniopterus schreibersii, Myotis adversus and Rhinolophus megaphyllus. Some examples are cited of known cave use, and reference is made to conservation principles.

- 0200 HAMILTON-SMITH, E., 1974. The present knowledge of Australian Chiroptera, Aust. Mammalogy, 1 : 95-108.

A comprehensive review of research on Australian chiroptera. (note : this paper was completed in 1972; ABRN should be consulted for references to more recent research.)

- 0201 HARRIS, J.A., 1973. Structure and dynamics of a cave population of the guano mite, Uroobovella coprophila (Womersley), Aust. J. Zool., 21 : 239-275.

Reports an extensive study, carried out by both analysis of cave guano samples and laboratory culture. U. coprophila is exceedingly numerous in the cave community (up to 33.7×10^6 per square metre). Five stages in the life cycle were distinguished - egg, larvae, protonymph, deutonymph and adult. It was found that this mite feeds on fungi, but that a supply of fresh guano is necessary for both egg-laying and development to proceed. Annual patterns of change in mite population under cave circumstances were determined and described.

- 0202 HOOGSTRAAL, H. & KAISER, M.N., 1973. The subgenus Persicargas (Ixodoidea : Argasidae : Argas) 18. A. (P.) nullarborensis, new species from Western Australia. Ann. Ent. Soc. America, 66 : 1296-1298.
- 0203 KAISER, M.N. & HOOGSTRAAL, H., 1973, Bat ticks of the genus Argas (Ixodoidea : Argasidae) IX. Argas daviesi sp. nov. (Subgenus Carios) from Western Australia. Ann. Ent. Soc. America, 66 : 423-428.
- Describes A. (C.) daviesi from Eptesicus pumilus.
- 0204 KAISER, M.N. & HOOGSTRAAL, H., 1974. Bat ticks of the genus Argas (Ixodoidea : Argasidae) 10. (Carios) dewae, new species, from Southeastern Australia and Tasmania. Ann. Ent. Soc. America, 67 : 231-237.
- 0205 KITCHENER, D.J. 1973 Reproduction in the common sheath-tailed bat, Taphozous georgianus (Thomas) Microchiroptera : Emballonuridae) in Western Australia. Aust. J. Zool. 21 : 375-389.

The reproductive and associated organs of both male and female T. georgianus are briefly described. In females, only the right ovary is functional and pregnancies occur only in the right horn. They are monovular and the corpus luteum occupies most of the ovary and is deeply embedded in its stroma. Females are monotocous and the gestation period is probably about four months, young being born from October to February. They are monoestrous and there is an autumn and early winter dioestrous-anoestrous period. Spermatozoa are not stored in the reproductive tract of females and copulation appears to coincide with the oestrous condition. In males, spermatogenesis proceeds throughout the year and spermatozoa are present in the epididymis and vas deferens in all months that males were collected (no records for December). Spermatozoa are also found in the ampulla of Henle and vesicula seminalis in most months of the year. The position of the testes varies with seasons; in summer they descend to the scrotal sacs; in autumn, winter and spring they are more abdominal.

- 0206 KOOPMAN, K. 1973, Systematics of Indo-Australian Pipistrellus Period. Biol. (Zagreb) 75 : 113-116.
- The systematics of Pipistrellus in the Indo-Australian archipelago is very complex and confused. Current systematics goes back to Tate, who recognized nine groups in these islands. Taxonomic changes since Tate are summarized and a reassessment of the groups made. It is concluded that five of Tate's groups (affinis, minahassae, savii, circumdatus, joffrei) should stand as separate groups. Tate's annectens group has been removed from Pipistrellus, but another of Tate's groups (ceylonicus) has been extended into the islands. Tate's remaining three groups (abramus, coromandra, tenuis) are here merged with his extralimital pipistrellus group to form an expanded pipistrellus group. In an attempt to assess species differences on a single island where abundant material was available, a study was made of Pipistrellus on New Guinea. While the differences between

papuanus from near sea-level and collinus from high altitudes are pronounced, some intergradation takes place at middle altitudes. Thus there is only one species of Pipistrellus on New Guinea, which indicates that there are far fewer species in the Indo-Australian archipelago. Presumably ponceleti, angulatus, collinus, papuanus, sewelanus, nitidus, tenuis, sublidens and murrayi are all variants of one species, which should be called P. tenuis.

- 0207 LAND CONSERVATION COUNCIL (VICTORIA) 1973 (actually released 1974), Report on the Melbourne Study area, 444 pp., 12 maps

Reports Nyctophilus geoffroyi, N. timoriensis, Miniopterus schreibersii, Eptesicus pumilus, Chalinolobus gouldii, C. morio, Pipistrellus tasmaniensis, Myotis adversus, Nycticeius greyi.

- 0208 LAND CONSERVATION COUNCIL (VICTORIA) 1974, Report on the East Gippsland study area, 235 pp., 7 maps.

Reports Pteropus poliocephalus, Eptesicus pumilus, Chalinolobus gouldii, Miniopterus schreibersii, Nyctophilus geoffroyi and N. timoriensis.

- 0209 LAND CONSERVATION COUNCIL (VICTORIA) 1974, Report on the Mallee study area, 263 pp., 5 maps.

Reports Nyctophilus timoriensis, N. geoffroyi, Chalinolobus gouldii, C. morio, Eptesicus pumilus, Nycticeius greyi, Tadarida australis, T. planiceps, and Taphozous australis. (The latter species is an error - see 0215 below)

- 0210 MADDOCK, T.H. 1972, The lesser long-eared bat, Nyctophilus geoffroyi Leach, cave-dweller or occasional visitor? S. Aust. Nat., 46 : 63-64.

A brief review of records of N. geoffroyi from caves, which presents the suggestion that this species is undergoing transition from a cave-dwelling to surface-dwelling habit.

- 0211 MADDOCK, T.H. & McLEOD, A. 1974, Polyoestry in the little brown bat, Eptesicus pumilus, in Central Australia. S. Aust. Nat., 48 : 50, 63.

Banding and successive re-capture of E. pumilus in Northern Australia has demonstrated that five individuals were pregnant or had recently given birth in August-October 1973 and again in March 1974.

- 0212 NADCHATRAM, M., 1966, Revision of the bat-infesting chiggers of Chiroptella Vercammen-Grandjean (Acarina : Trombiculidae), with descriptions of two new larval species and a nymph. J. Med. Ent., 3 : 19-28.

Includes C. noticola sp. n. from various bats in the Solomon Islands and New Guinea.

- 0213 NADCHATRAM, M., 1968, Notes on the genus Rudnicula (Acarina : Trombiculidae) with description of a new species from Malaysia. Acarologia, 10 : 467-471.
- Four species are keyed : R. tibbi from Korea, R. barbarae (Domrow) new comb., from Australia, R. templei Nadchatram and Wilson from New Guinea and R. becki sp. n. from Malaysia.
- 0214 PHILLIPS, C.J. & BIRNEY, E.C. 1968, Taxonomic status of the vespertilionid genus Anamygdon (Mammalia : Chiroptera). Proc. Biol. Soc. Wash., 81 : 491-497.
- It is shown that the only described species in this genus is inseparable from Myotis adversus moluccarum and hence both the generic name Anamygdon and specific name solomonis are junior synonyms.
- 0215 SIMPSON, K.N.G. 1973, Amphibians, reptiles and mammals of the Murray River region between Mildura and Renmark, Australia. Mem. Nat. Mus. Vic., 34 : 275-280.
- Reports Nyctophilus geoffroyi and Taphozous australis (sic). This last species should be Tadarida australis - K. Simpson, pers comm.
- 0216 VERCAMMEN-GRANDJEAN, P.H. & NADCHATRAM, M. 1965. New considerations about the genus Riedlinia Oudemans 1914/Reinstatement of the genus Trombigastia Vercammen-Grandjean and Brennan 1957/Erection of a new genus Bishoplinia. Acarologia, 7 fasc. suppl., 317-324.
- The genus Trombigastia is reinstated; a new subgenus Neosomia and a new genus Bishoplinia are erected; two new species, Riedlinia (Neosomia) audyi and Bishoplinia wilsoni are described, both from New Guinea.
- 0217 WILSON, N., 1972, Ticks, pp.1122-1124 in Encyclopaedia of Papua and New Guinea, vol. 2.
- A brief review, which includes references to species found on bats.