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EDITORIAL

The continued interest in this newsletter is gratifying, and the most recent sign of this interest takes the form of a review in The Ring, 42/1965, p.115. Many thanks to the Editor for his kind comments.

I would like to draw your attention to "A first analysis of 'survey of cave-dwelling bats'" by David Purchase in this issue. This is a worthwhile project in which all speleologists can participate. Data cards are available through your society, or direct from the Secretary, Australian Bat-banding Scheme, C.S.I.R.O., Canberra.

TECHNIQUES AND EQUIPMENT

Publication on mist-netting.— Many bat workers may not have noted the following publication:

WILSON, S.J., LANE, S.G. & McKEAN, J.L. 1965. The use of mist nets in Australia. CSIRO Aust. Div. Wildl. Res. Tech. Pap. No.8, pp.1-26.

This paper deals specifically with mist-netting of birds but contains a great deal of valuable general data. It covers the purposes of mist-netting, design of nets, construction of poles, methods of use, special techniques, factors affecting catches, casualties, and repair of nets. A closing section emphasizes the importance of good public relations.

Hanging of mist nets.— from John Nelson. A problem with mist nets is that one often needs poles to set them up, and this makes extra and inconvenient luggage for the already heavily-laden batter. My way out of this problem is to use a ball of string. I can use this more effectively, and in more diverse situations, than I can use poles.

I use an ordinary ball of heavy string such as is used in older stores for tying parcels. I have found that I can throw the ball as high into the canopy as I want to place the net. I have considered using a large catapault for high rainforest trees but have not yet needed to do so.

I unwind a little of the string, no more than five yards, and then throw the ball over or through the canopy. The ball unwinds itself as it falls. I then tie the top edge of one end of the net to the string and pull the net up. Before the net gets too high I tie another string to the bottom. The same is done for the other end. The net can be hauled up as high as the canopy, although it may not reach quite this height if the trees are far apart. It does not really matter how far apart the trees are so long as you have lots of string.

Another advantage of this method is that it can be used to hang nets over any mass of water narrow enough to throw a ball of string across. One end is supported by a tree on one side, the ball is thrown across, then over a tree on that side. The net is hauled across the water to whatever position is desired. It is an advantage to keep the strings as long as the distance from the net to the edge, as this will allow the net to be easily hauled to the bank when a bat has been snared. Long leads are also a similar advantage for nets strung from high trees.

It is also a good idea to take the bottom tie strings forward into the wind so that a trough is formed. Several species which tend to bounce off and fall down the net are caught in this way.

Ultrasonic detectors.— A simple portable ultrasonic detector has been described in recent papers by Bertolini (1960) and McCue (1961?). One such detector is currently being constructed in Australia. However, it may be of interest to draw attention to the detector being marketed by Holgates of Totton Ltd Totton, Southampton, England. This detector was drawn to my notice by Lord Medway of the University of Malaya, who has found it of great value in field studies. This unit, complete with microphone and pre-amplifier, is marketed at £98.10.0 stg.

The ultrasounds of the bat are converted by this unit to an audible signal, and by the tuning of the instrument, the frequency characteristics of the animal's output may be studied. Range covered is from 15 kc. to 180 kc. Provision is made for beat frequency oscillator injection for output to tape recorder and for output direct from microphone to oscilloscope.

Constantine trap.— I have recently constructed a modified Constantine trap using monofilament nylon thread in place of the original stainless steel wire. This works very effectively and appears to me a far easier unit to use in most situations than the mist net. Will prepare full details of construction for the next newsletter.

PERSONAL

Peter Dwyer has moved to the Department of Zoology, University of Queensland.

Elery Hamilton-Smith has been appointed Honorary Associate in Zoology to the South Australian Museum, Adelaide.

RESEARCH NOTES

(For this issue I have asked Peter Dwyer to give some comments on the taxonomic problems of *Miniopterus*. I trust that others working with this genus will add to Peter's notes in future issues; comments upon skull morphology, dentition, variations in other populations, etc., will be of particular interest.)

A Note on Australian Miniopterus

- P.D.Dwyer

The genus Miniopterus is the sole representative of the subfamily Miniopterinae (Fam. Vespertilionidae). This group of bats includes a wide assemblage of forms ranging through southern Europe, Africa, Asia, and Australasia. Variation in size and pelage colour is great, but the apparent clinal nature of this has rendered taxonomy of the genus extremely confusing. Clarification of taxonomic problems will probably only be achieved by examination of large samples taken throughout the range, and by an understanding of geographic differences in the biology of related forms.

Tate (1941) considered that 'the 25 or more named forms (excluding Africa) of Miniopterus ... range themselves into three rather ill-defined groups...' These groups are tristis (forearm 47-53 mm), schreibersii (forearm 42-46 mm), and australis (forearm 35-40 mm). In addition to differences in forearm length, Tate refers to relative differences in skull and dental characters. Tate does not make it clear whether he considers members of the tristis group as a single species. He does, however, suggest that all bats of the 'schreibersii group must be regarded as members of a single species schreibersii, or if we regard the ashy-coloured western schreibersii as specifically distinct, blepotis.' And, similarly, that 'the australis group includes a single species with three subspecies.'

In a 'provisional arrangement' of the schreibersii group, Tate lists blepotis as a subspecies of schreibersii, and considers orianae as having doubtful sub-specific status. In a later paper (1952) he again considers blepotis as a sub-species of schreibersii and includes orianae with schreibersii. Here, however, he does not make it clear whether or not orianae is to be ranked as a separate subspecies or as equivalent to blepotis. Further taxonomic confusion arises from Tate's (1941) inclusion of magnater as the largest subspecies of schreibersii and his subsequent implication (1952) that he considers magnater as a member of the tristis group (i.e. 'In the future the large tristis type may be reported there (Australia) as well, since I have found magnater in a cave in New Guinea, near Port Moresby.')).

To date, the names australis, schreibersi, blepotis, and orianae have been associated with Australian Miniopterus. The first named can certainly be accepted as a distinct species of Miniopterus. Tate records its presence in Australia (east coast, south to Rockhampton) in his 1952 paper, but he does not refer it to any of his three (1941) subspecific categories. This nomenclature would appear to be satisfactory until a more detailed analysis of the entire species (or species complex) is undertaken.

It is clear from the above, however, that a great deal of confusion surrounds the status of blepotis and orianae. The name blepotis was originally associated with forms from Java, Banda, Amboina, Timor, and Japan (Temminck 1841, in Tate 1941). In his 1941 paper Tate does not record blepotis or any of its synonyms from Australia. The only Australian form mentioned is orianae from 'N. Australia", with its type locality as 'Darwin', and with reference to a series of specimens taken from 'that part of Queensland adjoining the railway out of Townsville.' This series is considered to 'conform closely to Thomas' description of orianae from Darwin.' In the 1952 paper Tate's reference to orianae is not clear but all specimens of schreibersii taken between Cape York and north-eastern New South Wales are referred to the subspecies blepotis.

There has been no attempt to disentangle the taxonomy of Miniopterus since Tate's study. Nor can any attempt succeed unless it deals with the genus throughout its range. Troughton (1957) refers blepotis to a separate species, ranging in Australia from Cape York through eastern Australia to South Australia, and he leaves orianae from the Northern Territory and the Kimberleys interpretable as either a subspecies or as a species in its own right.

Current Australian workers generally favour the view that the eastern form should be considered as M. schreibersi, and leave its specific status undecided. Specimens from the north-west appear to be often regarded as referable to orianae at subspecific level. My own interpretation is that the Australian species must be provisionally regarded as australis and schreibersi (note: schreibersi, not schreibersii, in accordance with recent rulings on zoological nomenclature). To date, however, I have used the trinomial blepotis with reference to north-eastern New South Wales populations. My reasons for this have been, firstly, to follow Tate (1952) and, secondly, to emphasize the pelage differences noted by some authors, which may separate the north-western orianae from the eastern form. Interpretation of pelage differences in Miniopterus is, however, difficult, and at this time I am not satisfied that the use of a trinomial for any Australian Miniopterus is justified.

Recent studies of the biology of M. schreibersi in Australia continually highlight the possibility of additional subspecific, or even specific, differentiation within Australia, and emphasize the need for future thorough taxonomic clarification.

I have referred above to clinal variation within members of the genus Miniopterus. Tate (1941) records the forearm length of members of the schreibersii group as 42-46 mm, but in the same paper includes within this group chinensis (48 mm), italicus (47 mm), japoniae (47 mm), magnater (48.4-51.4 mm), and others with forearms greater than 46 mm. In the same paper he records blepotis from Java, etc., as having a forearm of 44-45 mm, and orianae as 44 mm, but in the 1952 paper Australian blepotis (apparently including orianae) are recorded as ranging between 46 and 48 mm. Forearm lengths, per se, are insufficient to permit rigid separation of Miniopterus species.

In north-eastern New South Wales I have recorded forearm lengths for mature M. schreibersi from 47-51 mm. Recently, M. australis has been located within Australia as far south as latitude 31.5° — about Kempsey, N.S.W. No difficulty arises in distinguishing the two species in this portion of the range because forearm lengths of fully-grown M. australis are below 41 mm.

Young individuals with growing forearms are only found at maternity colonies. Here, M. australis young may be separated from similarly sized (and therefore younger) M. schreibersi by their increased development of the forearm (especially its relative slenderness and ossification) and pelage. In individuals older than three months, weight differences also clearly separate the species. M. schreibersi juveniles leave maternity colonies weighing about 12.5 g., and fully adult males and females are heavier than this (average about 15.5 g.). On the other hand, M. australis average about 7 g., and even pregnant females seldom exceed 10 g. Finally, differences in pelage colour are evident. In M. australis, pelage colours and moulting patterns are more subtle than in M. schreibersi. A tendency to frosting or greying of hair tips is usual in M. australis, but has no equivalent in M. schreibersi.

The nature and magnitude of these differences in M. schreibersi and M. australis in north-eastern New South Wales will probably also apply throughout Queensland; but it must be emphasized that the actual sizes, weights, and pelage shades encountered will probably vary with latitude.

References:

TATE, G.H.H. 1941. Bull. Amer. Mus. Nat. Hist. 78(9): 567-97.
TATE, G.H.H. 1952. ibid. 98(7): 563-616.
TROUGHTON, E.Le G. 1957. Furred Animals of Australia. Sydney.

A First Analysis of 'Survey of Cave-Dwelling Bats'

- David Purchase

1. Aims.— In order to gain a little more knowledge of the distribution of cave-dwelling bats, especially in caves not known to, or frequented by, bat banders, several thousand survey cards were printed and distributed by the Australian Bat-banding Scheme, CSIRO, in collaboration with the Australian Speleological Federation. These cards, when completed by observers, will provide an index in time and place to the occurrence of bats within Australian caves for use by bat researchers.

2. Results.— Since the first cards were distributed to co-operators in the survey in February 1963, 177 completed cards from 74 locations have been returned. With the exception of Tasmania (where bats do not normally occur in caves), following are the totals by States: N.S.W. 123, N.T. 28, Vic. 10, W.A. 9, A.C.T. 4, S.A. 3.

The following speleological societies have submitted cards: Sydmey University 34, University of New South Wales 32, Darwin Speleological Group 28, Canberra 20, Kempsey 4, Victorian Cave Exploration Society 2, Sub-aqua Speleological Society 2, Orange 1, Sydney 1. In addition, 31 cards have been submitted by bat banders and other interested persons not attached to a speleological society.

A preliminary analysis of data received to date reveals a few interesting results, e.g.:

(a) Grill Cave, Bungonia, N.S.W. Eight cards over a period of 18 months indicate a small build-up in numbers of Miniopterus schreibersi during March. As yet, no bats have been banded in this cave.

(b) Main Cave, Tuglow, N.S.W. No banding has yet been done in this area, but cards show the occurrence of at least a small population of M. schreibersi.

(c) Northern Territory. Very little banding has been done in the Territory, but W.P.Walsh (D.S.G.) has recorded four species in 13 locations and these cards will provide a valuable basis for future banding projects within the Territory.

3. Acknowledgments.— The Scheme is indebted to all co-operators who have taken the time and trouble to submit cards; but the number of reports and regional coverage to date is hardly sufficient to permit analysis or draw conclusions, other than those cited above. The following suggestions would greatly enhance the ultimate value of the survey: (a) the enlistment of many more co-operators, and allied to this, (b) a greater regional coverage; (c) a more extensive series of cards from the one location, especially if observations could be made at regular intervals over a period of one or two years, and (d) the collection of negative information, which is of equal importance to positive.

BAT-BANDING IN AUSTRALIA: AN APPRAISAL

Bats have now been banded in Australia for just over eight years, and the time seems opportune to appraise what has been achieved and what it is hoped to achieve in the future.

Since August 4, 1957, when the first bat was banded by Dr. G.M.Dunnet, approximately 35,000 bats of 15 species have been marked, including 31,500 individuals of the Bent-winged Bat, Miniopterus schreibersi; about 5,500 recoveries have so far been reported. On June 1, 1960, following several requests for bands and equipment from both professional and amateur workers, the Australian Bat-banding Scheme was created, under the auspices of the CSIRO Bird-banding Scheme. Since that date 19 banders have been enrolled; bands have also been supplied to research workers in New Zealand and Malaysia.

During these eight years of activity a great deal of information has accrued from the banding of Miniopterus schreibersi, plus a few other species that are the subjects of special studies; but there are some species banded that are not likely to yield any worthwhile results because too few individuals have been marked.

Bat-banding, like bird-banding and other forms of animal marking, is a technique that has been evolved for the identification of individuals within a population in order to study aspects of their habits and movements. To be fully effective, this technique relies on the banding and subsequent recovery of many individuals. If single, or few specimens of seldom encountered species are banded the chances of recovery are usually low, and even if they are recovered the numbers are too small to be of statistical value. The present state of Australian bat taxonomy (e.g. see notes on Miniopterus above), and the associated difficulties of identification, also make it undesirable for such species to be banded unless it is intended to carry out a continuing study of the species concerned. The Scheme has therefore now adopted the policy of restricting banding to those species nominated by the bander, who is required to justify his banding in the case of those species, either not readily identifiable, or not likely to be caught in numbers.

OBSERVATIONS AND NOTES

Dead bats at Wombeyan.— from Barbara Dew. On July 31st, at Wombeyan Caves, on entering the Fig Tree Cave, we had an unpleasant surprise. In four distinct areas we found the remains of at least 200 dead bats ... the first group consisted of 20-25, and we assumed that 'humans' were responsible as the bats had broken wings ... as if they had been knocked from the roof and trodden on ... in further we found another 50-55 in a similar state. Now I have never seen bats in this area before, as the roof is only a foot or so above your head... Up towards the Balcony we found the greatest 'slaughter' — of at least 150. Death appeared to have been over a period, as some were dry and mouldy, others fresh and bloody... In most cases the bodies appeared to have been eaten, especially the heads and fleshy parts. The area is in total darkness and quite a way in from the surface. There were no signs of predators, but I have seen rats at a distance in another part of the cave. Predation is suggested because the bodies were in definite areas, but scattered over a small confined space... (species: Miniopterus schreibersi - Ed.).

CURRENT LITERATURE

Reprints of interest. — Two further Australiana Facsimile Editions of the South Australian Public Library are worthy of notice: Eyre's Journals of expeditions of discovery into Central Australia ... in the years 1840-41 contains J.E.Gray's original description of Rhinonicteris aurantius in an appendix to Vol.I. Captain Sturt's Narrative of an expedition into Central Australia ... during the years 1844, 5 and 6 includes a reference to the collecting of the type specimen for Chalinolobus picatus.

Another reprint of interest is the latest edition, from Angus and Robertson's Sirius Books series, of F.N.Ratcliffe's Flying Fox and Drifting Sand.

Section A — Papers of Australian Interest

BRASS, L.J. 1964. Results of the Archbold Expeditions No.86. Summary of the sixth Archbold Expedition to New Guinea (1959). Bull. Amer. Mus. Nat. Hist. 127: 145-216.
Provides detailed habitat descriptions of all areas visited and summarizes the field work of the expedition. Locality records appear for the following species of bats: Pteropus neohibernicus, Pt. macrotis, Dobsonia moluccensis, Rousettus amplexicaudatus, Macroglossus lagochilus, Syconycteris crassa, Nyctimene albiventer, Paranyctimene raptor, Emballonura nigrescens, E. beccari, Taphozous sp., Hipposideros calcaratus, H. cervinus, H. muscinus, H. bicolor, H. diadema, Rhinolophus euryotis, R. megaphyllus, Otomops secundus, Pipistrellus papuanus, P. angulatus, Philetor rouhi, Murina sp., Miniopterus australis, M. schreibersi, M. tristis, Nyctophilus sp., N. microdon.

DELFINADO, M.D. & BAKER, E.W. 1963. Mites of the family Spinturnicidae from the Philippines (Acarina). Pac. Insects 5: 905-20.
All species parasitic upon bats; some records from New Guinea included.

DOMROW, R. 1963. New records and species of Austromalaysian laelaptid mites. Proc. Linn. Soc. N.S.W. 88: 199-220.
Includes the following records: Ichoronyssus aristippe on M. schreibersi (New Guinea and Wombeyan, N.S.W.); I. radovskyi n.sp. on bat sp. indet. (Malaya); Liponyssoides warnekei n.sp. on M. schreibersi (New Guinea); Neolaelaps spinosa on Nycteribiids from Pteropus (N.S.W. and N.Territory); Spinolaelaps miniopteri on M. schreibersi (New Guinea, Ingham, Qld., and Wombeyan, Sydney, N.S.W.); Ornithonyssus latro n.sp. on Eptesicus pumilus (Bonalbo, N.S.W.).

DWYER, P.D. 1965. Flight patterns of some eastern Australian bats. Vict. Nat. 82: 36-41.
Computations of the following morphological criteria are provided for 17 species: aspect ratio (with and without uropatagium); ratio wing area/uropatagial area; wing loading, and uropatagial loading. These results are then discussed in relation to present knowledge of flight patterns and behaviour, and suggested flight patterns deduced for species where this has not been recorded.

DWYER, P.D. 1965. Bat erosion in Australian limestone caves. Helictite 3: 85-90.
The clustering areas of Bent-winged Bats in limestone caves are frequently stained and etched. This staining is very intense, and covers large areas at breeding caves present in Palaeozoic limestones. Erosion of limestone is very conspicuous in these caves. Staining is not intense at breeding caves

in Tertiary limestones but a combination of chemical and mechanical erosion may, in part, account for the depth of dome pits in which the bats cluster. Certain caves that are characterized by extensive guano deposits and by conspicuously eroded and/or stained limestone, but which are currently without large colonies of bats, may represent ancestral breeding caves.

DWYER, P.D. 1965. Injuries due to bat-banding. Appendix to: SIMPSON & HAMILTON-SMITH, CSIRO Aust. Div. Wildl. Res. Tech. Pap. No. 9, pp. 19-24.
Injuries caused by wing-banding bats are discussed for Miniopterus schreibersi blepotis, Miniopterus australis, and Rhinolophus megaphyllus. For M. s. blepotis conspicuous injury was frequent for the first few months after banding with size 030 bird bands. The incidence of such injury was reduced when size 20 monel bat bands were used. Injury does not appear to cause death in M. s. blepotis; instead, improvement in the condition of the forearm is likely to follow early injury. The incidence of band loss in this species is probably low. Size 020 bird bands produced very little injury in M. australis. Neither size 040 bird bands nor size 20 monel bat bands has proved satisfactory for Rh. megaphyllus.

FAUNA SURVEY GROUP (F.N.C.V.). 1965. Mammal reports. Vict. Nat. 82: 61, 125.
Records Pteropus poliocephalus from Hughesdale, Mt. Dandenong, and Elwood; Nyctophilus geoffroyi from Hughesdale and east Buchan (all Victoria).

FELTEN, H. 1964. Flughunde der Gattung Pteropus von Neukaledonien und den Loyalty-Inseln (Mammalia, Chiroptera). Senck. Biol. 45: 671-83.
Discusses Pt. tonganus, ornatus, and vetulus.

GREEN, R.H. 1965. Observations on the little brown bat, Eptesicus pumilus Gray in Tasmania. Rec. Q. Vict. Mus. Launceston (n.s.) 20: 1-16.
The results of three years' observations on the little brown bat in northern Tasmania are recorded. The diurnal roosts of five maternal colonies are described and observations on their exit and entry flight are given. The three main methods used to capture specimens are described and 206 were collected by these methods. Of this total, 83 were examined and processed into the collections of the Queen Victoria Museum. The remaining 123 were banded and released, and 86 of these were subsequently recaptured 216 times on 34 trap nights. The longest distance recovery was three miles and the longest time lapse was 19 months. Colonies will use more than one diurnal roost at the same time and individual interchange between these roosts is usual. Colonies are at their greatest numerical strength in January, but autumn dispersal greatly reduces the colony during the winter months. A build-up occurs in the spring and parturition takes place between the end of November and mid-December, with a single birth being normal. Post-partum copulation and seminal storage is indicated by the structure of colonies and the seasonal behaviour of males. The growth, pelage, tooth eruption, and behaviour of young are described and progressive mensurations tabulated. Pelage variants are not indicative of sex but appear to be influenced by age, and possibly local environment. Tooth wear is apparently associated with age and in some cases has been found to be extremely severe. Body weight generally increases throughout the first year of the bat's life, and from six months of age the weight of females usually exceeds that of males. Observations are recorded on feeding, drinking, flight, swimming, voice, excretion, and toilet.

HAMILTON-SMITH, E. 1965. Some preliminary notes on Western Australian cave fauna. Western Caver (mimeo.) 5(3): 1-5.

Describes cave-dwelling colonies of Chalinolobus morio at Stockyard Gully, Jurien Bay, and the Nullarbor Plains, Western Australia. It is suggested that Murra-el-elevyn Cave, near Cocklebiddy and Gooseberry Cave, Jurien Bay, may be maternity colonies. The available evidence also suggests that, at the former, parturition occurs in spring.

HAMILTON-SMITH, E. 1965. Current problems in Australian bat biology. Bull. Aust. Mammal Soc. 2(1): 12-15.
Draws attention to specific problems highlighted by recent research and outlines avenues for possible future study.

HAMILTON-SMITH, E. 1965. Distribution of cave-dwelling bats in Victoria. Vict. Nat. 82: 132-7.
Discusses the distribution of Miniopterus schreibersi, Rhinolophus megaphyllus, and Myotis adversus in Victoria. It is suggested that the recording of Eptesicus pumilus in a Victorian cave is due to mis-identification. Seasonal movement patterns of M. schreibersi are discussed, and it is shown that the Victorian population of this species is provided by four reservoirs, centreing respectively upon maternity colonies at Naracoorte, South Australia; Warrnambool, Victoria; Nowa Nowa, Victoria; and Wee Jasper, New South Wales.

HITCHCOCK, W.B. 1961. Bat-banding in Australia. Bull. Aust. Mammal Soc. 1(3): 2.
Brief description of the Australian (CSIRO) bat-banding scheme.

LUNDELIUS, E.L., jr. 1963. Vertebrate remains from the Nullarbor caves, Western Australia. J. Roy. Soc. W.Aust. 46: 75-80.
Includes Nyctophilus geoffroyi from Murra-el-elevyn Cave.

MAA, T.C. 1964. A review of Old World Polyctenidae (Hemiptera: Cimicoidea). Pac. Insects 6: 494-516.
The family Polyctenidae is here divided into two subfamilies. Generalisations on the evolution and host relationships and a supplementary bibliography of the family are presented. For the Old World forms, host records of 228 specimens are analysed, and a revised key covering all genera and species is provided. Six species from bats of the genera Emballonura, Coleura, Hipposideros, and Tadarida from Sudan, Ambon, New Guinea, Australia, and the Solomon Islands are described as new. The total number of New World species is thus raised to 14.

MAA, T.C. 1965. An interim world list of bat-flies. (Diptera: Nycteribiidae and Streblidae). J. Med. Ent. 1: 377-86.
Lists 53 published generic and subgeneric names; 432 specific and subspecific names; divides the Nycteribiidae into two subfamilies and establishes subgenera and/or species groups; reviews the generic nomenclature and proposes a number of new combinations.

MILES, J.A.R. 1964. Some ecological aspects of the problem of arthropod-borne animal viruses in the western Pacific and south-east Asian regions. Bull. World Health Org. 30: 197-210.
Brief references to viruses in Chiroptera.

NELSON, J.E. 1964. Vocal communication in Australian flying foxes. (Pteropodidae: Megachiroptera). Z. Tierpsychol. 21: 857-70.
Spectrograph analyses of field and laboratory recordings of Pteropus poliocephalus are described and compared with some calls of Pt. gouldi and Pt. scapulatus. Mother-young, agonistic, reproductive, alarm, and feeding vocalizations are described. Among the mammals so far studied, the 22 calls distinguished in Pteropus are equalled only among the Primates.

NELSON, J.E. 1965. Movements of Australian flying foxes. (Pteropodidae: Megachiroptera). Aust. J. Zool. 13: 53-73.
Evidence is presented to show that the coastal species Pteropus poliocephalus and Pt. gouldi congregate in large camps from early to late summer. In these large summer camps the young are born and raised, the sexes become associated, and conception occurs. The numbers within these camps are influenced by the availability of blossom in the surrounding area. The adults are normally dispersed during the winter, while the immature form winter camps. These camps contain a larger percentage of adults in those winters in which blossom is more abundant. The inland species, Pt. scapulatus, forms large camps in early summer but the young are born in autumn when the population is dispersed. Since the food supply of Pt. scapulatus is less dependable, and undergoes greater fluctuations than that of the coastal species, Pt. scapulatus is more nomadic than poliocephalus and gouldi.

PESCOTT, T. 1965. White-striped mastiff bat from Geelong. Vict. Nat. 82: 75.
Records Tadarida (Austronomus) australis from Geelong, Victoria.

PIZZEY, G. 1963. Little red peril. Animals 2: 654-7.

PIZZEY, G. 1965. When the bats fly in. Melbourne 'Herald.' 22 May 1965, p.22.
Popular articles on Pteropus.

PURCHASE, D. 1961. Note on the skeletons of lesser long-eared bats (Nyctophilus geoffroyi) found in the Coppermine Cave at Yarangobilly, N.S.W. Newsletter Canberra Speleo. Soc. (mimeo.), Apr. 1961.
Records the discovery of a group of approximately 50 skeletons found together in the cave concerned. This is an unusual record because this bat does not normally inhabit caves, nor do other bats normally enter the caves at Yarangobilly.

RIDE, W.D.L. 1964. The mammals of Depuch Island. In: Report on the aboriginal engravings and flora and fauna of Depuch Island, Western Australia. W. Aust. Mus. Spec. Publ. no.2, pp.75-8.
Refers to unidentified Microchiroptera seen in flight.

ROBERTS, F.H.S. 1964. The tick fauna of Tasmania. Rec. Q. Vict. Mus. Launceston (n.s.) 17: 1-8.
Records Argas (Carios) sp. from Pipistrellus tasmaniensis, Hobart.

RYAN, R.M. 1964. The type locality of the Australian horseshoe bat, Rhinolophus megaphyllus. Aust. J. Sci. 27: 259-60.
Provides evidence to establish the type locality as being at Cave Flat, on the north bank of the Murrumbidgee River at its intersection with the Goodradigbee River, this locality now being submerged in the Burrinjuck Dam.

SANDARS, D.F. 1957. Hymenolepis miniopteri n.sp. (Cestoda) from an Australian bat, Miniopterus blepotis Temminck 1840. J. Helminth. 31: 79-84.

SERVENTY, D.L. & MARSHALL, A.J. 1964. A natural history reconnaissance of Barrow and Montebello Islands, 1958. CSIRO Aust. Div. Wildl. Res. Tech. Pap. no.6, pp.1-23.
Refers to previous records of Eptesicus pumilus from Montebello Islands, although not recorded on the authors' visit.