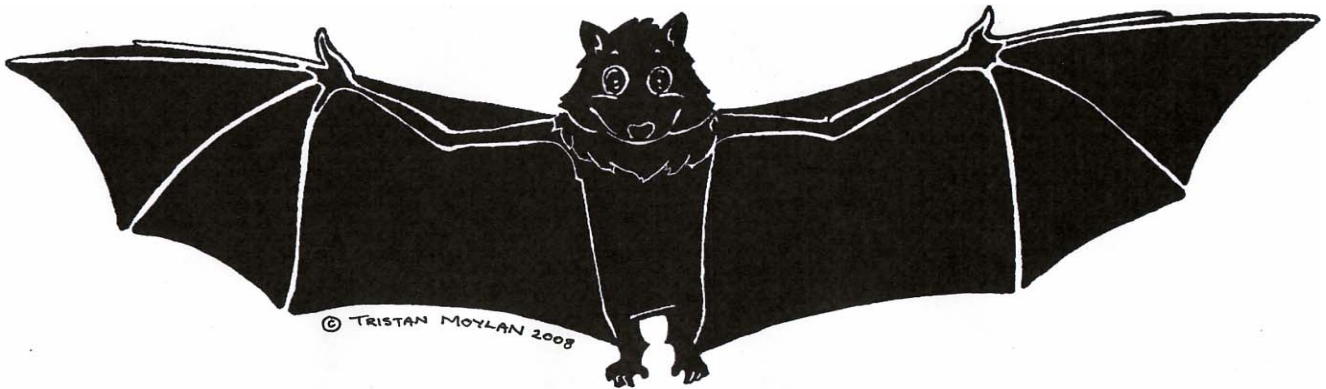

The Australasian Bat Society Newsletter

Number 30

April 2008



ABS Website: <http://abs.ausbats.org.au>
ABS Listserv: <http://listserv.csu.edu.au/mailman/listinfo/abs>
ISSN 1448-5877

– Instructions for contributors –

The *Australasian Bat Society Newsletter* will accept contributions under one of the following two sections: Research Papers, and all other articles or notes. There are two deadlines each year: **31st March** for the April issue, and **31st October** for the November issue. The Editor reserves the right to hold over contributions for subsequent issues of the *Newsletter*, and meeting the deadline is not a guarantee of immediate publication.

Opinions expressed in contributions to the Newsletter are the responsibility of the author, and do not necessarily reflect the views of the Australasian Bat Society, its Executive or members.

For consistency, the following guidelines should be followed:

- Emailed electronic copy of manuscripts or articles, sent as an attachment, is the preferred method of submission. Manuscripts can also be sent on 3½" floppy disk, preferably in IBM format. **Please use the Microsoft Word template if you can (available from the editor).** Faxed and hard copy manuscripts will be accepted but reluctantly! Please send all submissions to the *Newsletter* Editor at the email or postal address below.
- Electronic copy should be in 11 point Arial font, left and right justified with 16 mm left and right margins. Please use Microsoft Word; any version is acceptable.
- Manuscripts should be submitted in clear, concise English and free from typographical and spelling errors. Please leave two spaces after each sentence.
- Research Papers should include: Title; Names and addresses of authors; Abstract (approx. 200 words); Introduction; Materials and methods; Results; Discussion; and References. References should conform to the Harvard System (author-date; see recent *Newsletter* issues for examples).
- Technical notes, News, Notes, Notices, Art etc should include a Title; Names and addresses of authors. References should conform to the Harvard System (author-date).
- All pages, figures and tables should be consecutively numbered and correct orientation must be used throughout. Metric units and SI units should be used wherever possible.
- Some black and white photographs can be reproduced in the *Newsletter* after scanning and digital editing (consult the Editor for advice). Diagrams and figures should be submitted as 'Camera ready' copy, sized to fit on an A4 page, or electronically as TIFF, JPEG or BMP image files. Tables should be in a format suitable for reproduction on a single page.
- Research Papers and Notes will be refereed, and specialist opinion will be sought in some cases for other types of articles. Editorial amendments may be suggested, and articles will generally undergo some minor editing to conform to the *Newsletter*.
- Please contact the *Newsletter* Editor if you need help or advice.

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The Australasian Bat Society Newsletter is ISSN 1448-5877.

Publishers contact address is PO Box 3229, Tamarama New South Wales 2026.

– Editorial –

Hello again!

Thank you all for your patience and anticipation for this latest *Newsletter* edition. I'm sure you will agree with me that the wait was worthwhile, with the compilation of over 50 pages of current bat news.

My last editorial brought you news of interesting encounters with bat experts from Canada and the States. Since then, I have had the amazing opportunity to experience a traditional Indian wedding (not my own!) on the sub-continent. Whilst I didn't get the chance to seek out bats on this trip, in between the five days of celebrations and festivities a few of us did visit Ranthambhore National Park, Rajasthan, in search of elusive Royal Bengal Tiger. We were lucky to see two of the beautiful, majestic creatures snoozing under a bush on our first safari. Unfortunately my photos of the tigers are a bit sketchy, so you will have to make do with the picturesque Taj Mahal instead.



The remainder of my 10 days in India was a test of nerves as we negotiated the streets and traffic, a test of strength as most of us dealt with 'Delhi-Belly' and a test of stamina as we tried to keep up with the intense, yet wonderful, wedding celebrations.

Moving on to bat news...Inside this edition of the *ABS Newsletter* you will find your own copy of the brand new Wildlife Friendly Fencing brochure produced by the good folk up at Tolga Bat Hospital.

Finally, I would like to conclude by commenting on an event that transpired recently via the executive e-mail list. Earlier in the year an e-mail circulated asking the executive to comment professionally on an ABS submission to the government's 2020 summit. Unfortunately, although most executive members agreed that a submission would be 'noble' and 'worthwhile', there was insufficient time to prepare and synthesise our ideas. I would like to suggest that as a society we need to create several succinct, 500 word *evolving* documents that summarise our stance on topical issues such as: climate change; clearing of land for agriculture; forestry; wood chipping; protection of old trees in public spaces; management of riparian zones, etc. This list is by no means conclusive, but might I suggest that members interested in compiling initial comments on these topics send their documents to the editor, or the president, where they can be circulated for further comment then stored for use when the need arises. This would ensure that we are not caught out again and we will be prepared to quickly give a voice to the needs of bats in Australia.

Susan Campbell
Newsletter Editor

P.S. It seems that in order to fill the role of ABS editor, one has to reside in the West, and so it is that I find myself starting a new position with the Department of Agriculture and Food in Western Australia. While my new role initially focuses on starlings, I'm sure I can convince the team to shift their focus towards our more nocturnal winged creatures eventually!



Front cover: Image by Tristan Moylan, used for the 13th Australasian Bat Society Conference.

– President's Report –

Rob Gratton

Outgoing ABS President

How quickly two years have gone by since my elevation from 2nd Vice President to President, I certainly now have a greater appreciation of the commitment required of the President. With this in my mind, I have decided to step down from the President's role, and I am pleased to announce that Michael Pennay was elected as the new President. Michael brings a wealth of experience and enthusiasm into the role and is already making his mark in the short time he has been in the role.

Another conference has come and gone and once again what a conference it was. As usual, there were lots of interesting papers, winners of the various awards can be found on pages 23-24. The Anabat workshop as usual generated a lot of interest. I would like to thank Craig Grabham and Lindy Lumsden for their hard work in organising the conference and our hosts Charles Sturt University. The conference certainly generated a lot of media interest, at last count there were two newspaper articles, four radio and two television interviews. It would appear others are suddenly realising just how interesting our batty friends are.

Unfortunately there are still serious concerns on the bat conservation front; the Christmas Island Pipistrelle's plight is of great concern. Our new President and members of the executive are in the process of once again contacting the Commonwealth Minister for the Environment about its plight, it's looking very likely that it may become the first extinction of an Australian mammal in more than 50 years.

On a final note, I would like to thank the members of the executive, including the extended committee, for the time they volunteer. Without their commitment we don't have an ABS. I would encourage all ABS members at some point to have an active role in the running of the society, particularly the emerging professionals.

To all the executive and extended executive, thank you for your support over the last two years, a very special mention must go to Lindy Lumsden, the engine room of the society.

See you around the traps,

Rob Gratton

ABS outgoing President.



Michael Pennay
Incoming ABS President

Hi everyone, this is my first report as president. I have to admit I'm both daunted, but also excited, by the opportunity to be president. I'd really like to start by thanking Rob Gration who has been 'pres' for the last 2 years. I've really admired Rob's infectious enthusiasm and his obvious broad interest in bats, particularly education, technology, new methods and techniques. I really hope that I can continue the friendly, open and approachable tradition Rob and other past presidents have brought to the role.

Jumping right in – recently there is a fair bit that has been happening for the society to report. In March we had our 13th conference at Charles Sturt University in Albury. This was a great opportunity to catch up with fellow bat enthusiasts and hear what has been happening in Australasia. Very big thanks is owed to all those who helped to make the conference happen, especially Craig Grabham and Lindy Lumsden. The conference generated lots of interest from the media. There were several radio, newspaper and TV stories about the conference itself and more importantly, the value of bats and conservation. So thanks again to everyone who came and participated!

In other news, the ABS has started working on a number of new ideas. We have begun a trial which offers subsidised (free) electronic membership to students in developing countries in Australasia. We hope this will encourage interest and local research in bats, broaden access to the society, and hopefully improve our knowledge, conservation and friendships in the amazingly diverse and unique Australasian region.

The ABS executive is also in the process of establishing a modest student's grant scheme, to support students with bat related research. The details of how the scheme will be managed are still being developed, but it is anticipated the grants would be an annual amount that would assist with purchase of equipment, field trips or other needs, probably sponsored by the ABS through an existing student's grants programme.

Finally, it was discussed at the conference that the ABS trial field trips in the alternate years where the Financial Annual General Meeting does not coincide with the Conference. The aim of these field trips would be to utilise the extensive experience of members to undertake a small scale project that improves bat knowledge and conservation and also allows an opportunity for members to get together in the field, socialize and learn from each other. We're hoping to give this a go next year so stand by for details.

Those of you who attended the conference in Thurgoona would have heard about some not-so-good-news stories, particularly the continuing rapid decline of the Christmas Island Pipistrelle, which is looking very likely to become extinct. There have also been some very tough years for the Southern Bent-wing Bat with many juveniles dying, apparently from the effects of the drought and frosts. There was also some discussion of 'white nose syndrome' causing mass die-offs of bats in the North east of the United States of America. The society has written letters to Peter Garrett Minister for Environment about the situation of both the Pipistrelle and Southern Bent-wing Bats, warning him of the decline and recommending urgent action to prevent the extinction of the Pipistrelle. We have also written to Australian Quarantine and Inspection Service, and Tony Burke the Minister for Agriculture Fisheries and Forestry to warn them about White nose syndrome and asking them to pay particular attention to hygiene of items coming in from caves in the affected areas of the United States.

So here goes! Enjoy this edition of the newsletter, I look forward to working with you all and please don't hesitate to get in touch if you want talk bat...

Michael



– Australasian Bat Society Inc: Business and Reports –

Minutes of the Australasian Bat Society Annual General Meeting



AUSTRALASIAN BAT SOCIETY, INC.

ABN: 75 120 155 626

Held on Thursday 27th March during the 13th ABS conference, at Charles Sturt University, Thurgoona Campus, Albury NSW

1. Open attendance and apologies

The meeting opened at 4.30pm

Apologies:

Kyle Armstrong, Marjorie Beck, Susan Campbell, Linda Collins, Lisa Evans, Greg Ford, Glenn and Margaret Hoye, Jenny Maclean, Greg Richards, Bruce Thompson, Marg Turton, Mark Venosta.

Present:

Grant Baverstock, Robert Bender, Gillian Bennett, Steve Bourne, Murray Ellis Nathan Garvey, Craig Grabham, Chris Grant, Rob Gration, Judith Hallinan, Steve Hamilton, Bill Holsworth, Clare Hourigan, Maree Kerr, Ian Kitchen, Brad Law, Lindy Lumsden, Dan Lunney, Alicia Lyon, Dennis Matthews, Deb Melville, Damian Milne, Tony Mitchell, Colin O'Donnell, Nancy Pallin, Michael Pennay, Terry Reardon, April Reside, Martin Schulz, Andy Spate, Sonia Stanvic, Carole West, Anne Williams, Narawen Williams, Ray Williams, Terry Wimberley, Trish Wimberley.

2. Ratification of Minutes of FAGM, at ABS/RZS Symposium April 2007, Sydney

The minutes of FAGM 2007 were endorsed as a true record.

Moved: Lindy Lumsden Seconded: Judy Hallinan

3. Business arising from minutes

ABS agreed to send a formal letter to Jenny Maclean endorsing the wildlife friendly fencing project.

4. Reports from executive officers

• **President's Report – Rob Gration**

In his report Rob Gration spoke to the FAGM minutes regarding ABS activities over the past year. Rob advised some actions from the FAGM were outstanding but that the executive was working towards a more efficient management of ABS executive meetings during 2008.

The highlight of the year was the RZS/ABS symposium. Papers from the symposium are still coming in and Rob urged ABS members who still had outstanding papers to submit these as soon as possible. RZS advises that the publication should be completed later this year.

Rob thanked the ABS committee in particular Craig Grabham and Lindy Lumsden for their organising of the Thurgoona conference.

Rob advised the ABS members that the executive committee was looking at funding a student project and were considering the best way of doing this. The ABS executive will report progress to the members.

Finally, Rob declared his intention of standing down as President.

- **1st Vice President's Report – Greg Richards**

As the 1st Vice President was not present no report was presented.

- **2nd Vice President's Report – Lindy Lumsden**

Lindy Lumsden spoke on the roles of the 2nd Vice President. Main roles are to communicate with the general public (answering queries etc) and to ensure that conferences happen.

Most enquiries come via the website and Lindy answers or refers the queries to appropriate people. Many queries are similar and the ABS will put as much information onto the website to answer common questions to assist with this role.

In addition to these major roles, Lindy also proof-reads the *ABS Newsletter* and arranges printing and posting.

Lindy also spoke about the importance of communicating about the "white-nose syndrome", a fungal infection of bats which is causing many fatalities in USA and is becoming a major cause of concern. Lindy informed the ABS that Marg Turton has put together some guidelines for Australian speleologists and others who may be visiting US caves to avoid cross infection and to prevent the disease entering Australia and affecting our bat populations.

- **Secretary's Report – Maree Kerr**

There was little to report from the secretary beyond the executive meetings held during the year. Recent correspondence included a \$200 donation from the Greater Dandenong Environment Group following a talk given to their members by Lindy Lumsden. Otherwise no correspondence has been received except for the regular issues of the *ACKMA* (Australian Cave & Karst Management Association) Journal.

- **Treasurer's Report – Craig Grabham**

Craig Grabham presented the Treasurer's report, and the auditor, Robert Bender, explained aspects of the report.

The Treasurers' report was accepted.

Moved: Nancy Pallin Seconded: Lindy Lumsden

In discussion, it was noted that the ABS was healthy financially and should be doing more to assist with funding of projects that met the objectives of the society.

- **Membership Officer's Report – Damian Milne**

Damian Milne presented the Membership Report.

Rob Gratton thanked Damian for doing a great job looking after members and for the initiatives he has introduced.

5. Other committee reports

Editor's Report

Lindy Lumsden presented the editor's report by Susan Campbell.

6. Election of Office Bearers

Nancy Pallin conducted the elections.

President

One nomination was received for Michael Pennay.

Nominated by Terry Reardon Seconded Maree Kerr

There being no other nominations, Michael was elected President.

1st Vice President No election was held for this position at this time. The position will not be filled until after consultation with the current incumbent. No other nominations were received.

2nd Vice President

One nomination was received for Lindy Lumsden.

Nominated by Maree Kerr Seconded Nancy Pallin

There being no other nominations, Lindy was elected 2nd Vice-President.

Treasurer

One nomination was received for Craig Grabham.

Nominated by Lindy Lumsden Seconded Damian Milne

There being no other nominations, Craig was elected Treasurer.

Secretary

One nomination was received for Maree Kerr.

Nominated by Rob Gration Seconded Michael Pennay

There being no other nominations, Maree was elected Secretary.

Membership Secretary

One nomination was received for Damian Milne.

Nominated by Lindy Lumsden Seconded Craig Grabham

There being no other nominations, Damian was elected Membership Secretary.

Newsletter Editor

One nomination was received for Susan Campbell.

Nominated by Nancy Pallin Seconded Lindy Lumsden

There being no other nominations, Susan was elected Newsletter editor.

Public Officer

Nancy Pallin agreed to stay in this non-elected role.

Lindy Lumsden moved a vote of thanks for Rob Gration as president over the last two years. This was carried by acclamation.

Rob Gration thanked the outgoing executive and extended executive for their support over his term as president and welcomed the new executive committee, congratulating Michael Pennay as the new President.

At the request of Michael Pennay, Rob Gration continued to chair the meeting.

7. Other business

• **Update on Christmas Island Pipistrelle**

Lindy Lumsden reported that the situation was getting worse. The Christmas Island Pipistrelle was common 20 years ago and by 2006 had declined by 90% in abundance and range. Over the last two years this decline has continued at a rapid rate, with now only 8 bat passes/night on average at the few remaining sites it occurs at, compared to 180 bat passes/night two years ago.

The bat is now critically endangered and IUCN, having now recognised it as a separate full species, has listed it on the global endangered register. It is still not known what has caused the decline.

A monitoring program has been carried out and work is progressing on documentation the feasibility to set up a captive breeding program.

The ABS will write a letter to the new Minister regarding the plight of the Christmas Island Pipistrelle.

- **Southern Bentwing Bat**

Following the workshop on the Southern Bentwing Bat on Wednesday 26th March, the following motion was put to the meeting.

That the Australasian Bat Society Incorporated recognises that the Commonwealth of Australia has listed *Miniopterus schreibersii bassanii* as Critically Endangered under the Environment Protection and Biodiversity Protection Act 1999. The Society recommends that the Commonwealth Government and State Governments of Victoria and South Australia take immediate action to secure the future of *M. s. bassanii*.

Moved: Andy Spate
Carried.

Seconded: Maree Kerr

The workshop proposed a number of actions to ensure the conservation of *Miniopterus schreibersii bassanii* and a working party will prioritise these and submit to the executive committee. The ABS will write a letter to the Commonwealth and State Minister based on the motion and the proposed actions.

- **13th conference proceedings** – ABS requested that presentations from the conference be burned to CD.

8. Next Meetings

- **2009 FAGM**

The ABS discussed what to do in conjunction with the next FAGM. For the last few years the FAGM has been held in conjunction with a workshop. It was suggested that the 2009 FAGM be part of a field trip instead. The motion was put to the floor.

That the Australasian Bat Society will hold the 2009 FAGM as a field trip and that the executive will work out a project and venue and report back to the ABS members.

Moved: Rob Gration
Carried

Seconded: Michael Pennay

Various locations were suggested for the site of the field trip and it was agreed that it should be somewhere where the survey results would be important to the local community.

- **2010 conference**

The 14th ABS Conference will be held in Darwin in 2010. Damian Milne advised that conference could not be held at the traditional time immediately after Easter due to the wet season, and could not be held until at least June. He also warned that the conference may be more expensive than in the past. Dates and indicative costs will be sent to the ABS members as soon as practicable.

9. Close

Rob Gration thanked the conference participants and spoke about the excellent media attention it achieved on television, commercial and ABS radio and newspaper. ABS will try to get footage and photos of media stories.

The meeting closed at 5.30 pm.



Membership Report

Damian Milne
damian.milne@nt.gov.au

The membership of the ABS improved again last year with the total number of members by the end of 2007 reaching a new high of 293 – one up on the previous year. The turnover rate was relatively high, with 24 new members and 23 who either chose to cease their membership, or were more than two years un-financial. I also raided the archives (well...Lindy did actually) for the membership figures over the past 10 years to see how the Society has been fairing. As shown in Figure 1, the ABS membership has seen impressive growth and has increased by 26% over this period.

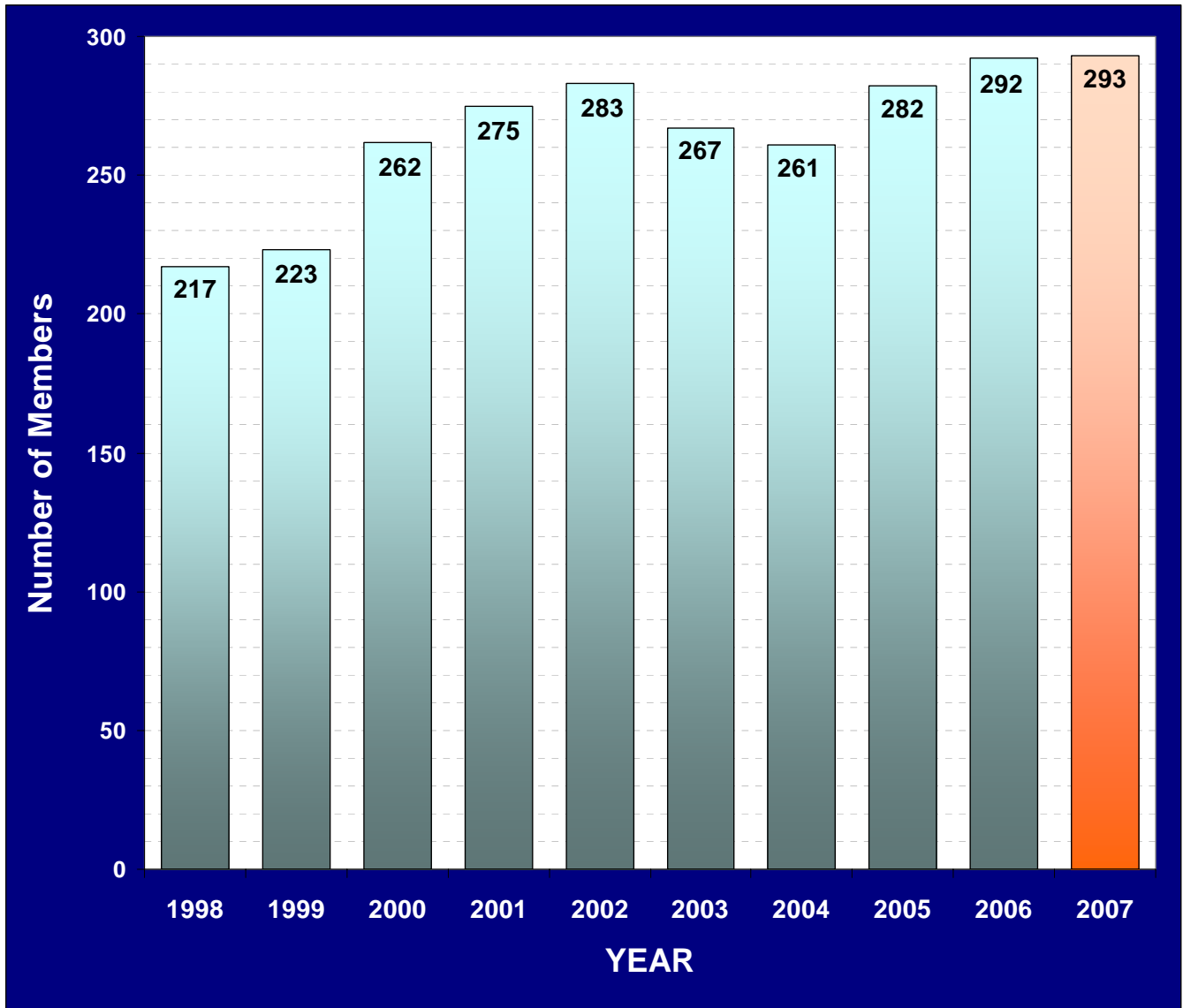


Figure 1. Ten year trend in ABS Membership numbers 1998 – 2007.

The overall financial status of the ABS membership at the end of 2007 is depicted in Figure 2. 81% of members were fully financial (i.e. up to date with their membership payment), 17% were un-financial and 6% were un-financial for longer than one year. As shown on the graph, these figures are more or less the same as the previous year.

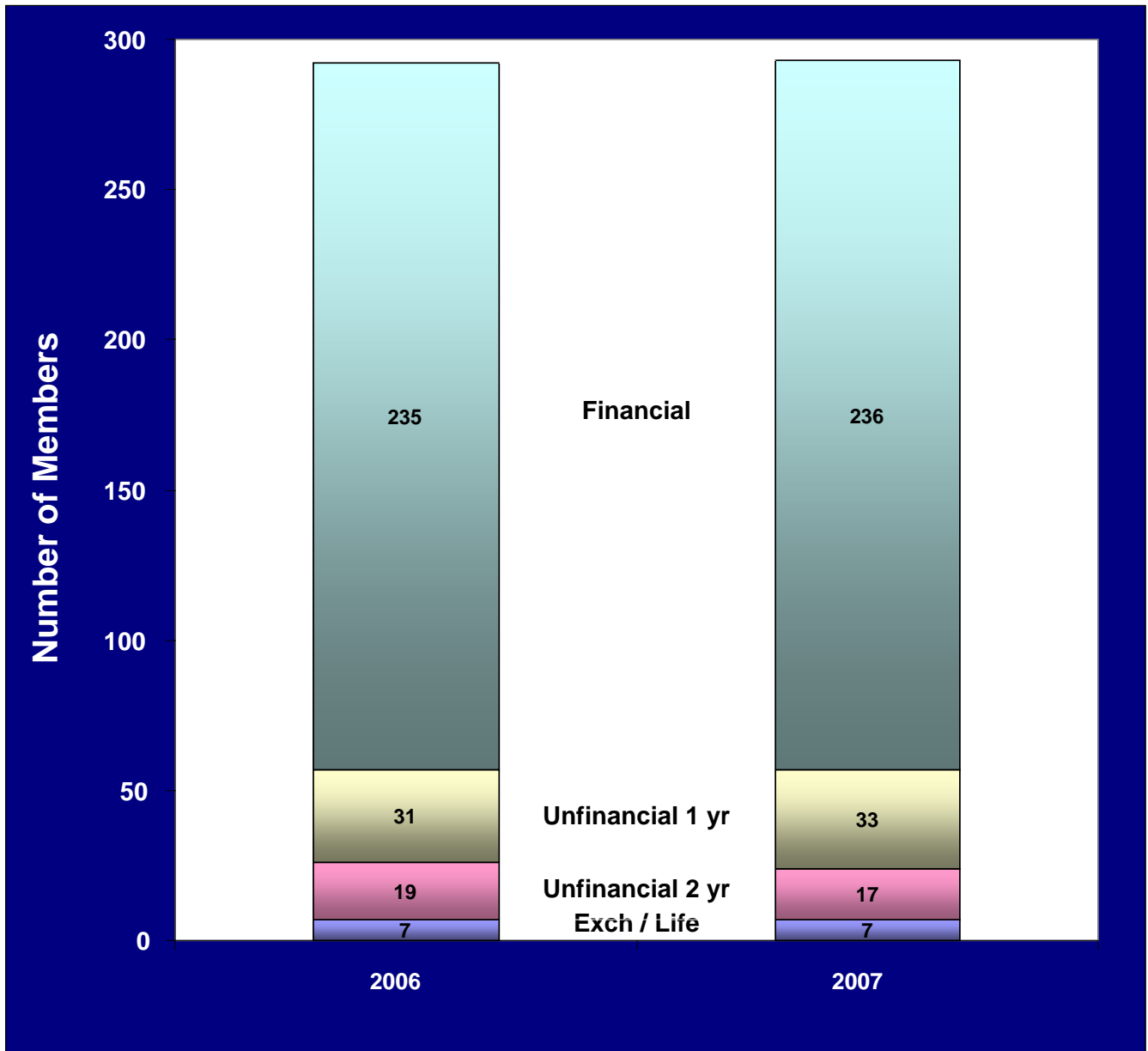


Figure 2. Financial make up of ABS members in the year ending 2007 and compared against 2006.

At the recent AGM in Albury, we also discussed the number of people that were subscribed to the ABS Listserv. In 2004 there were 80 – 90 subscribed members. That same year an email was sent to all unsubscribed members inviting them to join. This number increased to 138 by the end of 2007 (about half of all members). At the AGM, Lindy Lumsden noted that the listserv is one of the main forms of communication and is often used to distribute other information (such as ABS conference info), and felt that the listserv was still under-utilised by our members. Therefore, another notice was sent out after the Albury ABS conference inviting unsubscribed members to join. At last count the total number of subscribed members was now at 190. This equates to almost two thirds of the ABS membership or 70% of all members who have a listed email address. Remember, if you haven't done so already and wish to join the ABS listserv, you can do it yourself at <http://listserv.csu.edu.au/mailman/listinfo/abs> or just send an email to me - membership@ausbats.org.au. Thanks to Herry for his efforts in maintaining and subscribing members to the ABS Listserv.



Treasurer's Report

Craig Grabham

	\$	%	
Income		(of income)	
Membership subscription	\$8,038.00	94.1%	
Interest (Cash Management)	\$303.20	3.5%	
Interest (Cheque)	\$195.35	2.3%	
Interest (Gift Account)	\$4.66	0.1%	
Donations (ABS Gift Fund)	\$0.00	0.0%	
TOTAL INCOME	\$8,541.21	100.0%	
Expenditure			
Membership Management (renewals postage, etc)	\$831.38		
Newsletter (production & postage)	\$2,863.68		
Insurance (public liability)	\$1,963.50		
Executive (ie. webpage production & postbox rental)	\$0.00		
Merchant Fees (Credit Card Facilities)	\$459.03		
Bank fees (Cheque)	\$104.85		
Bank fees (Cash Management)	\$144.00		
Bank fees (Gift)	\$0.00		
TOTAL EXPENDITURE	\$6,366.44		
SURPLUS (DEFICIT)	\$2,174.77		
GST Refunded from ATO	\$0.00		
GST Paid to ATO	\$282.00		
ASSETS AT 31 DECEMBER	2007	2006	Change
ABS Cash Management Trust (Investment)	\$7,495.77	\$7,283.41	\$212.36
ABS Cheque Account	\$27,557.47	\$26,401.26	\$1,156.21
ABS Gift Fund (Donations)	\$1,039.36	\$1,034.70	\$4.66
TOTAL ASSETS	\$36,092.60	\$34,719.37	\$1,373.23

Membership	
Cash inflow	\$8,038.00
Costs	\$831.38
Surplus	\$7,206.62

Bank accounts	
Cash inflow	\$503.21
Cash outflow	\$707.88
Deficit	\$204.67

Summary		
Membership	\$7,206.62	100.0%
Donations	\$0.00	0.0%
Newsletter	\$2,863.68	-39.7%
Insurance	\$1,963.50	-27.2%
Bank accounts	\$204.67	-2.8%
Executive	\$0.00	0.0%
Net result	\$2,174.77	30.2%

Surplus comprises	
Excess of member subs	\$2,174.77

Note: GST paid in last quarter, not yet refunded.

Editor's Report

Susan Campbell

Having taken over recently from Kyle Armstrong, I am still only just gaining an appreciation for the role as editor for the ABS. I am fortunate in having spent the last 6 months visiting three of the world's top bat research groups and I have enjoyed sharing these experiences in my editorials. I only hope you've all enjoyed reading them! My first edition as editor also benefited from receiving articles written by our colleagues overseas. I greatly appreciated these and I hope to continue these collaborations and links via the Newsletter.

I must say I am disappointed at the absence of any witty captions for the photo of Bruce Thompson and all his gear included in the last edition, perhaps we could ask for submissions once the conference dinner is well under way and I can still publish them in the next edition?

As always, there is a lack of reports and viewpoints being sent to the editor. I will start to remind people via the list-server of the cut-off dates for submissions. However, I encourage all our members to write up your recent batting activities or at least, prompt your colleagues to do so. Please encourage people to use my life-long email address for submissions as the @pgrad address will soon expire.

s.campbell@zoology.unimelb.edu.au

Apologies for missing the conference, I hope it goes brilliantly.

Susan.



New ABS Website page for difficult to obtain bat publications and reports

We are setting up a new ABS website page that will contain notes, reports and any other type of publication about bats and we invite all of our members to contribute. Check it out at www.ausbats.org.au, click on the "links" button and there you find the "Bat reports, notes and other publications". A number of reports and theses have already been loaded, as well as the difficult to obtain article: Ratcliffe (1931) 'The Flying Fox (*Pteropus*) in Australia' CSIRO Bulletin No. 53.

We are particularly seeking information that is not generally readily accessible from places such as your local library or popular websites. Some examples include student projects and thesis, consultancy reports and technical notes. Also of interest are any observations about bat behaviour, habitat or distribution that you've got ferreted away on a computer file somewhere – what might seem trivial to you can sometimes be turn out to be really valuable information. Consider sending these to the *Newsletter* first, but they are too long for the *Newsletter*, this webpage would be a good place to lodge them.

So, if you have written anything about bats that might be of interest to others, please send it to Damian Milne at membership@ausbats.org.au or feel free to ask him if you have any further queries.



Abstracts from the 13th Australasian Bat Society Conference

Charles Sturt University, Thurgoona, NSW

26-28 March 2008

SPOKEN PAPERS

The Malagasy *Miniopterus*

Belinda R. Appleton¹ and S.M. Goodman^{2,3}

¹ Department of Genetics, The University of Melbourne, Parkville, Vic, 3010

² Field Museum of Natural History, 1400 South Lake Shore Drive, Chicago, Illinois 60605, USA

³ Vahatra, BP 738, Antananarivo (101), Madagascar

Email: b.appleton@unimelb.edu.au

Madagascar is renowned for its high levels of biodiversity and endemism. Madagascar's substantial period of continental isolation has long been used to explain these attributes, especially at taxonomic ranks at and above the genus level. It is widely thought that colonisations of animals and subsequent radiations have led to the development of a largely endemic fauna. Further hypotheses focus on the species radiations within the island and describe retreat dispersion watersheds and centers of endemism in an attempt to provide a framework for biogeographical study in Madagascar.

This work focuses on the Malagasy species from the widespread genus *Miniopterus*. Our work shows that all forms of *Miniopterus* found in Madagascar are endemic to the island. The work also reveals numerous previously unrecognized species, bringing the number of Malagasy *Miniopterus* species from four to a minimum of 10. Most of these species are currently undescribed.

Bat roost boxes: seasonal and annual usage patterns

Robert Bender

185 The Boulevard, Ivanhoe VIC 3079

Email: rbender@netlink.com.au

The Organ Pipes National Park roost box project has been ongoing now over 13 years, which may provide a good simulation of usage patterns of natural roosts over this time. Several long-term experiments have been conducted by varying entrance slit dimensions and thickness of timber and orientation of box. We now have a set of boxes used year-round, some boxes predominantly used in warmer months, some in colder months, and some surprising patterns. Annual usage patterns show bats favour individual boxes intensively some years, then avoid them in following years, though a few seem irresistibly attractive and are much used every year. There will be a preliminary discussion of what underlies these patterns with a preliminary comparison with a similar project on the Yarra River bank in Ivanhoe which only has results for 3 years to date.

Bat roost boxes: maintenance issues

Robert Bender

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Email: rbender@netlink.com.au

At Organ Pipes National Park on northwest fringe of Melbourne a roost box project has been ongoing since late 1994. Initially 10 boxes were installed, which has now grown to 37, mainly of the Stebbings design from UK. Various problems have arisen of boxes needing to be replaced, timber warping or cracking, attachment screws corroding or being pushed out by the tree, hinges corroding, other animal species attempting to enlarge entrances. Invasions by bees, paper wasps and ants are discussed, especially ants. Apart from invertebrates, Sugar Gliders, Ringtail possums and feral rats have sometimes caused problems. Cost of installing and maintaining boxes are presented and needed

duration of commitment to box maintenance – at least a century, with frequent visits to check on condition of boxes – our group does it monthly. Preliminary results from a project on the Yarra River in Ivanhoe, in which bats first appeared in February 2005 are presented for comparison.

The Droopy Bats of southeastern Australia

Chris Corben¹ and Harry Parnaby²

¹ corben@hoarybat.com

² Department of Environment and Climate Change (NSW), PO Box 1967, Hurstville NSW 2220

Gould's Wattled Bats *Chalinolobus gouldii* in southeastern Australia seem to include two distinctive call variants. In Tasmania, montane areas of Victoria and southern Queensland, some bats produce echolocation calls which terminate in a pronounced, downwards droop in frequency. Calls of these "Droopy Bats" are generally easily distinguished from those of normal Gould's Wattled Bats, and the acoustic differences are much greater than between the morphologically distinctive genera *Falsistrellus* and *Scoteanax*.

In the late 1980s, Droopy Bats were incorrectly attributed to *Falsistrellus*. Subsequently, it has been widely assumed that they are a variant of Gould's Wattled Bat. Recent field observations of Droopy Bats have shown them to be consistent with Gould's Wattled Bat in flight action, shape and colour, and it seems inevitable they would be identified as such in the hand.

Droopy bats are found in only a small proportion of the total distribution of Gould's Wattled Bat. The two call variants are largely separated geographically, but occur together where their distributions meet. The simplest explanation is the presence of two cryptic species. Otherwise, some as yet unknown mechanism would need to be postulated to maintain these distinctions in the absence of consistent differences in environmental conditions. We encourage others to investigate this issue.

The rise and fall of the Critically Endangered Southern Bent-wing Bat *Miniopterus schreibersii bassanii*

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Miniopterus schreibersii bassanii (Southern Bent-wing Bat) is a cave-dwelling bat found in South Australia and western Victoria. It is a subspecies of the more widely distributed *Miniopterus schreibersii* (Large Bent-wing Bat). This subspecies has recently been listed as Critically Endangered under the EPBC Act. The principal reason of the increased status is a dramatic decline in the population at the larger of its two breeding caves. The current knowledge of this subspecies will be summarised, and potential reasons for the population decline explored. This paper will provide background information for a workshop to be conducted at this Conference to determine what action needs to be taken to conserve this subspecies.

Bats collected during a mammal survey of the TransFly Ecoregion of southern New Guinea.

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The TransFly Ecoregion of New Guinea is recognized as among the most distinctive of biotic regions in Australasia, characterized by a mixture of open, seasonally dry savanna woodlands and grasslands alongside wetter rainforests. Resembling areas of Northern Australia with which it shares a portion of its biodiversity, broad areas of the TransFly remain unsurveyed for mammals. Preliminary results are presented on the bats recorded during a mammal survey conducted for WWF PNG in 2006. A harp trap and mist nets were used for the first time in this region near the village of Serki in Western

Province of Papua New Guinea. Two hundred and thirty bats were captured comprised of 21 species from the families Pteropodidae (7), Mollosidae (2), Vesptertilionidae (9) and Hipposideridae (3). General aspects of the survey, range extension records and significant collections of species poorly represented in collections are reported.

The diversity of insectivorous bat assemblages within a subtropical urban landscape

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We investigated the bat diversity of four major habitat types within a large Australian subtropical city to determine whether species richness differed significantly between habitat types, as suggested by previous findings. Forty sites representing remnant bushland, parkland, low density residential, and high density residential habitats were surveyed using bat detectors on six non-consecutive occasions. Fourteen bat species were recorded. Mean species richness was lowest in high density residential sites, but significantly higher in low density residential sites than remnant bushland areas. Evenness profiles were similar across habitats, and were not strongly dominated by a few species. These findings contradict those of other studies on bat diversity, and highlight the need for caution in making generalisations based on the existing information from temperate regions.

A 20 year harp trapping study at Organ Pipes National Park

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Insectivorous bats were surveyed using harp traps at Organ Pipes National Park from 1988 to 2008. Six species were trapped *Chalinolobus gouldii*, *Chalinolobus morio*, *Nyctophilus geoffroyi*, *Vespadelus darlingtoni*, *Vespadelus regulus*, *Vespadelus vulturnus*. A total of 93 trap nights on 13 occasions was completed catching a total of 830 bats.

The purpose of this study was an attempt to track bat population changes prior to bat boxes being installed and annually thereafter. In parallel with this harp trapping a maximum of 40 bat boxes had been installed within the same area and provided roosting for a maximum of 270 bats at one time.

These repetitive trappings were kept as consistent as possible including location, type, number of trap nights and time of year. Uncontrollable environmental variables such as temperature, humidity, wind, rainfall, river level and moon phases were recorded. Biases in harp trappings regarding favouring certain species were considered to remain consistent over the study period. Results showed the same six species over the 20 years of this study but the percentage of the predominate box roosting species *Chalinolobus gouldii* increased.

What constitutes adequate survey effort for bats?

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Traps and ultrasonic detectors are standard tools to survey and monitor trends in bat populations. Despite their extensive use, little is known about what constitutes adequate survey effort to confidently conclude a species absence from a study area or to produce precise estimates of activity levels for rigorously documenting trends over time. We present some recent examples of studies that investigate these questions. First, the Golden-tipped Bat is infrequently detected using harp traps, but it is a

potential candidate for monitoring in State Forests. In Chichester State Forest, 11 sites were chosen in riparian rainforest, with one trap set per site over six nights. Seven individuals were trapped over the 66 trap-nights, resulting in a low detection probability of $P=0.137$ (using the Maximum Likelihood Estimation method). To optimise a reliable monitoring program for a species with such a low detectability, would require 23-26 repeat visits per site (Mackenzie and Royle 2005). This is clearly impractical, but it tells us that such species are likely to be better suited to targeted research than long-term monitoring. A second example involved setting multiple Anabat detectors for multiple nights to estimate the minimum number of nights required to yield precise estimates of bat activity. Preliminary analyses reveal that increasing the number of sampling nights results in increased precision when estimating activity, but that this can be moderated by increasing the number detector sites in an area.

The ecology and conservation of the enigmatic Eastern Long-eared Bat (*Nyctophilus timoriensis*) in Victoria

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The Eastern Long-eared Bat *Nyctophilus timoriensis* (south-eastern form) is a rare species that is widely distributed from south-eastern Queensland, through inland NSW into north-western Victoria and eastern SA. It is classified as Vulnerable both nationally and in each state in which it occurs. In Victoria it is extremely rare, with only six records for the state prior to 2007. A study was commenced in 2007 to increase knowledge of its specific habitat requirements, roosting and foraging ecology, and threats to its long term conservation. This was centred on the Nowingi area, where an individual was trapped in 2004, and the adjacent Hattah-Kulkyne National Park. Extensive trapping effort was undertaken (539 harp trapnights and 206 mistnet hours), during which 963 bats of 11 species were caught. There were 19 captures of Eastern Long-eared Bats representing 15 individuals: one male was caught four times. The majority of individuals trapped were males (12 males to 3 females). Twelve individuals were fitted with radiotransmitters, and tracked to 29 roost sites. Most roosts were in dead spouts on mallee eucalypts, with some under bark or in fissures of dead Buloke or Belah trees. These roosts provided little or no buffering against extreme ambient temperatures. All roosts, except one, were in long-unburnt habitats that had an abundance of hollows in the general area. All individuals roosted solitarily. Individuals moved large distances on a nightly basis. Roost sites were 1.87 ± 1.63 km (range 0.34 – 7.06 km) from the capture point. Individuals used a number of different roost sites, often moving to a new roost each day. In contrast to other species of long-eared bats where consecutive roosts are usually close together, Eastern Long-eared Bats moved large distances between roosts: 2.00 ± 1.86 km (range 25 m – 5.88 km). The capture of 15 individuals during this study has significantly increased the number of Victorian records of this species. It is believed that the long-unburnt vegetation in this area, which is situated within a large intact area of vegetation, are likely to be the key factors influencing the comparatively high numbers found in this area.

Roost selection by bats in woodchipped forests

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This research focused on species dependent on old-growth forest elements. The aim was to determine the roosts selected by Gould's Long-eared Bat and the Little Forest Bat in forests that had been logged for woodchips 25 years earlier. The bats were caught in harp traps, radio-tracked to roost trees and a comparison was made between trees used and trees available. Both bat species were selective in the species, size and condition (live/dead) of their roost trees, and in landscape characteristics, such as logging history, topography and aspect. Gould's Long-eared Bat selected, as maternity roosts, cavities in large (dbh: mean 73.6 cm), live trees, located in coupes in unwoodchipped forest on slopes with

eastern or southern aspects. Adult males showed a preference for roosting under exfoliating bark of dead wattle. Both male and female Little Forest Bats selected cavities in large (dbh: mean 68.7 cm) trees. Their roosts were preferentially located on south and east facing gullies and mid-slopes. Neither species used live trees <50 cm dbh, although they dominated the forest. While roost preferences are complex, there is a consistent pattern of dependence on cavities found in dead or decaying trees. This and earlier studies offer no evidence that regrowth vegetation in intensively managed forests provides roosting habitat for tree-roosting bats. Rather, conservation of these species depends on preservation and recruitment of old growth elements of forests.

Recovery of the Grey-headed Flying-fox: an overview of the Department of Environment and Climate Change's efforts in NSW (2001 – ongoing)

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The Grey-headed Flying-fox *Pteropus poliocephalus* is a wide-ranging species, spanning Queensland, NSW and Victoria, and is listed as a vulnerable species at both the state (NSW and Victoria) and national level. Being a highly mobile species, it moves across its range in response to natural resource availability, and plays a critical ecological role as a pollinator and seed disperser of our native forests.

The primary threat to the Grey-headed Flying-fox is habitat loss or modification – other threats include killing in commercial crops; harassment at roosts; potential competition and hybridisation from Black Flying-foxes; negative public attitudes and conflict with humans; electrocution on powerlines, entanglement in netting and on barbed-wire; climate change; and disease. It is unique as a threatened species in that it is also recognised as an agricultural pest, and also faces increasing conflict with humans at the urban interface.

The listing of the Grey-headed Flying-fox as a vulnerable species under the NSW *Threatened Species Conservation Act 1995* in May 2001 instigated the formation of the NSW Flying-fox Consultative Committee and the strengthening of the statewide flying-fox conservation program. This presentation provides an overview of the flying-fox research and project work coordinated by the NSW Department of Environment and Climate Change since the listing of the Grey-headed Flying-fox as a threatened species in NSW, and how science is being used to inform the conservation of this species. Projects discussed include preparation of the national recovery plan; establishing the flying-fox camp database; population surveys and an inland distributional survey; attitudinal surveys; research on foraging habitat, roost site selection and flying-fox damage in orchards; and development of the NSW flying-fox camp management policy.

Reproductive management of captive *Pteropus* species

Debbie Melville¹, Elizabeth Crichton¹, Gemma O'Brien², and Steve Johnston¹

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² University of New England, Physiology Department, Armidale, NSW.

Pteropus (flying-fox) species around the world are on the verge of extinction, primarily due to habitat destruction. The establishment of *ex situ* conservation programmes, such as the development of captive breeding colonies have the potential to help save these species. Captive colonies can serve as important insurance reservoirs of genetic diversity. However, the polyandrous mating system of Pteropids means that there is a level of uncertainty surrounding paternity of the offspring. One way to overcome this uncertainty is to utilise assisted breeding technologies, such as artificial insemination (AI) in the reproductive and genetic management of these captive populations. Assisted breeding technologies can also play a primary role in improving our general comprehension of Pteropid reproductive biology and should be used as reproductive and genetic tools in conjunction with habitat protection and education campaigns.

The development of AI requires the cryopreservation of sperm. Cryopreservation involves cooling, freezing and thawing the sperm, a process which can cause damage to the plasma membrane and

acrosome. Damage or loss of the latter is of particular concern as Pteropid sperm have a large anteriorly projecting acrosome which is extremely sensitive and prone to damage. To ensure that the majority of sperm remain alive, retain their acrosomes and maintain their motility during cryopreservation, the correct protocol must first be established. This involves the development of species-specific diluents and cryoprotectants, and the determination of appropriate rates of temperature change during the cooling, freezing and thawing processes.

My PhD research is investigating ways of improving Pteropid sperm cryopreservation protocols, with the aim of utilizing protocols developed using common species of Pteropids to aid in the conservation of endangered Pteropid species. This would allow the genetics of males from endangered species to be conserved and potentially returned to the population long after that individual male has died. Furthermore, it would allow for the collection of semen from wild males to be stored or used in AI programmes for captive breeding populations and it would eliminate the need to transport live flying-foxes between captive populations.

New records and extensive range extension for the critically endangered Bare-rumped Sheath-tailed Bat *Saccolaimus saccolaimus* (Chiroptera: Emballonuridae) including genetic analysis, notes on field identification and description of echolocation call

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This study combines field survey, morphological and genetic analyses to reveal several new records, as well as large extensions to the known Australian distribution of *Saccolaimus saccolaimus*. The morphological similarities to *S. flaviventris* are addressed and genetic, morphological, and echolocation analyses used in an attempt to provide diagnostic characters to identify the two species. Approximately 200 individuals were identified at seven new localities, and our genetic and morphological analysis indicates there are likely to be more due to mis-identified specimens in museum collections. *S. saccolaimus* is currently listed nationally as critically endangered due to the rarity of observations. In light of the new information and the uncertainties we've identified, 'data deficient' is considered to be the most appropriate classification for this species. We recommend genetic testing of all Australian *Saccolaimus* specimens within museum collections to determine the species true extent and conservation status.

Batting in Borneo

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In December 2007, five staff and 26 students from James Cook University headed off to the wilds of Sabah, Borneo, for a field-based learning experience and an opportunity to catch some great bats. Based in the lowland primary Dipterocarp forest of the Danum Valley Field Centre, we used a four-bank harp trap, mist nets and AnaBat CF1's + HP PDA's to capture bats and record echolocation calls. Over seven nights we caught 34 individuals from 13 species of both micro and mega chiroptera and recorded the calls of 20 species (alas, only 6 could be confidently assigned to a species). Only mega chiropterans were caught in the mist nets and both mega and micro chiropterans in the harp trap. Four-bank harp traps appear to offer greater capture success than 2-bank traps: we often observed bats successfully flying past the first 3 banks, only to become entrapped by the fourth. Our goals for this annual field course are to continue to add to our knowledge of the bats present in the region, enhance the call library and introduce many more students to the world of batting.

Gods, vultures, starvation, suicide and a pickle jar, the beginning and the end of *Vespadelus vulturnus*. An anthology of mistakes.

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Whilst investigating the background history of the little forest bat (*Vespadelus vulturnus*) for a publication I discovered the bat's history holds a number of sometimes tragic stories and mistakes, including some substantial errors we're all guilty of perpetuating.

This talk introduces the characters and stories and describes some of the mistakes uncovered, including the discovery that for 30 years nobody has realised that the type specimen of *Vespadelus vulturnus* is in fact a different species. I explain how the error was made and what it means.

Variations in hollow availability for 3 species of eucalypts in semi-arid woodlands of central-western NSW

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Hollow-bearing trees provide roost sites for at least 13 species of bat from the woodlands of the wheat-sheep belt in central-western NSW. However, hollow-availability has been greatly reduced by broad-scale clearing for agriculture; compromising the long-term survival of hollow-dependent fauna in the area. Limited information exists about hollow availability in eucalypt species of the NSW wheat-sheep belt. Additionally, variation in hollow characteristics among tree species inhibits the application of existing data from other species. This study compares hollow availability among three dominant eucalypt species; *Eucalyptus melliodora* (Yellow Box), *Eucalyptus microcarpa* (Grey Box) and *Eucalyptus populnea subsp. bimbil* (Poplar Box). We have established 142 one-hectare sites in a highly cleared (<20% native woody vegetation cover remaining) agricultural landscape. Sites range in tree density from no eucalypts on-site to whole remnants and are on roadsides, stock routes and stream margins. Initial data from 26 sites compare hollow abundance and hollow type in relation to tree species, trunk diameter, tree height, crown size, tree form and condition. We also compare hollow-availability in single-trunked and multiple-trunked trees, coppicing versus non-coppicing trees and live versus dead tree segments. Of all trees assessed (DBH > 15 cm) 74% of *E. microcarpa*, 63% of *E. populnea subsp. bimbil* and 48% of *E. melliodora* were found to be hollow-bearing with hollow-production thresholds of 164, 171 and 186 mm respectively. All species have shown an increase in hollow abundance with increasing DBH, while *E. melliodora* had many fewer hollows at a given trunk diameter than *E. microcarpa* and *E. populnea subsp. bimbil*. Overall, sites had very low numbers of hollow-bearing stags (<4%).

Artificial bat habitats in Western Australia

Joe Tonga

Natsync Environmental, 25 Oakover Street, East Fremantle WA 6158

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Natsync Environmental has been designing, producing and installing artificial homes for native animals for the past 10 years. We have been trialling microbat homes for the past five years. We started with building the conventional timber boxes and progressed to PVC.

Our objectives were to design, build and install a bat home which had the following attributes:

- Long life. Microbats are notoriously slow in taking up residence in timber boxes. A home can deteriorate in the elements waiting for inhabitants. Plantation plywood will only last eight to ten years even when coated with good quality paint.

- Temperature Stability. Provide a home that has various temperature gradients that fulfil the biological requirements of microbats.
- The ability to house different species of microbats.
- Designed to become nursery colonies.
- Generous landing pad.
- Easy for the bats to move around.
- *Apis mellifera* resistant.
- Totally weatherproof.
- Minimal installation

In summary we found that:

Conventional timber, single cavity, bat roosting boxes rarely attract micro bats in the Perth suburbs of Western Australia. Within 12 months they fill up with *Apis mellifera*.

Current known installation techniques on trees are totally inadequate. We have developed a system that moves with the trees.

Temperature is critical. All locations studied have extremely high temperatures in summer.

New design of sand-filled PVC appears successful. Attract local bats in middle suburbia in 15 months.

Bat homes mounted on sheds, old buildings attract inhabitants faster than on trees.

Bat community responses to logging in jarrah forests, South-western Australia

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To determine whether timber harvesting practices in jarrah forests of Western Australia negatively impact forest bat communities, we investigated bat activity in unlogged, logged and regrowth forests. Our aim was to test hypotheses that bat diversity was lowest in gaps and that species negatively affected by logging were less frequent in gaps, compared to regrowth and unlogged forest. We used Anabat Detectors to compare relative use and foraging activity by bats (bat activity) at four sites in each of unlogged forest, gaps and regrowth (12 sites in total), with detectors placed both on tracks and off-tracks at each site. Preliminary results showed that logging history had no impact on bat activity, when on and off-track data were pooled (Global $R = 0.02$; $P = 0.414$). However, off-track sites grouped separately from on-track sites in the MDS and bat communities were significantly different (Global $R = 0.55$; $P = 0.002$). Thus, activity on tracks did not significantly vary with logging history, showing that use of forest tracks by bats is unaffected by logging. At the species level, no bat responded to logging history. However five species, excluding *Tadarida australis* and *Mormopterus sp.*, showed significant differences in activity between on and off-track sites. These five species showed similar activity in logged, regrowth and unlogged forests on tracks but on-track activity differed significantly from off-track activity. Tracks are thus important in ameliorating the impacts of logging on bats in selectively timber-harvested forests and should be maintained for the long-term persistence of bats.

Additional paper presented at the conference (no abstract available)

Pit-tagging Lesser Short-tailed Bats: developing an ethical technique for monitoring 2005–2008

Jane Sedgeley and Colin O'Donnell

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POSTER PRESENTATIONS

Understanding the effects of heat stress in flying-foxes (*Pteropus* spp.) supported by case studies at Blackbutt colony, 2006 & 2007

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To better understand the effects of heat stress on the flying fox colony of Blackbutt Nature Reserve, Newcastle, New South Wales, data was obtained from two consecutive disasters to examine the relationships between gender, age and species of the affected population. In addition, the cases are supported by literature to examine lethal temperature; the physiological processes of body temperature, heat stress, temperature regulation, heat transfer within the body and heat loss mechanisms; and the behavioural signs and assisted field/captive techniques employed during the period of the disasters.

In conclusion, the age of the flying fox is the most significant method of examining the affected population, for pups and juveniles made up the majority of casualties in 2006 and 2007, with no obvious gender preference. No species significances could be determined, as there was an unknown proportion within the colony prior to the disaster.

The methods employed by the wildlife carers attending the disaster were supported by physiological literature as discussed, with supporting photographs illustrating the extent of the 2006 disaster, including behavioural signs, assisted techniques and post-disaster data collection methods of the affected flying foxes.

Bats of South Australia's Murray Region – a free poster

Aimeé Linke

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The Mid Murray Local Action Planning Committee in collaboration with the Bats for Biodiversity Project, has run the Community Bat Monitoring Program since 2003. During the course of the Program, it became evident to us that many members of the community had little appreciation of the diversity of microbats in their region. We therefore decided to design and print a poster, which would illustrate the regional bat biodiversity, and make the posters freely available to the community.

The poster "Bats of South Australia's Murray Region" features photographs of the 16 microbat species of the region, and includes some text with general information about bats. Photographs and text were compiled in collaboration with the South Australian Museum.

The poster design and content were funded through the South Australian Murray Darling Basin Natural Resources Management Board's Community Grants and the printing of 2000 posters was funded through the Department of Environment and Heritage.

The aim of this poster is to raise awareness on the bat species of the region and hopefully assist in understanding their role in biodiversity and the need to protect and conserve their habitat.

Australian bats on Wikipedia

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Wikipedia is a free non profit internet based encyclopaedia that is collaboratively written by volunteers, anybody can contribute. Wikipedia has grown rapidly since it started in 2001 and is now accessed by 8-9% of web users globally on a daily basis. It currently ranks as the 8th most visited website in the world based on global traffic. As such Wikipedia probably offers one of the simplest and most

accessible ways for information about Australian bats to be conveyed throughout the world. Unfortunately at the moment only a very small number of Australian bat entries have any information whatsoever, the great majority are 'stubs'... the Wikipedia equivalent of a vacant space just waiting to be filled. Because anybody can contribute to and edit Wikipedia pages, filling these stubs provides a great opportunity for Australian bat enthusiasts to contribute to the 'global commons' by adding information to species they know about. To demonstrate how it can be done (and to learn myself) I have filled out a real stub on Wikipedia as an example (http://en.wikipedia.org/wiki/Little_Forest_Bat). Hopefully this poster will encourage more people to take up the challenge.



13th Australasian Bat Society Conference Awards

Titely Award – Best overall paper

Damian Milne (Felicity Jackling and Belinda Appleton)

*“New records and extensive range extension for the critically endangered Bare-rumped Sheath-tailed Bat *Saccolaimus saccolaimus* (Chiroptera: Emballonuridae) including genetic analysis, notes on field identification and description of echolocation call”*

BCI award – Best conservation paper

Lindy Lumsden

*“The ecology and conservation of the enigmatic Eastern Long-eared Bat *Nyctophilus timoriensis* in Victoria”*

Wimberley Award – Best Rehabilitation paper

Jane Sedgeley

“Pit-tagging Lesser Short-tailed Bats: developing an ethical technique for monitoring 2005–2008”

Greg Richards Best Student Paper (student travel)

Steve Hamilton (and Karen Firestone)

“Bats collected during a mammal survey of the TransFly Ecoregion of southern New Guinea”

GHD Student Poster Award

Timna Dean

*“Understanding the effects of heat stress in flying foxes (*Pteropus* spp.) supported by case studies at Blackbutt colony, 2006 & 2007”*

Rob Gration Student Encouragement Award 1

Laura Rayner (Murray Ellis and Jennifer Taylor)

“Variations in hollow availability for 3 species of eucalypts in semi-arid woodlands of central western NSW”

Rob Gration Student Encouragement Award 2

Paul Webala (Stuart Bradley, Michael Craig, Kyle Armstrong)

“Bat community responses to logging in jarrah forests, south-western Australia”

Humorous Awards

House and Garden Best Roof Feature

Joe Tonga

"Artificial bat habitats in Western Australia"

Humanitarian Award for vigilant exclusion of sugar gliders from bat boxes

Robert Bender

"Bat Roost Boxes – maintenance issues"

Best Costume

Steve Hamilton for his magnificent field costume in his presentation.

Runner up: Jane Sedgely, a.k.a Charlie's Angel
2nd Runner up: Terry Reardon, a.k.a Masked Bat Man

Education Award

Clare Hourigan

For demonstrating that those who finish their talks on time attract more questions

An award for Advancing repeat bat holidays

Jen Parsons

"Batting in Borneo"

Bat Box ad-infinitum

Robert Bender

And last but definitely not the least:

Mr Droopy award

Chris Corben

"Droopy bats of southeastern Australia"



Workshops held at the 13th Australasian Bat Society Conference

In addition to the spoken and poster presentations, five workshops were held at the conference:

Conservation of Southern Bent-wing Bats. Discussion led by Steve Bourne

Rehabilitation and care of flying-foxes. Discussion led by Judith Hallinan

Bat education material. Discussion led by Chris Grant

Issues relating to excluding bats from houses. Discussion led by Ray Williams

Anabat workshop. Including presentations by Chris Corben, Brad Law and Lindy Lumsden

Workshop summary: Rehabilitation and care of flying-foxes

Judith Hopper-Hallinan

President

Wildlife Assistance and Information Foundation Inc.

judycats@ozemail.com.au

1. Fractures

For many years just about any fracture in a flying-fox meant immediate euthanasia. Now, fortunately, a more considered approach is being taken and each fracture assessed on its merits.

Mandi Griffith under the veterinary management of Dr Teri Bellamy has successfully treated many fractures through to release.

The notes on fractures are from a conversation with Mandi on her case histories and the issues she has observed and managed.

Every fracture is worth considering for treatment, however, it is important to note that “worth treating” is a vastly different situation for a wild animal which must be released from a domestic pet which can remain in care for its life time. It is, therefore, important to obtain the advice of an experienced wildlife vet and preferably one experienced in the treatment and temperament of chiroptera.

The key to success seems to lie with the temperament of the animal concerned, its age, general health and attitude in addition to the type or situation of the break (although these are important). Equally key is dedicated nursing requiring time, knowledge and the ability to apply veterinary advice and ‘listen to’ the bat in question.

Fractures are ‘easier’ to treat successfully when:

- the break is new
- the bat is young
- the bat is healthy
- the bat is calm
- the break is midway along the bone shaft

Problems occur:

- with a radius as it can easily rotate and cause nerve damage resulting in a ‘floppy’ 2nd and 3rd finger,
- if the periosteum is damaged this can cause problems in pinning (as bone may have to be removed) and causes complications in healing.

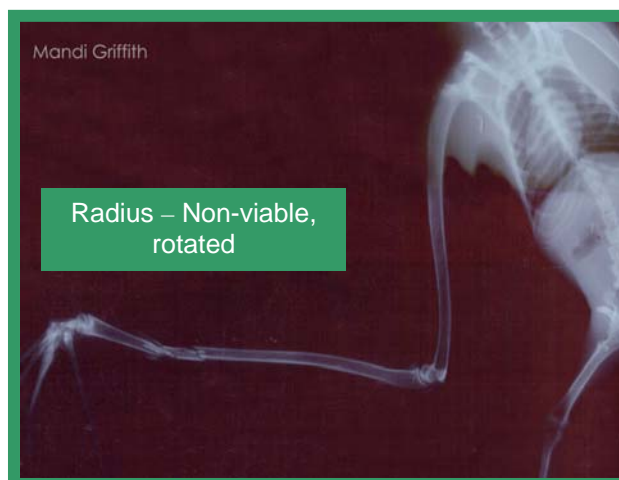
1.1 Case Studies

Juvenile 370g, hypothermia, compound radius pinned. Successfully released with the pin in-situ. The pin was left in to avoid interference with the growth plate.

Femur in several bats have been successfully pinned and the bat released after removal of the pin. In fact the bat often successfully attempts to use the newly pinned leg only hours after surgery.

Male Grey-headed Flying-fox with a mid-shaft humerus resulted in nerve damage. This took a year to recover but was successfully released.

Splinting of closed fractures have also been successful on several occasions.



1.2 Techniques / Comments

Pinning or splinting can be done for arm and leg bones. Finger bones can be splinted or pinned with a fine gauge catheter stilette. Clavicle or ribs simply require cage rest, i.e. bed rest not moving around an open aviary. It is important to provide a sling with clavicle fractures to ensure the bones fuse correctly.

Pinning of arm bones must be done from the elbow, keep well away from wrist. Similarly pinning too close to the hip is not successful as it is impossible to stabilise a pin into the femoral head.

If the fracture does not require surgery it may be splinted. Cue tips or a padded plunger from a 1ml syringe have been successful. For finger bones in young juveniles a thick duoderm patch may be sufficient to stabilise the fracture.

An 18 or 19 gauge catheter can be more successful than a traditional bone pin as it is hollow and small diameter and therefore easier to insert.

Timing

Fractures without complication will take at least 3 months dedicated nursing to heal. Approximate times are:

- 1 week sedated on a hammock
- second week very restricted cage
- sutures are usually removed at around 10 to 14 days
- 3rd to 4th week restricted cage
- pin is usually removed at 6 to 8 weeks
- then 2 months+ of rehab to recover muscle and bone strength

Drug Use

Antibiotic of choice is clindamycin ("antirobe' drops).

Pain management and stress reduction are key to fast and successful recovery. Sedation will depend on the vet clinic and availability of drugs but the following have been successful: Tramal, Butorphanol, Temgesic. NB these are all S8 drugs and require vet administration. Some pain relief can be obtained with metacam.

Nursing

A bat with a fracture requires dedicated nursing and attention to mental and physical needs.

During the first week it is crucial to provide physical support to the break site and to the bat, e.g. strap the wing to the body and keep the bat in a crepe wing sling. If the bat is in extreme pain or attacks the surgery site, it may need



sedation in which case it may be necessary to administer i/v fluids. For example, a 350 g bat will require approx. 80 ml of fluid over a 24 hour period based on 10% for dehydration, 10% maintenance and 5% fluid therapy. Too little and the bat will become dehydrated, too much and the bat may 'drown'. Equal parts of 5% Glucose and Sodium Chloride, or Hartman's has worked well.

Extra nutritional support may aid healing such as extra vitamins (Pentavite, Incremen), glucosamine chondroitin. Care must be taken not to overdose with calcium. Lactating or post lactating females can be low on calcium and/or nutritionally compromised. Remember that sunshine is essential and that bats are arboreal / aerial animals and need some space and air to prosper. These are intelligent animals and stress is an important factor in any healing. You may believe you are offering intensive care treatment by staying awake by the bat's side all night, but the bat might be in a state of constant stress, waiting for you to leave so it can relax. Think how you feel after surgery; it's nice to have visitors, but even nicer when they leave and you can sleep and regenerate.

2 Membrane Wounds

Not many years ago a wing membrane hole the size of a 50c piece was considered non-releasable and any tear from the wing edge was immediately euthanised. Things have changed and continue to change.

Bats have a great ability to heal their wings if given some help and sufficient peace and quiet to do so.

These notes are the result of 3 years of research on methods to heal wing injuries caused primarily by entanglement but also other causes such as chemical burns.

Every damaged wing should be assessed on:

- ability to heal the wound,
- ability to heal the wing,
- ability to achieve flight.

Healing the wound is frequently the easy part, achieving flight can be more difficult!

Damage is easier to correct when:

- the injury is clean – no infection or swelling,
- arms are not involved,
- flight can be maintained during healing,
- time is available (for treatment and rehabilitation).

Problems occur

- when extensive swelling of the wrist is involved,
- large areas of the membrane have been destroyed, particularly if bone is exposed,
- more than the last phalanx is lost (particularly on more than one finger).

Pain management is a must for these wounds, see nursing.

2.1 Case Histories

Gavin: cut from the trailing edge the depth of the wing between the body and the 5th finger and between the 5th and the 4th finger. Treated with macadamia oil and flight therapy late in the treatment time. Released after 9 months – 2003.

FB: wing torn from the edge half the length of the 3rd finger. Treated with macadamia oil and flight therapy. Released after 6 months – 2005.

Penny: wing torn from the edge the length of the 5th finger. Treated with macadamia oil and flight therapy. Released after 2 months – 2008.

Barrack, net caught, extreme wrist swelling and complete loss of membrane over the wrist. Treated with valium, Tegaderm and Solosite and released after 2 months – 2008.

Mango: entire propatagium burnt away, burn hole over 4th and 5th, multiple other injuries. Treated with macadamia oil and intensive physiotherapy. Released after 6 months – 2004.





A typical net caught wound – treated with Solosite and Tegaderm and released. Shock was treated with valium. Black oval indicates area of total membrane loss. © J Hallinan

2.2 Technique / Comments

Healing the Wound.

The primary need is to protect the wound from desiccation and scarring. The two most successful treatments have been macadamia oil and Solosite® wound gel under a Tegaderm® dressing. Duoderm® can be used but is thicker and more prone to interference by the bat. It is also opaque making it difficult to track the progress of the wound and can be difficult to remove.

Macadamia oil must be applied at least daily, either dripped on or sprayed on. It is suitable on patagium wounds, fingerbone wounds and in extreme cases (when a dressing can not be applied) has been used with success on open arm wounds.

Tegaderm and Solosite are left on for several days if possible. NB the wound exudate will build up and appear as a dirty greenish fluid. This is normal and in fact desirable. The only problem has been during prolonged use (many weeks) over a large area of healthy patagium. The wound exudate has caused damage to the surface of the wing. This is rare.

Occasionally a bat may develop an infection. This can be treated topically with silver dressings, systemically with antibiotics or a combination. Honey has been successful on

minor infections and mouth infections.

Healing the Wing

Regrowth of membrane over large areas usually causes scarring which in turn causes contraction of the wing. The best treatment is early flight and/or massage and stretch of the developing scar. Failing this the scar can be cut open surgically after scarring is complete and the wound correctly managed.

Maintaining Flight / General Health

Flight requires not only a functional wing but a healthy fit bat. Currently 2 months is the minimum time in care for a serious wound (down from 9 months) and this is too long for a hard release. It also too long to keep a bat confined or alone. Bats must be in a flight aviary, with other bats, entertainment and exercise. Muscle tone will need to be developed with exercise and flight practice. The bat will still require a soft release.

Nursing

Most bats are very tolerant of handling and Tegaderm dressings. Open Elizabethan collars will protect the dressing if they are prone to removing it and still allow feeding. They do prevent grooming so monitor for fly strikes. Capture in a net or on barbed wire can be highly stressful. Added to this is the constant handling to treat the bat. This can and does lead to capture myopathy and death. Treatment is valium and rehydration immediately the bat arrives. If the bat stresses at handling then dose with valium 20 minutes before treating.

These wounds are painful and treatment should be given. Valium (or Benadryl cough mixture in an emergency) are not actually pain treatments but may assist by relaxing the bat. Metacam is an anti-inflammatory and will help relieve related pain. Paracetamol and codeine have been used on bats. Stronger pain treatment may also be required – consult a wildlife vet. NB Dr Ralph Howard is an authority on pain management in wildlife.

3 Stress Management and Long term Rehabilitation

These two issues are all too often ignored. There are too many cases of bats kept for weeks in a cage on the dining room table or for months in a cage in a garage. Stress delays healing even if it doesn't kill in its own right and is against animal welfare principles. Occasionally a bat may have to be kept in an isolation cell because another bat and/or a bigger aviary are not available. Most of the time, however, this excuse is more to do with the carer wanting to have a bat than the needs of the bat.

Forget care group political boundaries and personal egos and MOVE the bat to where it can be well!!!!!! It is your responsibility to get the best care possible for the bat.

Severe wounds will require weeks or months of healing and rehabilitation to enable the bat to fly. Bats are social animals and do not tolerate isolation at all well. They are also intelligent and get bored. Long term care is a specialist activity and requires specialist facilities. These are available! A rehabilitation cage must supply entertainment and climbing opportunities as well as space to fly.

An adult bat in a cage, no matter how large, will not develop muscle tone and wing strength unless it is forced to exercise. These bats must be given physiotherapy and flight practice.

3.1 Case Histories

Banks: Three days in netting, severe wounds. Despite valium treatment on arrival he died 9 days later of capture myopathy.

Male kept for 10 days in a cage in a garage – so aggressive the experienced carer wouldn't try to remove him for transport. Half an hour after arrival into a flight aviary with other bats he was calm enough to lift down from the roof and examine without protest.

Female kept in a noisy animal room at a vet for two days. Died of stress within 48 hours.

Mango – burnt wings. Had extensive physiotherapy sessions with Helen Nicholson – Strathfield Vet Hospital and daily exercises and flight for 6 months. She was kept in a large flight aviary with other bats. She learnt to fly and was released.

3.2 Technique / Comment

Nursing – stress reduction

Most bats are very tolerant of handling. At least after the first few hours and if there are other, calm, bats around.

Entanglement in a net or on barbed wire is highly stressful. So is restraint at a noisy clinic or in a small isolation cell (cage in the dining room). Added to this is constant handling to treat the bat. This can and does lead to capture myopathy and death. Treatment is valium and rehydration immediately the bat arrives.

Bats are very idiosyncratic to valium, however 2 mg to 3.75 mg (well ¾ of a 5 mg tablet) usually works. If not try 5 mg. I have never dosed above 7 mg (and that bat was still trying to bite me). Valium is easily given in honey in a Qantas coffee spoon. For very suspicious bats, thin the mixture with water and administer from a syringe.

If the bat stresses at handling then dose with valium 20 to 30 minutes before treating. A side effect of valium is that they tend not to remember what you were doing and they remain calm when humans are around later.

An Elizabethan collar can reduce the stress of handling by reducing the amount of constraint needed. A collar with Velcro tabs is very quick to apply and prevents (or at least hampers) a bat from biting.



This means that the head does not have to be held (which is a 'predator grip' and therefore stressful) and the bat can 'watch' if it wants. Some bats are calmer if they can see what is happening.

Any bat will be calmer with another bat around. Please note: a very quiet bat living on a dining room table is not calm; it is in shut down mode due to stress.

If a bat goes into shock then treat it for shock. Depending on the degree of shock offer glucose or lectade and check the hydration levels. In a cat carry cage or equivalent make a 45° slope from piled towels or a sling. Wrap the bat as for a baby and place on its back on the towels. Hook the feet under the bars of the cage. Place a lighter cloth over its face.

Ensure that the bat is warm with a heat pad, a hot water bottle, or warm room. Make sure it is not too hot. Do not disturb for two hours. It is safe to assume any captured bat is likely to be suffering a degree of shock. They should be treated appropriately. This does not mean abandoning the bat in an isolation cell beside the TV. If the bat is showing signs of stress placing it in a noisy aviary is also not a good idea. Put it in a medium-sized cage with a nurse bat for company (they're social and they help each other).

Nursing -- long-term rehabilitation

This is a time consuming and energetic activity. Flight practices comes after specialist physiotherapy to correct problems. This involves:

- throwing from person to person – increasing the distance and number of throws, or,
- holding the feet and running up and down the garden to make it flap.

They are remarkably tolerant of these activities.

The success of nursing long-term patients for successful release depends entirely on the dedication of the nurse. The bat must have company and must be exercised every day and preferably more than once. Basically you are preparing a top flight athlete for a marathon. And its life depends on winning the marathon every day for the rest of its life. If you can't spend this amount of time every day then PASS IT ON to some-one who can.



– Research Papers and Notes –

Is the Western False Pipistrelle disappearing from the northern Darling Range of Western Australia?

Bob Bullen

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The Western False Pipistrelle (*Falsistrellus mackenziei*) is a large bat for an insectivore. At 20 g, it is the largest of the air-superiority insectivores that inhabit the south-west forest of Western Australia. Because of its size, *F. mackenziei* needs a particularly productive habitat to survive hard times. This bat has had a historical range (20th century) that takes in the south-west corner of the state from Cape Leeuwin in the south-west, past Albany in the south-east and north up the Darling Range to the latitude of Perth. Its preferred habitat is the hardwood (Jarrah, Karri, Marri and Tingle) forest and the open woodland that adjoins it. It has been happy in coastal Tuart forest to the west of the Darling Escarpment as far north as the southern suburbs of Perth. Not a lot is known as yet about its foraging strategy and its microhabitat use, what is known is summarised in Churchill (1998) and Start and McKenzie (2008). In general, its foraging strategy is thought to be roughly similar to the allopatric, *Scotorepens balstoni*, an insectivore that inhabits the much dryer Coolgardie woodland and the arid zone to the north and east.

Historical records of *F. mackenziei* presence over the last hundred years are not particularly numerous, but do cover its range reasonably completely. Its echolocation call is quite distinctive and lies between the *Chalinolobus gouldii* and *Vespadelus regulus* insectivores in the forest. It is similar to the call of *S. balstoni*, but stronger and longer. I have previously collected reference calls from the southern forest from known *F. mackenziei* sites and also from individuals released after netting.

Over the past five years or so, on an opportunistic basis (unstructured as my time available for the search was not plentiful), I have been looking for *F. mackenziei* along the Darling Range using my Anabat in an attempt to better define its range and its foraging strategy. I had set out to find a series of sites that I could use for a more structured study of its foraging and microhabitat, as well as catch and measure a few live specimens to better understand its morphology and physiology. I began my search along the drainage lines that cross the Jarrah forest at the northern limit of the historical range south of Mundaring at latitude 31.9°S, close to home of course. To my frustration, I wasn't able to locate any in those early searches. Not to be deterred, I moved my search area progressively further south, much to my long suffering (but ever patient) partner Cathy's frustration, as the late night drive home was getting ever longer. Over the next three years, we moved the search as far south as Collie at Lat 33.3°S. We looked in the forest, the fringing woodlands to the east and the coastal plains to the west. By this time I was starting to question my ability to find a simple bat as we had only been successful at three locations, all on the coastal plain between Lake Preston at Lat 33°S and Bunbury. What was going on? Was this bat really a will-of-the-wisp or was I looking in the wrong places. Finally, in the forest between Collie and the south coast we started to pick them up on the Anabat recordings. So I wasn't going batty after all! So back to the question, what is going on?

It is well known here in the west that rainfall on the Jarrah forest has been steadily reducing for some 30 years now due to the effects of global warming. Is there a link? I have a set of presence data (Fig. 1), both historical between the years of 1960 and 2000 as well as my own data collected between 2003 and 2008. Added to this I have a few Anabat records from colleagues collected along the coastal plain south of Bunbury. There are of course a lot of absences so I began to review the data by focusing on the presences that I do have.

From earlier work on *Tadarida australis* (Bullen and McKenzie 2005), I suspected strongly that the matter was entwined with the climatic variables over the south-west forest and the adjoining regions. I carried out a similar analysis to that of the *T. australis* using Bureau of Meteorology (BOM) climate average data published on the web. I found that the obvious meteorological measurements of monthly

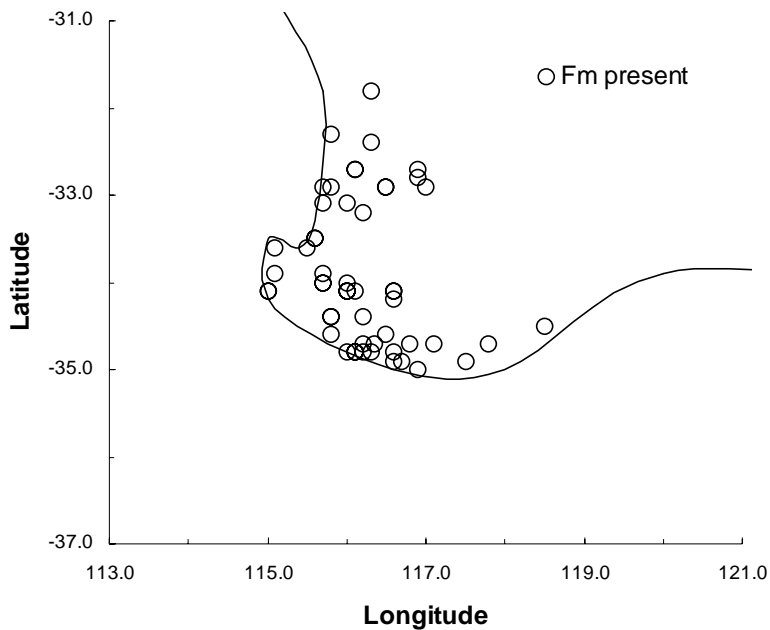


Figure 1. Locations where *Falsistrellus mackenziei* has been present.

rainfall, humidity and enthalpy that relate to productivity of a region did not separate the historical *F. mackenziei* locations from the historical *S. balstoni* locations over the summer months. This is because *S. balstoni* inhabits regions that receive significant summer rain from storms while the forest still receives 10 to 30 mm per month in these dryer months.

Figure 2 shows the average monthly rainfall for the locations where *F. mackenziei* and *S. balstoni* have been present. Similar relationships hold for the other two parameters mentioned. The parameters that did show a separation of the *F. mackenziei* and *S. balstoni* records were overnight minimum temperature and 9 am relative humidity (Figs 3 and 4). It wasn't a huge step from there to combine the two using a psychrometric chart and see that there was significant correlation with "saturated" overnight air conditions (i.e. the air is at or below the dew point) for the *F. mackenziei* locations and "unsaturated" overnight air conditions for the *S. balstoni* locations. In fact there was a very strong correlation. Figure 5 shows the % split for "presence" sites with saturated and unsaturated overnight conditions for both species. The 5 to 10% of outliers for both species are actually sites with marginal summer overnight relative humidity between 85 and 100%. Digging a little deeper and applying the 2007/8 BOM data to my recent search area strengthened the correlation, as these data qualified the drying Darling Range as the years pass and confirmed that the latitude of the northern limit of the saturated overnight air mass in January and February is progressively moving south. So are my suspicions that the *F. mackenziei* is disappearing from the ranges south and east of Perth proven by the data? Not yet, as I have said that my search to date has been on an opportunity basis and is not properly structured but the available evidence is getting stronger. Also, what of the areas that still have the species present but are having progressively drier spring and summer seasons as the years pass, namely the coastal plains between Mandurah and Cape Leeuwin? The data and climate modelling projections suggest that *F. mackenziei* may soon retreat from these areas. Clearly this species is under threat from global warming and the ongoing drying of the south-west corner of WA that is projected by current climate models.

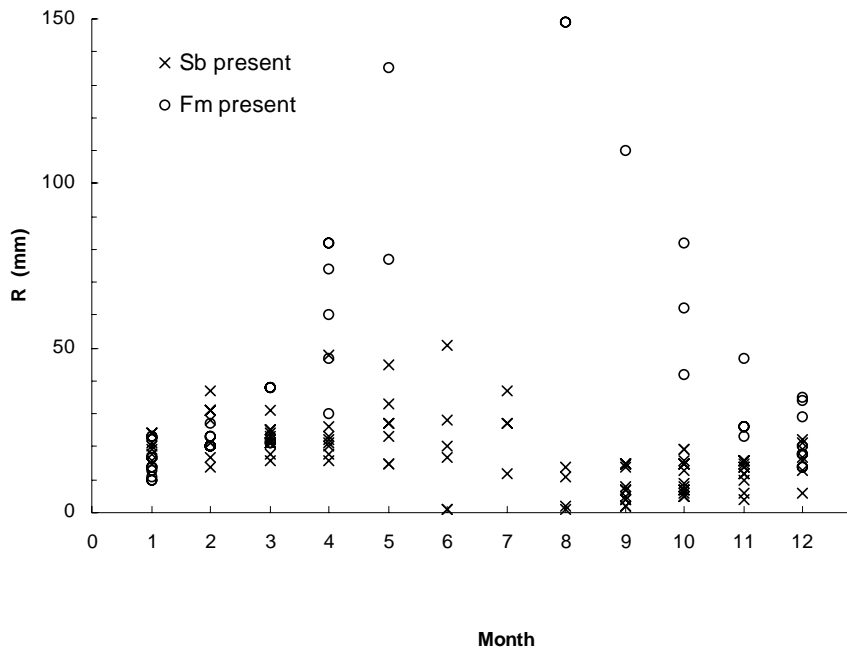


Figure 2. Monthly rainfall averages for sites where *Falsistrellus mackenziei* and *Scotorepens balstoni* have been recorded. Note that the data for December to March overlap.

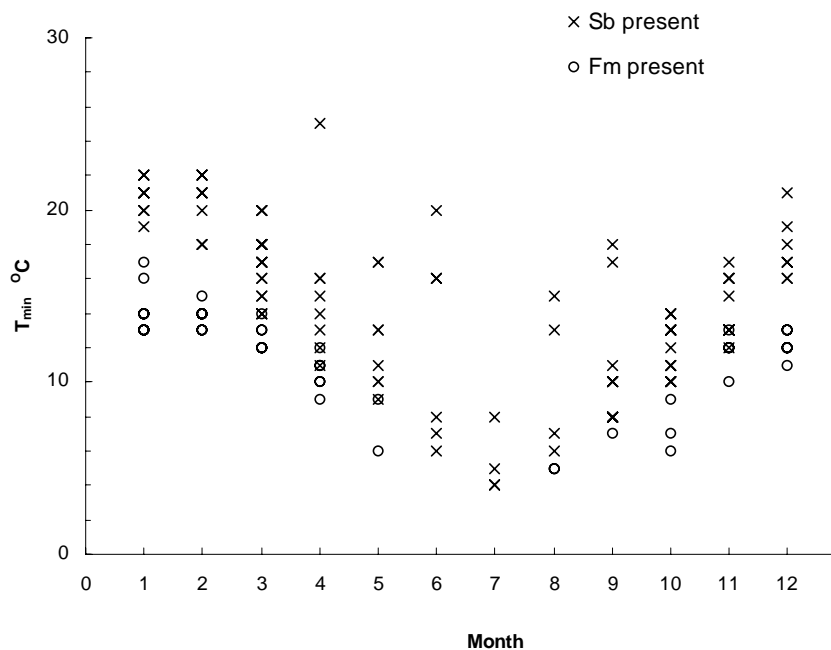


Figure 3. Monthly average minimum overnight temperature for sites where *Falsistrellus mackenziei* and *Scotorepens balstoni* have been recorded.

As noted above, we also do not know whether this species is a “hub-and-spoke” forager that spreads out from a stable location or a species that moves from location to location following the food supply. We currently suspect the latter, even to the point that we think that *F. mackenziei* may at times flock together as they forage, but we have no hard proof beyond three encounters with good numbers at locations where the larger numbers have not been seen at a later date.

Clearly a structured survey for this species is called for and a more thorough correlation made with the BOM data to support the climatic threat. Future surveys should be carried out quite quickly as my projections for the coastal plain noted above show that the species will possibly disappear from there quite soon, at least between December and March, leaving the deep forest south of Donnybrook to the coast and east to Albany as the shrinking domain of this species.

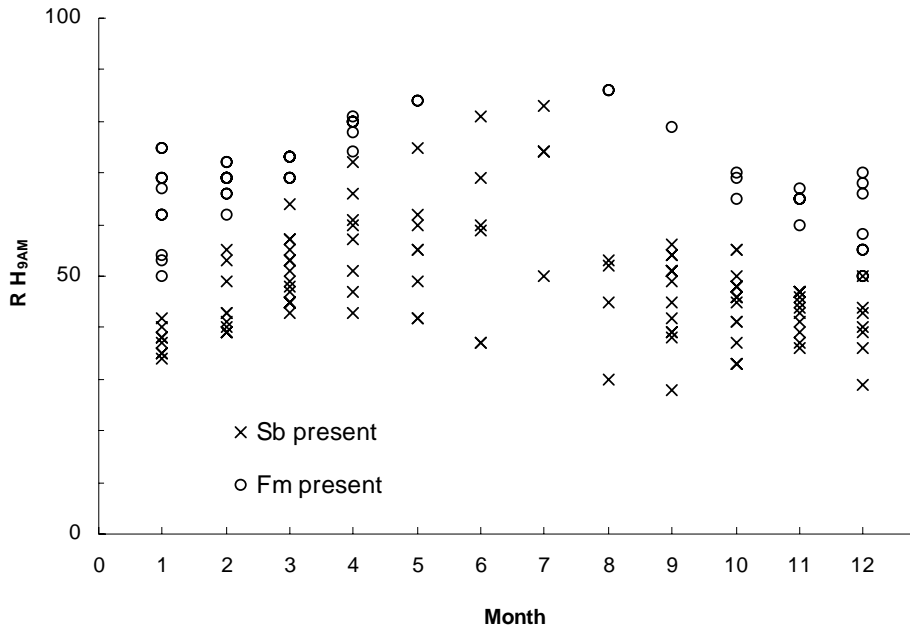


Figure 4. Monthly average relative humidity at 9 am for sites where *Falsistrellus mackenziei* and *Scotorepens balstoni* have been recorded.

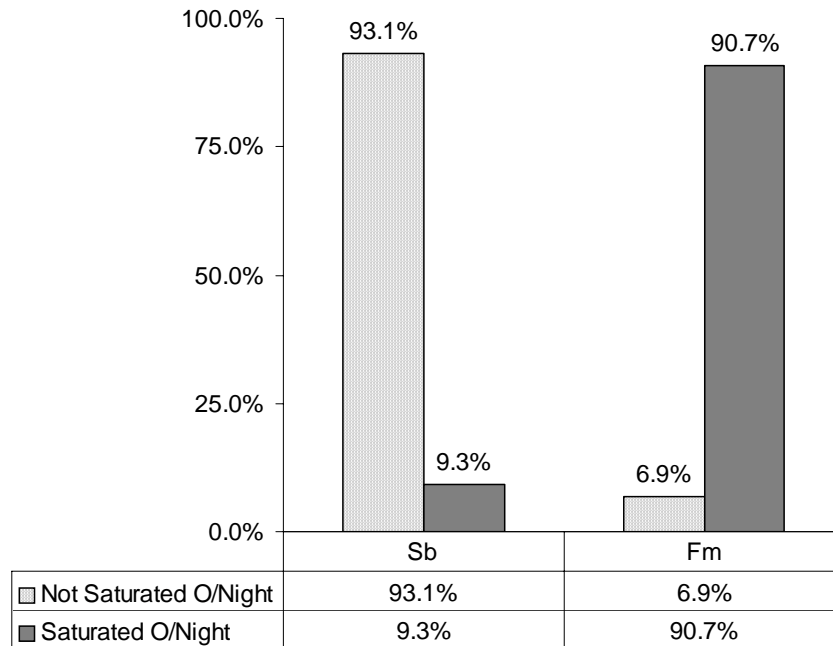


Figure 5. Comparison of overnight conditions, saturated air versus non-saturated air, for sites where *Falsistrellus mackenziei* and *Scotorepens balstoni* have been recorded.

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– Reports and Viewpoints –

Attracting bat enthusiasts while they're young!

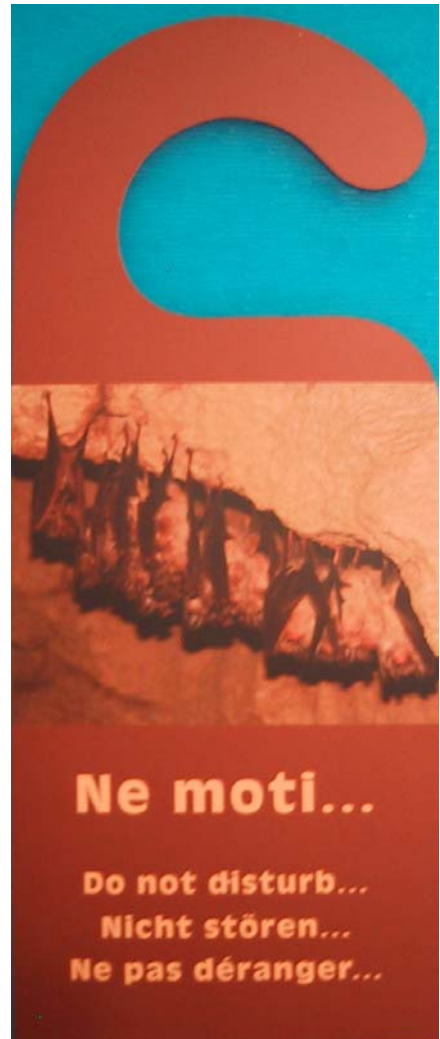
Silvia Žele

Email: silvia@melbpc.org.au

It has been three years now since I first became a member of SDVPN – Slovenian Association for Bat Research and Conservation (<http://www.sdpvn-drustvo.si/ENG/indexen.html>) and I am excited about our new schemes to attract young people to become bat enthusiasts.

Recently we were successful in getting a grant from the Government Communication Office for a project translated as 'Do not disturb...sleeping bats!' which will help us promote the idea that bats should be left in peace. As Slovenia currently holds the EU Presidency, we have had the message printed in four EU languages on a door-handle sign. Our intention is to distribute these during workshops but especially at the well-attended Student Exposition which takes place once a year. Many students live in student dormitories or in shared housing so the signs are intended to be practical as well as informative.

In September 2007 we were successful in rescuing 120 *Pipistrellus pygmaeus* when they had set up home in the laundry of a students' hall of residence and had to be relocated. Four of us 'permit holding' volunteers, each took 30 home for a few days while a bat box was built and attached to the outside of the building. We managed to keep the attitude towards the bats positive so the operation attracted interest and assistance from students and the authorities. The box will now be monitored as part of an ongoing project. The hours I spent hand feeding my thirty has left me with a huge amount of respect for those volunteers who do this work on a regular basis.



Pipistrellus pygmaeus being fed.

We also aim to attract even younger bat enthusiasts! We successfully applied for funding from the Slovenian Ministry of Education and Sport to run a series of workshops at kindergartens and primary schools. Through entertaining and educational activities, we show the uniqueness and beauty of bats to the children, their parents and the teachers in the hope that they will become ongoing supporters of bat conservation.

I will be back in Melbourne in August and am looking forward to visiting the Organ Pipes National Park and once again taking part in the monthly Bat Box Inspection.



– Gadgets and Techniques –

Ed: In the last Newsletter I published this intriguing photo of Bruce Thompson and Bob Berry from the USA and asked you all for your thoughts on possible accompanying captions. Sadly, Bob passed away in February this year (see Bruce's eulogy below). However, I am sure that Bob would have appreciated the humor associated with your submissions. Thanks to those who participated, I look forward to receiving even more captions for this editions photo (see below).



Olivia Whybird: "Yes, well actually I have one that goes wheeeee as well as wizz bang"

Damian Milne: On why Bruce Thompson came back with so much stuff from Mexico...."Yeah, fair dinkum Bob, they won't let you out of Mexico with that head torch, or that fancy camera, or that weird looking gadget...don't worry mate give them to me, I'll sort it out for you!"

Lisa Evans: "What happens if I press this button?"

"I'll swap you a bottle of tequila for it!"

Bat men and their bat toys...I would tell you what they're saying, but I couldn't understand them after their excited voices hit the ultrasonics.

Ed: Well, no one else said it, so I will: "Mine is bigger than yours!"

Eulogy to Bob Berry – Bruce's words on a kind and thoughtful bat enthusiast

Our last newsletter featured a shot of myself with Bob Berry from California at the Mexican International Bat Conference and I will be interested to see what sort of responses we get to the question posed by Susan Campbell, 'what are they saying?' In fact it was all about his ultrasound recording equipment (of course!!!).

To most bat conference-goers Pat and Bob have always been immediately recognisable as the pair with matching outfits, whether rhinestone or Hawaiian, they usually stood out from the crowd. Together they have worked for many years on Californian bats and in particular on the Californian Leaf-nosed Bat.

So it seemed quite out of the blue, that some time after the conference we heard that Bob was battling prostate cancer and in February this year we found out that he had passed away.

Bob was always the “gadget man” and was always on the forefront of technology. If you wanted to find out which video camera model had the best night-shot ability, or which LED torch was best, Bob was your man. So when I saw him at the conference with the relatively new bat detector (from Binary Acoustic Technology), I knew that he would be able to tell me everything that I needed to know – vital statistics and comparisons with other systems, the quality of recordings etc., Bob would know it all!! In a past life he worked with the US Air Force and developed algorithms for targeting systems in bombers and fighter aircraft. Indeed, those who knew him better than I did, would tell you that his mind operated on a completely different level to most people. To me, Bob was a wonderfully friendly and interesting bat fanatic and it was always well worth the time to seek him out chat about mutual interests. I always learned something!

So it was rather fitting that we featured a picture of Bob in our last newsletter, at the last bat conference he ever attended. On behalf of our members, I have extended our sincere condolences to Pat and his family. International bat conferences will never be quite the same without him.

New photo in need of a caption: (extra points if you can name the bear!)





– News and Announcements –

No more bat shooting in Queensland

Carol Booth

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Ever since colonists planted fruit orchards in Australia, flying-foxes have been attracted to eat in these fruit supermarkets. For this, many millions have been killed – mostly by shotguns and electric grids in recent years.

Now in Queensland the killing approach to crop protection against flying-foxes has finally been outlawed. Seven years ago the government banned the use of lethal electric grids and in May this year the environment minister announced that no more damage mitigation permits will be issued for shooting flying-foxes.

Both decisions were made for welfare reasons. Under its nature conservation legislation, the Queensland government can only issue damage mitigation permits if the chief executive is satisfied that the method is humane. Any method that does not kill instantly is likely to be inhumane.

Queensland Conservation applied to the Animal Welfare Advisory Committee – an independent body including welfare experts set up under Queensland's *Animal Care and Protection Act* – to evaluate whether shooting flying-foxes in orchards was humane.

We provided evidence that a significant proportion of flying-foxes shot in orchards were likely to die of wounds rather than be killed instantly and that dependent young flying-foxes would die from starvation when their mothers were killed in orchards. The AWAC received submissions and presentations from a range of parties and concluded that the practice indeed was inhumane.

The subsequent decision by the EPA to cease issuing damage mitigation permits for shooting flying-foxes is also good for nature conservation. As demonstrated in population modelling by Allen McIlwee and Len Martin (published in *Australian Zoology* in 2002), flying-fox populations are sensitive to low levels of imposed mortality, and even fairly low levels of culling can cause population declines. It undermines population recovery of threatened species.

Although the quota system for the take of flying-foxes in orchards agreed to by the states and the federal government ostensibly reduced numbers killed to less than 1% of population estimates, the quota was likely to be significantly exceeded by illegal killing. The quotas allowed orchardists to shoot just one flying-fox every 1 to 2 nights. Illegal killing will undoubtedly still occur in Queensland, but with a zero quota, enforcement will be much more straight-forward and there will be more pressure on growers to adopt non-lethal methods.

The decision is also good for those who like eating the same fruits that bats do. I for one am looking forward to eating Queensland lychees and rambutans again.

If you would like to congratulate the Queensland government on the decision to end the killing of flying-foxes in orchards please email the Hon. Andrew McNamara MP, Minister for Sustainability, Climate Change and Innovation, at Sustainability@ministerial.qld.gov.au. If you would like a copy of the submission Queensland Conservation made on the cruelty of shooting please email me on carol.booth@gmail.com. If you would like to advocate a similar decision for NSW, please write to The Hon. Verity Firth, Minister for Climate Change and Environment at office@firth.minister.nsw.gov.au – for further information please contact Humane Society International at admin@hsi.org.au or (02) 9973 1728.

In other Queensland news, two sets of fruit-growers who were ordered in separate decisions by the Queensland Planning and Environment Court to dismantle their electric grids after they were found to have used the grids in contravention of the Nature Conservation Act have failed to do so. Applications for contempt of court have been or soon will be filed against them. Further information on these cases can be found at <http://www.envlaw.com.au/case.html> (the Yardley case and the Frippery case).



Minister's response to issue of shooting flying foxes

Minister for Sustainability, Climate Change and Innovation
The Honourable Andrew McNamara – 15/05/2008

The Queensland Government has announced an end to issuing permits for shooting flying foxes from September. Minister for Sustainability, Climate Change and Innovation, Andrew McNamara, told State Parliament today the decision follows a recent finding from the Animal Welfare Advisory Committee that shooting flying foxes is inhumane.

“The protection and management of flying foxes is an ongoing matter of public interest,” Mr McNamara said. “They play an important role in the maintenance of biodiversity as a plant pollinator, but they also feed on fruit crops, particularly lychees and rambutans.”

Shooting of flying foxes for crop protection has been authorised by the Environmental Protection Agency under Damage Mitigation Permits, but only for strict numbers agreed to by the Commonwealth on an annual basis. “No further Damage Mitigation Permits will be granted in Queensland for shooting flying foxes after 1 September,” Mr McNamara said.

“Thankfully, the number of permit applications has been declining in recent years, as growers recognise that the only secure method of protecting their crops is by netting.” “I’m advised the vast majority of growers have moved to netting.” “Nets also exclude birds, and some also exclude insect pests and protect against hail, providing an even greater benefit”. “Of course, the use of nets incurs a cost, but that is offset by more and better quality fruit, less time spent sorting and packing, no time spent patrolling orchards at night and more reliable production yields.”

“The Queensland Rural Adjustment Authority will accept applications for low interest loans from growers who are wanting to install exclusion netting.” Mr McNamara said the question of shooting flying foxes was considered recently by the Animal Welfare Advisory Committee. He said that the Committee found that shooting flying foxes for fruit protection under Damage Mitigation Permits is inhumane. “AWAC is an expert committee with members who have experience in welfare – including the RSPCA – primary production and Indigenous issues”. “Like all mammals, flying foxes are sensitive to pain.” “They are often wounded rather than killed outright and are difficult to retrieve in the dark to be dealt with humanely if injured. “There are four species of flying fox in Queensland, the little red, black, spectacled and grey-headed.” While all four species are protected as ‘least concern’ wildlife under the Nature Conservation Act 1992 (NC Act), the latter two are also listed as ‘vulnerable’ species under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).



Bat Health Alert: Mystery “White Nose Syndrome” causes mass die offs of bats in north-eastern United States of America

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Some members may have heard about the mystery affliction that has caused horrific declines in cave-dwelling populations of bats in the north-east of the USA, others may not. Until the cause for the deaths is known, there is some concern that if the syndrome is a pathogen it could be accidentally spread to Australasia (and other places). I have tried to compile the most recent and accurate information so that we are all aware of the situation and remain alert to the risk.

In summary, the latest information is that there have been reports of mass die offs of hibernating bats in some states in north-eastern USA in 2007 and 2008. The cause of the affliction reported from caves and mines in New York, Vermont, Connecticut and Massachusetts, remains unknown. It has been called “White Nose Syndrome” because affected bats have visible growths of white fungus around their faces, although it is unknown if the fungus, another pathogen or environmental contaminants are the primary cause of the mortalities. The syndrome has been described as a major and imminent threat to North American bats. It has clearly been catastrophic where it occurs in the USA with up to 99% mortality recorded in the past two years. The population of bats at Hailes Cave in New York State, one of the first caves where the syndrome was first discovered has declined approximately 93% from 15,584 in 2005, to 1,200 at last count.

There are still a lot of unknowns about White Nose Syndrome. A reliable source of information is the US Fish and Wildlife Service webpage http://www.fws.gov/northeast/white_nose.html dedicated to the syndrome. This page is updated whenever new information becomes available, it includes maps, some data and links. The USA National Speleological Society also has a web page "[White Nose Syndrome: A major problem for both bats and the caving community](http://www.caves.org/grotto/dcg/white-nose.html)" <http://www.caves.org/grotto/dcg/white-nose.html> linked to the US Fish and Wildlife service page that contains specific information for cavers. The International Society for Infectious Diseases, early alert notifications Promed alert (4/3/08) contains a brief summary of laboratory and histological findings. Refer to the following web link http://www.promedmail.org/pls/otn/f?p=2400:1001:3087720544384126::NO::F2400_P1001_BACK_PAGGE,F2400_P1001_PUB_MAIL_ID:1000.71668

There is also an excellent powerpoint presentation by Alan Hicks from NY State Department of Environment and Conservation that covers the distribution, impact and symptoms of White Nose Syndrome in that State including photos, recent figures from surveys and comments about potential ways it has spread. It is available at (warning its 8.6mb) <http://www.caves.org/grotto/dcg/wns-hicks-show.pdf>. This is probably the best source of photographs currently available showing the impacts of the syndrome.

The key messages for Australasian bat workers and speleologists about the syndrome are:

1. There is a problem of bat deaths in caves in north-eastern USA, we don't know what it is yet but it looks very bad and we all need to be alert and cautious to avoid the problem spreading.
2. Probably most important, anyone planning on caving or doing bat research in caves in north-eastern USA, should check the latest advisories (from the USFWS website) and to pay particular attention to the maps of known localities, the guidelines for cavers and hygiene protocols.
3. Everyone should be aware of the symptoms and keep their eyes and ears out for any unusual observations in Australia, particularly of sick hibernating bats in caves.

If anyone comes across what they suspect may be White Nose Syndrome in bats in Australia they should immediately contact the Commonwealth Department of Fisheries Forestry and Agriculture National Pest and Disease Outbreak Hotline on 131 450. They should also contact their relevant state environment department. Because this is a new problem and staff at those departments may not be fully aware of the issue it would also be good to report any unusual observations they suspect may be White Nose Syndrome to the ABS so that we can follow up on any report.

The main symptoms to look out for are one or a combination of:

- white fungus on nose, also sometimes on the wings and tail – this fungus is not always obvious;
- bats flying during the daylight and many dying inside, around and outside caves; and
- bats concentrated near cave entrances in the light penetration zone.

I have also written to Australian and New Zealand Ministers for Agriculture, Fisheries & Forestry, Tony Burke and Jim Anderton and also to the Executive Director of Australian Quarantine Inspection Service on behalf of the Australasian Bat Society to both alert them to problem and also to ask them to pay attention to hygiene of equipment used in caves and mines from those states in the USA coming into Australia and New Zealand.



Breast cancer in a bat

Jenny Maclean

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www.tolgabathospital.org*

We have had a bat diagnosed by a local wildlife vet as being in the final stages of malignant breast cancer. The female bat was found clinging to the brickwork of a shop in Atherton. She had 2 massive lesions bilaterally on the anterolateral chest wall, not involving the nipple though both nipples became necrotic over a period of 3 days. She had massive cancerous invasions bilaterally in the lymph and axillary glands. She has been euthanised and some samples taken for histology. I'm wondering if anyone has seen any reports of wild bats presenting with cancer. I can't find anything on a literature search.



Conservation upgrade for the Southern Bentwing Bat

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For those who may not have caught this news, the southern bentwing bat was recently upgraded from Conservation Dependant to Critically Endangered under the EPBC Act. There are only four mammals in this category, and 3 are bats. This is an important step in the conservation management of this taxon. Thanks to those involved in preparing the nomination and providing comment.



***Chalinolobus dwyeri* maternity roosts?**

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I'm seeking any anecdotal records of Large Pied Bat *Chalinolobus dwyeri* maternity roosts. The only published account of a maternity roost (Dwyer 1966) was destroyed in 1976. I've written a paper on another roost in central NSW, and the reviewers have asked if there are other unpublished observations of maternity roosts of this species. If you have seen a maternity roost of *C. dwyeri* could you please let me know (you don't have to disclose details – I just want to get a grasp on how many have been observed). Thanks!



2008 North American Bat Conservation and Management Workshops

Information forwarded by Kari Gaukler

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Each year, Bat Conservation International (BCI) offers a series of comprehensive, introductory field workshops to train serious students of bat conservation in current research and management techniques for the study of bats. Following an intensive 6-day, 5-night agenda, BCI biologists and professional colleagues will present a combination of lectures and discussions, field trips to view bat habitat resources and hands-on training to catch and identify bats. Students also learn species identification, netting, radio-tracking, night-vision observation and habitat assessment while working in extraordinary settings.

A California workshop focuses on the conservation and management of bats in the Pacific Northwest. Set among the rugged backdrop of unique lava formations at Lava Beds National Monument, we will have an unparalleled opportunity to observe and discuss how variations in cave environments uniquely impact where bats roost. In addition to viewing evening bat emergences and exploring the unique volcanic formations, we will practice setting nets and traps at ice cave entrances, over we meadows and in mixed pine forests. Townsend's big-eared bats and colonies of Mexican free-tailed bats are just two of the 14 bat species we hope to encounter at this workshop. Janet Tyburec and local experts lead this workshop, which features species identification (including by echolocation calls), bat conservation, threats, management, education, public health and nuisance issues and much more. Our lodging located in the heart of the Pacific Flyway, is tucked between the Tule Lake and Lower Klamath National Wildlife Refuges, both of which boast exceptional waterfowl diversity where bird-watching and photography opportunities abound. One session: July 19-24, 2008. Limited to 20 people. Departure city: Medford, OR. Cost \$1,395.

Our Pennsylvania workshop highlights eastern bats and their habitats. We'll net, trap and release bats over trout streams and beaver ponds, observe endangered Indiana bats swarming at a mine entrance, watch 20,000 little brown bats in a spectacular dawn return to their roost at a restored church and examine them up close. Workshop co-leader Cal Butchkoski of the Pennsylvania Game Commission is a leading expert on surveying and radio-tracking Indiana bats, as well as one of America's most successful builders of bat houses and other artificial roosts. Cal and Janet Tyburec, joined by local consultant John Chenger, will share a wealth of knowledge covering all aspects of bat conservation, management, education and public health and nuisance issues. Home cooking is but one of the many unexpected treats at historic Greene Hills Manor, our workshop headquarters. One session: August 17-22, 2008. Limited to 20 people. Departure city: Harrisburg, PA. Cost: \$1,395.

2008 Acoustic Monitoring Workshop

In response to many requests, BCI is offering an acoustic monitoring workshop session at Lava Beds National Monument in California. The workshop will cover hardware and software including Anabat, Pettersson and SonoBat and teach call identifications and how to develop a monitoring program. Joining BCI's Jane Tyburec will be acoustic software developers Chris Corben and Joe Szewczak, along with acoustic experts Sybill Amelon and Ted Weller. The format will be similar to BCI's Bat Conservation and Management workshops, combining discussions of current research with hands-on demonstrations and fieldwork. Each night, we will be capturing bats and developing call libraries so participants can return to their home study areas and begin their own projects armed with knowledge and experience. BCI will have equipment available, but participants are encouraged to bring their own systems. The Acoustic Monitoring Workshop is an advanced workshop designed for graduates of previous BCI workshops and/or experienced bat workers. One session: July 24-29, 2008. Limited to 20 people. Departure city: Medford, OR. Cost: \$1,595.

For additional information, registration forms and scholarship applications, visit www.batcon.org, "get involved".



Batcorder information

Damian Milne

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Thought this might be of interest to some of the Anabaters out there (if you weren't aware of it already). Actually, I don't think the Batcorder is new at all but seems like they're just getting their act together in terms of supporting software to go with the hardware. I like the fact the system records and stores the full original call signal, is fully digital and the microphone setup is relatively water resistant. There are of course some downsides (no speaker for listening to real time calls for instance!).

I also noticed some remarkable similarities between aspects of the Batcorder system and Anabat (hmmm...are they filching some of your ideas Chris C??).

The quote they gave me per unit was 2400€ (\$4000 Aussie dollars). Web sites below.

Batcorder home - <http://ecoobs.de/en/cnt-batcorder.html>

Batcorder manual - <http://ecoobs.de/en/cnt-support.html>



Echolocating bats cry out loud to detect their prey

New article review:

If you think rock concerts are loud, you should hear the bats. An article published in the open-access journal PLoS ONE finds that bats emit sounds that are above the human threshold of pain. Researcher Annemarie Surlykke (Institute of Biology, SDU, Denmark) and her colleague Elisabeth Kalko (University of Ulm, Germany) investigated the patterns and behavior of echolocation in 11 species of insect-eating tropical bats from Panamá. The bats use a sonar system to capture insect prey at night, and the researchers reconstructed these flight paths using arrays of microphones and photographic methods. These models were used to estimate the intensity of sound that was emitted during the flights.

Surlykke and Kalko found that bats emit a sound that is stronger than any other animal in air. The exceptionally loud sounds exceed 140 decibels (dB) SPL (Sound Pressure Level measured at 10 cm from the bat's mouth). This is louder than the 115 - 120 dB that is emitted at a loud rock concert and the 120 dB human threshold of pain.

Humans, however, cannot hear the echolocation call since the bats emit sounds at ultrasonic frequencies. They do this in order to find the location of small insects that would be missed using lower frequencies. These high frequencies, though, do not travel as far in air as low frequencies because of air's ability to attenuate the sound. The researchers used estimates of the detection range for typical insect prey to conclude that extremely intense, ultrasonic sounds are necessary in order to counteract this attenuation. Another interesting finding was that bats that emit the highest frequencies were also the ones emitting the highest intensities. This first comparative field study of bat echolocation sounds found a wide variation of signal intensities and frequencies that converged on similar detection ranges.

"Overall, our study underlines the importance of intensity measures in the field as source level plays a crucial and so far largely underestimated role in bat echolocation. If we want to further understand which ecological and evolutionary factors shape echolocation signal design, an even larger variety of call parameters need to be considered, including sound duration and pulse interval, which may create call-echo overlap or other masking effects," conclude the authors.

Surlykke A & Kalko EKV (2008). Echolocating bats cry out loud to detect their prey. *PLoS ONE*, 3(4).



In Search of the Mystery Tag!

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As some of you know, I have been monitoring a colony of insectivorous bats (White-striped Freetail Bats *Tadarida australis*) at a maternity roost in a building at Sydney Olympic Park. You might have even seen the site on the field trip, during the ABS/RZS symposium last year.

I have expanded this study, and I am now PIT tagging some individuals from the bat colony and I have placed a tag reader at the roost entrance.

To cut a long story short, in recent data collected from the roost (4 April 08 – at 4:53 am) I have picked up a 'mystery' pit tag number. It was just a single reading – so if it (whatever 'it' is!) has gone in the roost, it has not come out againyet. It is most likely to have been a tagged bat, but not necessarily – it may have been a possum, bird (night), lizard etc (anyone tag cockroaches?).

In my search for the solution to this mystery, I have exhausted all the obvious channels so far. It is not a 'domestic' animal tag, none of the terrestrial scientists and bat ecologists who have tagged fauna in the area in the past have used this number, I have also contacted WIRES and Flying Fox carers, I have even contacted fisheries (flying fish?!!) – not one of theirs either!

I have managed to find out it is a tag manufactured by Texas Instruments (983 is the manufacturers code). But neither the Australian distributor of TI tags, nor its base in the Netherlands, can enlighten me further about this number!

The full tag number is: **983 002394943503**. If you, or anyone you know has tagged any creature, anywhere – can you please check if this number is among yours – I am sure the answer will be of great interest to everyone!

Here's hoping someone may be able to shed some light on this mystery!!! I can be contacted via email on marg@turton.com.au or mobile 0418 201 586.

****STOP PRESS****

Another mystery tag has been recorded at the site at 2.52 am on 29 April 08. The pit tag number is **865 273579698399**. If you can help identify this number please call Marg.



'Wildlife Friendly Fencing' brochure

Jenny Mclean (Tolga Bat Hospital) and Carol Booth (Queensland Conservation), with sponsorship from the ABS, have produced a brochure on barbed wire fencing and its hazard to wildlife. This brochure is reproduced on the following pages, and a hard copy included with the *Newsletter*. For more information, or to obtain additional copies of the brochure, contact Jenny on info@tolgabathospital.org or go to www.wildlifefriendlyfencing.com.au.





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Bat Care Brisbane. www.bats.org.au



Thousands of
animals face
a cruel death
every year
on barbed
wire fences.



Gremlin Jilder, Photo: Harry Kunz

Barbed wire is a major hazard for wildlife. Each year thousands of animals face a cruel death from entanglement on barbs, usually on the top strand. Over 70 species of Australian wildlife have been identified as occasional or regular victims of barbed wire fences, especially nocturnal animals such as bats, gliders and owls. Many fail to see the fence, or cannot clear the height under windy conditions. Many of those rescued are too severely damaged to return to the wild.

There are also other fencing hazards. Kangaroos get hung up in fences that are too high, whether plain or barbed, a situation perhaps made worse by the bottom strand of a fence being too low. Wetlands fenced too close to the water-line prevent cranes from landing or taking off.

Wildlife friendly fencing (WFF) is fencing that is safe and effective for wildlife, people and livestock:

- WFF does not entangle or harm wildlife
- WFF allows the appropriate free movement of wildlife across rural and urban landscapes.
- WFF may mean no fence at all.

WFF avoids the use of barbed wire, especially on the top strand of fences, and where fences are in hotspots for entanglement. Hotspots include ridge lines, feed trees, wildlife corridors, new fences and fences over/near waterways.



wildlife friendly fencing in action

Geoff, a farmer near Cardwell in north Queensland, noticed an animal caught on his barbed wire fence. The local wildlife carer quickly identified it as a female Mahogany Glider, an endangered species found only in that area. The glider had failed to make the distance between two trees, and the barbs of the fence caught her membrane. After months of rehabilitation she was eventually released. Several months later another female was entangled on the same stretch of barbed wire. The barbs tore her pouch and both babies died. The damage is likely to prevent her rearing future young.



Geoff realised it was time to make changes to his fences and considered his options:

- Make the fence more visible. Nocturnal animals can see a 1cm wide white tape that flickers in the wind better than grey wire.
- Make the top strand harmless by replacing barbed with plain wire. or covering it with polypipe split longitudinally.
- Plant trees to shorten the gliding distance for gliders between trees.

Geoff chose options 2 and 3 and no gliders have since been caught.

And in the city... Barbara arrived at work and noticed a flying fox caught on the barbed security fence. The fence had a row of flowering native shrubs along one side, and the bat had come to feed on the nectar. She decided to remove these shrubs, and plant ground-cover natives. The top strand of barbed wire was replaced with plain wire.

what you can do

- Make your fences wildlife friendly.
- Monitor barbed wire fences in your area and encourage landholders to go wildlife friendly.
- Encourage your local natural resource management groups to promote wildlife friendly fencing.
- Help distribute the WFF brochure.
- Visit www.wildlifefriendlyfencing.com for advice and information. While online, shop for WFF t-shirts and car stickers.

Report entangled animals to your local wildlife rescue organisation. You can find them at www.fauna.org.au or in Queensland, you can call the RSPCA on 1300 ANIMAL (Tel: 1300 264 625). Rescue is best left to experienced carers with the skills to minimise further harm, and take the animal into care for assessment and rehabilitation. Please do not attempt to handle flying foxes.



– Recent Literature –

Compiled by Susan Campbell from ISI Web of Science (November 2007 – mid June 2008)

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