



AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

ANNUAL REPORT 2008-09





Report of the Agricultural Scientific Collections Trust

for the Year Ended 30 June 2009

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Report of the Agricultural Scientific Collections Trust
For the Year Ended 30 June 2009.

This is the twenty fifth* Annual Report on the activities of the Agricultural Scientific Collections Trust, established in 1983 under the provisions of the *Agricultural Scientific Collections Trust Act, 1983, No., 148*, of the NSW Parliament.

*The 11th to 15th annual reports were included as a section of NSW Agriculture's Annual Report.

Aims and Objectives

The Act provides statutory protection for the scientific collections of Industry and Investment NSW and ensures their long-term maintenance and improvement. At present, the collections vested in the Trust are the Plant Pathology Herbarium and the Insect and Mite Collection, both housed at Orange Agricultural Institute and the Forest Entomology, Forest Pathology and Wood Sample collections, housed at

West Pennant Hills. The entomological and plant pathology collections are used in both research work on the taxonomy and identification of insects, mites, fungi and other microorganisms harmful to agricultural and forestry plants and in providing advice on the identification, host range, distribution and biology of these organisms.

Access

Director of the Collections

Agricultural Scientific Collections Trust

Orange Agricultural Institute

Forest Road

Orange NSW 2800

Telephone: (02) 63913800

Fax: (02) 63913899

Email: murray.fletcher@industry.nsw.gov.au

Business hours: 8.30 am - 4.30 pm.

The present Director of the Collections is Dr M.J. Fletcher, Principal Research Scientist and Curator of the Entomological Collections.

Details of the Trust and the Agricultural Scientific Collections Unit (ASCU) are available on the internet at:

<http://www.dpi.nsw.gov.au/research/areas/research-operations/scientific-collections-unit>

Composition of the Trust

Trust members are appointed by the Minister for Primary Industries for a period of five years. The Trust currently comprises:

Chairman

Ms H. Scott-Orr, Former Director Health Science & Strategic Alliances, NSW Department of Primary Industries

Trustees

Mr R. Armstrong, 14 Thoopara Place, Orange, NSW

Dr T. Entwisle, Executive Director, Royal Botanic Gardens and Domain Trust, Sydney, NSW

Dr D.F. Hales, Senior Research Fellow, Department of Biological Sciences, Macquarie University, 2109.

Dr Simon McKirdy, CEO, Cooperative Research Centre for National Plant Biosecurity, University of Canberra, ACT

Director of the Collections

Dr M.J. Fletcher, Principal Research Scientist, Curator, Entomological Collections, NSW DPI (Dr Fletcher is not a member of the Trust)

Secretary to the Trust

Dr M.J. Priest, Special Plant Pathologist, Curator, Plant Pathology Herbarium, NSW DPI (Dr Priest is not a member of the Trust)

Meetings

One meeting of the Trust was held during the reporting period, on 8 December 2008.

Freedom of Information Act

The Agricultural Scientific Collections Trust is F.O.I. Agency No 1668. No submissions or activities relevant to the *NSW Freedom of Information Act 1989* were made during 2008-2009.

Activities of the Trust

2008-2009

The Minister formally approved the transfer to the Trust of the Forest Insect Collection (FCNI), the Forest Plant Pathology Collection (NSWF) and the Forestry Wood Sample Collection, all housed at West Pennant Hills. These are the first additions to the Trust collections since the Trust Act was established in 1983 to provide statutory protection to the agricultural insect and mite collection and the Plant Pathology Herbarium (Herb-DAR), then housed at Rydalmere, NSW.

The newly gazetted Forestry Commission of NSW Insect collection (FCNI) is a collection of over 50 000 Australian and exotic forest and forest product insect specimens. The Forestry Pathology collection (NSWF) is a collection of approximately 3 500 tree and timber fungal specimens and fungal fruiting bodies and approximately 1 500 fungal cultures. The third and last collection is the Forestry Commission of NSW Wood collection, which contains approximately 30 000 wood samples of Australian and overseas material, a voucher herbarium collection and a comprehensive microscope slide collection.

The primary role of the Trust Collections and their associated personnel is to provide authoritative taxonomic support for agricultural and forestry activities in New South Wales. The Agricultural Scientific Collections Unit in Orange has continued to make a significant contribution to sustainability and market effectiveness of agricultural produce in NSW by providing basic information on the identities, distributions, host relationships and pest status of plant pests and pathogens for biological control, integrated pest management, quarantine and trade purposes. The Science and Research Collections based at the Forest Science Centre provide invaluable identification and reference resources for current research projects and forest health surveillance. The insect and disease collections are also a repository of biosecurity comparative material relating to potential exotic plant pests affecting agriculture, forestry and timber products.

The business conducted at the December 2008 meeting of the Trust included budget provision for temporary assistance with

the backlog in the insect and mite collections, the future of the bacterial collection and the future of the seed collection from the former Seed Laboratory at Roseberry.

Abbreviations

The following abbreviations are used in this report:

APPD – Australian Plant Pest Database

AQIS – Australian Quarantine and Inspection Service

ASCU – NSW Agricultural Scientific Collections Unit, Orange (also the Coden for the Insect Collection)

CHAEC – Council of the Heads of Australian Entomological Collections

DAFF – Australian Government Department of Agriculture, Forestry and Fisheries, Canberra.

FCNI – Forest Health Insect Collection, West Pennant Hills

Herb-DAR – Plant Pathology Herbarium, Orange

I&I NSW – Industry & Investment New South Wales

NATA – National Association of Testing Authorities.

NAQS – Northern Australian Quarantine Strategy

NSWF – New South Wales Forest Pathology Herbarium, West Pennant Hills.

OCCPO – Office of the Chief Plant Protection Officer, Canberra, a component of DAFF.

Accreditation

NATA accreditation was retained for the detection of exotic mites in honey bees.

The Mycology section has relinquished its ISO 17025 accreditation due to the low numbers of samples which do not justify the cost. All of the diagnostic and identification work has been incorporated into the ISO 9001 certification.

Both the ASCU collections (AU073) and the Forestry collections (AU021) have been re-registered scientific organisations for non-commercial loan, donation or exchange of scientific specimens of native Australian species between Australian and overseas institutions by the Department of the Environment, Water, Heritage and the Arts.

Personnel

Dr Rob Brown has formally resigned from the Trust after 15 years of dedicated and highly valued service.

Ms Helen Scott-Orr has been regazetted as the Chair of the Trust for a further five years.

Dr Ric Cother retired on 31 July 2008 and Ms Dorothy Noble retired on 1 August 2008. Care of the bacterial collections is now being provided by mycological staff. Ms Norma Cother retired in March 2009 leaving Herb-DAR with just two staff.

Dr Fletcher continued as Adjunct Professor in the School of Agriculture and Wine Science at Charles Sturt University and was invited to join the editorial board for the journal *Entomotaxonomia*, published jointly by the Chinese Academy of Science and the Chinese Entomological Society.

Dr Fletcher completed a four year term as Vice President and Chairman of the Executive of the Australian Entomological Society in September 2008.

Dr Birgit Löcker and Ms Catherine Phillips have been helping with curatorial work with the mite collection on a casual basis.

Curation

Herb-DAR

Accessioning of the overseas plant pathology collection continued during the year and the collection is now almost fully databased. Extensive updating of all of the virus records has commenced bringing them into line with current nomenclature. Two hundred collections were added to the herbarium from research, diagnostic and other sources. One hundred and twenty cultures were added to the fungal culture collection.

The closure of bacteriology and the departure of Mrs Cother from the Mycology Section has left a large gap in resources. Mrs Cowan has been trained in all aspects of the culture collection and is currently managing the culture collection (fungi, bacteria and viruses) as well as undertaking herbarium duties.

ASCU

Part of the insect alcohol collection has been sorted, relabelled, topped up and reorganised. Progress has been made although a substantive amount remains to be done (70% of project funds used).

Curatorial duties such as labelling and databasing of the mite reference slide collection were undertaken (mainly by Dr Löcker). One major task that is urgently required is to re-arrange the mite slide collection so that new and old specimens can be arranged in phylogenetic order

FCNI

The major activity within the FCNI is the general maintenance and curation of the collection as a whole. Editing and revision of material already electronically data based is also undertaken. In addition, Mr Goodyer, working part-time, has brought several major coleopteran sections of the collection up to date with current taxonomic literature. In general, the collection has only moderate increases in holdings in any given year. The accession of material from a *Sirex* trapping program was the last major influx of specimens. The processing of this material, including data basing has recently been completed by Mrs Sims, with a subset of information being supplied to OCCPO as part of the National Plant Pest Indicator Species Surveillance program. Accessions to the extensive termite collection are, almost, exclusively by way of suspected AQIS intercepts and through material collected as part of NAQS and sent to the Forest Science Centre for identification.

A number of upgrades are planned for 2009-2010 in order to fully capitalize upon the purchase of additional insect cabinets which was made in 2008 to allow for expansion of the collection. The first upgrade relates to the housing of the collection at the West Pennant Hills site. The collection room was specifically designed to maintain temperature at 19-20°C and this has been achieved consistently over recent years. However, following the discovery of mould in cardboard trays stored within the collection area, the humidity was checked and found to be excessive with levels as high as 80% on some

days. This situation has been exacerbated by the high humidity experienced in Sydney in the last 6 months. The problem has been brought to the attention of management and a proposal to alter the air conditioning has been put forward. The proposed change involves an upgrade of the air condition system with improved dehumidifying capabilities which will reduce the humidity to 55%. The necessary capital item approval has been granted but funds are yet to be made available and consequently the proposed changes have not occurred. The second upgrade relates to the replacement of the dedicated databasing computer. This computer has now been upgraded to a faster model. The new computer is proposed to be used in conjunction with a Leica microscope, digital camera and associated software to be purchased when capital funds are made available. These purchases will improve the taxonomic capabilities of forestry research being undertaken at West Pennant Hills. It is planned that this microscope will eventually become part of the remote microscope network.

NSWF

The NSW Forest Pathology Collection is a collection of both plant specimens and fungal specimens. Many of the plant specimens have been relocated to Forests NSW facilities in Coffs Harbour, under the curation of Mr Doug Bins. The fungal collection is located at West Pennant Hills.

New material is curated and details are electronically recorded. *Eucalyptus* species are the main hosts of new pathogens. The majority of these are leaf pathogens, but recently there has been a number of stem canker fungi. Overall there is a low level of new accessions.

The upgrades planned for the FCNI collection in 2009-2010 are also applicable to NSWF. The upgrade of the air conditioning in the insect collection will also impact on the room housing NSWF. The second upgrade replacing the dedicated databasing computer will also be used to run the NSWF data base. The new Leica microscope, digital camera and associated software will be available for fungal identifications and photography.

All these improvements will enhance the taxonomic capabilities of forestry research being undertaken at West Pennant Hills.

Herb-DAR and the NSWF are databased with KE-Texpress. The Trust is the largest provider of collections data to the APPD (over 330 000 data records of insects, mites and plant pathogens)

Loans

Herb-DAR

The herbarium sent out seven loans to national and international institutions. In addition, 64 cultures (fungi and bacteria) were sent out for research or teaching purposes.

ASCU

Eighteen loans of insects were sent from the Unit during the year, including holotypes of two species of planthoppers sent to Italy.

Six loans have been sent out by the mite section. These were for holotype and paratype specimens of Phytoseiidae plus Tetranychidae non-types. Destinations included Queensland, France and Italy.

FCNI

Outgoing loans - Requests for loans are usually quite low and revolve around current collaborative research projects. Most requests have been queries regarding specimens present in the collection and relevant collection information. Most queries like these are probably done on-line through the APPD web site so that direct requests to DII staff at West Pennant Hills under report actual usage of the collection.

Returning loans - Following the death of renowned Bark Beetle expert Dr Stephen L. Wood, eight specimens of bark beetle were returned to the FCNI collection. The material had apparently been loaned to Dr Wood by a former member of the then Entomology Section, Dianne Campbell, in 1984. Again, following email correspondence, this time from the Museum of Victoria, material on loan to a former staff member was located in a separate section of the collection. The material had been borrowed in 1986-88 by G.A. Webb from the Museum of Victoria, Macleay Museum, Queensland Museum and the Australian Museum. All outstanding material will be returned by early 2010.

NSWF

Outgoing loans - Numbers of requests for material/specimens are low and revolve around current collaborative research projects. Duplicate specimens have been sent to several institutions for collaborative work on new species of foliar fungi from eucalypts, including Centraalbureau voor Schimmelcultures (CBS) in the Netherlands; Murdoch University, Western Australia; Forest and Agricultural Biotechnology Institute (FABI), South Africa and the Queensland Department of Primary industries and Fisheries

Returning loans - nil

Diagnostics

ASCU

A total of 4 859 insect and mite identifications were made during the year, the largest proportion (63%) being fruit flies collected in traps.

Herb-DAR

Two fungal identifications were made for the Plant Health Diagnostic Service and two further identifications were made for AQIS.

FCNI

Mr Eldridge carries out regular termite identifications for AQIS and NAQS. Numbers are variable but can range from 10 to 50 per year. The collection provides a diagnostic resource for the Forest Health Survey group.

Collection staff regularly undertake identifications of insect material from the general public and other I&I NSW agencies, including Forest NSW timber inspectors.

NSWF

The collection provides a diagnostic resource for the Forest Health Survey group. Dr Carnegie undertakes identifications of leaf disease or wood decay material for the general public and other I&I NSW agencies, including Forest NSW timber inspectors. Specimen samples are sent to collaborators at Murdoch

University and EMAI (I&I NSW) for DNA sequencing for the confirmation of the identification of new species.

Exotic Detections

ASCU

Ms Knihinicki provided acarological support following the detection of Glover's spider mite, *Tetranychus gloveri* in Darwin by NT DPI.

An exotic bamboo aphid, *Takecallis arundinariae* (Essig), was detected on bamboo in the tiger enclosure at Dubbo Zoo and was subsequently also found in Victoria.

FCNI

Termite detections – diagnosis of AQIS intercepts of termites tends to be concentrated on species of the subterranean genus *Coptotermes*. The majority of these turn out to be the local species *Coptotermes acinaciformis*, known to invade imported goods and containers left sitting on wharfs or stored on the ground. The exotic species, *C. formosanus* and *C. gestroi* are identified from time to time. Other exotic species diagnosed include *Incisitermes minor*, a drywood termite from western USA, *Zootermopsis angusticollis*, a dampwood termite from north-western USA and Canada.

An infrequent but regular detection is *Cryptotermes brevis*, West Indian drywood termite. These occur mostly in items of furniture and are dealt with by AQIS. A recent example of a post-border detection resulted in an expensive whole-house fumigation, funded by I&I NSW.

Diagnostics of termites collected through the Northern Australia Quarantine Strategy (NAQS) presents an on-going challenge. No known exotic species have been identified but several specimens collected are clearly of species undescribed and unknown from Australia.

NSWF

A fungal leaf pathogen of eucalypt, *Kirramyces pseudoecalypti*, was detected for the first time in NSW in 2008. Previously it had only been known in Queensland.

Import Risk Analyses

Draft Import Risk Analysis Report for Unshu mandarins from Japan and for Apples from China were reviewed during the year.

New Research Grants

Ms Knihinicki received \$5 000 from WA Department of Agriculture for taxonomic research and the identification of phytoseiid species found on grapevines and apples in WA.

Dr Fletcher received \$10 000 from Curtin University for determination of Auchenorrhyncha collected during a invertebrate survey of Barrow Island associated with the Gorgon Gas Development. Funding originated from Chevron Ltd.

Visitors

Prof. Mike Wingfield (FABI, South Africa), Prof. Giles Hardy (Murdoch University) and Mr Geoff Pegg (QDPI & FI) visited the Forest Science Centre and inspected eucalypt stem canker fungi.

Training

ASCU

Staff of the Unit received training in BioSIRT (6), Western Flower Thrips identification (2), Fruit fly PCR (1), EndNote bibliographic software (8), Automontage photographic system (2), Fruit fly identification (4) and Dangerous Goods Shippers Course (7).

Dr Fletcher undertook a series of training courses for Level 4 Managers in NSW DPI.

FCNI

Mr Eldridge provides ongoing training for NAQS entomologists and Mr Horwood (I&I NSW) in termite identification.

Dr Kent has attended two workshops run by OCCPO/DAFF on the use of PDAs for the collection of survey data.

Conferences Attended

Dr Fletcher, Mr Gillespie, Ms Knihinicki and Mr Löcker (all ASCU) were members of the organising committee for the highly successful 39th Annual General Meeting and Scientific Conference of the Australian Entomological Society (AES), held in Orange in September 2008. Attendance for Mr Gillespie and Ms Knihinicki was funded by the Australian Entomological Society, for Mr Löcker by Biofirst funding and Dr Fletcher was funded privately.

Dr Fletcher, Mr Gillespie and Dr Kent attended a meeting of CHAEC held immediately preceding the AES conference in Orange in September 2008.

Mr Eldridge represented forestry at two Plant Health Committee meetings, Devonport in November 2008 and Brisbane in June 2009.

Referee reports

Staff of the unit have provided referee reports for the following scientific journals.

Entomological News

Experimental & Applied Acarology - Special Issue

General and Applied Entomology

Journal of the Royal Society of New Zealand

Systematic Entomology

The Australian Journal of Entomology

The Australian Entomologist

Zootaxa

Zookeys

Publications by ASCU staff

Refereed scientific publications

Coher, N. and Priest, M. (2009). A simple and effective method for the elimination of bacteria from fungal cultures. *Australasian Plant Pathology* 38: 132-134.

Crous, P. W., Summerell, B. A., Carnegie, A. J., Wingfield, M. J., Hunter, G. C., Burgess, T. I., Andjic, V., Barber, P. A. and Groenewald, J. Z. (2009). Unravelling *Mycosphaerella*: do you believe in genera? *Persoonia* 23: 99-118.

Crous, P. W., Summerell, B. A., Carnegie, A. J., Wingfield, M. J. and Groenewald, J. Z. (2009). Novel species of Mycosphaerellaceae and Teratosphaeriaceae. *Persoonia* 23: 119-146.

Cunnington, J.H., Sri Kanthi de Alwis and Priest, M. (2009). Some notes on *Phytophthora syringae* and *P. multivesiculata* in Australia. *Australasian Plant Disease Notes* 4: 42-43.

Davison, J.A., Hartley, D., Priest, M., Krysinka-Kaczmarek, M., Herdina, McKay, A. and Scott, E. (2009). A new species of *Phoma* causes ascochyta blight symptoms on field peas (*Pisum sativum*) in South Australia. *Mycologia* 101: 120-128.

Fletcher, M.J. and Moir, M.L., (2008) *Gunawardenea*, a new genus of squat leafhoppers from Western Australia, with description of two new species (Hemiptera: Cicadellidae: Deltocephalinae). *Records of the Western Australian Museum* 24(4): 429-436.

Fletcher, M.J. and Moir, M.L., (2009) *Budginmaya eulae* gen. et sp. nov., a myrmecophilous planthopper (Hemiptera: Fulgoromorpha: Flatidae) from Western Australia. *Australian Journal of Entomology* 48(1): 36-39.

Fletcher, M.J. and Larivière, M.C., (2009) *Anzygina*, a new genus for some Australasian microleafhopper species formerly placed in the genus *Zygina* Fieber (Cicadellidae: Typhlocybinae: Erythroneurini). *Australian Journal of Entomology* 48(2): 164-176.

Dominiak, B.C., Links, I.J., Fletcher, M.J., Worsley, P. and McDougall, S., (2009) Detection and spread of currant-lettuce aphid, *Nasonovia ribisnigri* (Mosley) (Hemiptera: Aphididae) in New South Wales. *General and Applied Entomology* 38: 27-30.

Kent, D.S. (2008) Distribution and host plant records of *Austroplatypus incompertus* (Schedl) (Coleoptera: Curculionidae: Platypodinae). *Australian Entomologist* 35(1): 1-6.

Kent, D.S. (2008) The mycangia of the ambrosia beetle, *Austroplatypus incompertus* (Schedl) (Coleoptera: Curculionidae: Platypodinae). *Australian Journal of Entomology* 47: 9-12.

Knihinicki, D.K., McCarren, K.L. & Scott, J.K. (2009) A new species of *Aceria* (Acari: Eriophyidae) damaging sowthistles, *Sonchus* spp. (Asteraceae), in Australia with notes on *Aceria sonchi* (Nalepa, 1902). *Zootaxa* 2119: 23-38.

Larivière, M.C. and Fletcher, M.J., (2008) A new genus, *Zeoliarus*, for the endemic New Zealand species *Oliarus atkinsoni* Myers and *O. oppositus* (Walker) (Hemiptera: Fulgoromorpha: Cixiidae: Cixiinae: Pentastirini). *Zootaxa* 1891: 66-68.

Scott JK, Yeoh PB & Knihinicki DK. (2008). Redberry mite, *Acalitus essigi* (Hassan) (Acari: Eriophyidae), an additional biological control agent for *Rubus* species (blackberry) (Rosaceae) in Australia. *Australian Journal of Entomology*, 47: 261-264.

Smith SM, AJ Beattie, DS Kent & AJ Stow (2009) Ploidy of the eusocial beetle *Austroplatypus incompertus* (Schedl) (Coleoptera: Curculionidae) and implications for the evolution of eusociality. *Insectes Sociaux* 56(3): 285-288.

Electronic publications

The entire ASCU web diagnostic package, covering keys to Australian Auchenorrhyncha, Aphids found on lettuce in Australia and Fruit Flies of southern Australia, were redesigned and relaunched on 1 March 2009. This update brings the packages into line with modern web design and required the individual checking of more than 4 000 files.

The Auchenorrhyncha package was updated 40 times during the reporting year, including addition of all generic synonymies. The package is now citable as:

Fletcher, M.J. (2009 and updates). *Identification keys and checklists for the leafhoppers, planthoppers and their relatives occurring in Australia and neighbouring areas (Hemiptera: Auchenorrhyncha)*. <http://www1.dpi.nsw.gov.au/keys/leafhop/index.html>

The following two keys were listed in the 2007-2008 annual report but were, in fact, published during the current reporting year.

Fletcher, M.J. (2008) *Illustrated Key to the Genera of the Tribe Ipoini (Hemiptera: Cicadellidae: Eurymelinae)* <http://www1.dpi.nsw.gov.au/keys/leafhop/eurymelinae/ipo00.htm>

Fletcher, M.J. (2008) *Illustrated Key to the Genera of the Subfamily Penthimiinae occurring in Australia (Hemiptera: Cicadellidae)* <http://www1.dpi.nsw.gov.au/keys/leafhop/penthimiinae/penth00.htm>

Kent, D.S. (2008) Psyllids in vegetable crops. *NSW Vegetable IPM Newsletter* 5: 4-6. http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/219444/vegetable-ipm-issue5-april08.pdf

Conference papers

Fletcher, M.J., Löcker, H. & Mitchell, A. (2009). The leafhopper genus *Orosius* Distant (Hemiptera: Cicadellidae): a molecular appraisal. Australian Entomological Society's 39th AGM and Scientific Conference, Orange, NSW, 28 September – 1 October 2008. (poster)

Fletcher, M.J. & Moir, M.L. (2009). The world's first inquiline flatid planthopper (Hemiptera: Fulgoromorpha: Flatidae). Australian Entomological Society's 39th AGM and Scientific Conference, Orange, NSW, 28 September – 1 October 2008.

Gillespie, P.S., Löcker, H. & Hailstones, D. (2009). Molecular and morphological diagnostics for fruit flies of economic significance to Australia. Australian Entomological Society's 39th AGM and Scientific Conference, Orange, NSW, 28 September – 1 October 2008.

Gitau, C.W., Gurr, G.M., Dewhurst, C.F., Fletcher, M.J. & Mitchell, A. (2009). Biology and Management of the planthopper *Zophiuma lobulata* Ghauri (Hemiptera: Lophopidae) in Papua New Guinea. Australian Entomological Society's 39th AGM and Scientific Conference, Orange, NSW, 28 September – 1 October 2008.

Kent, D.S. and Pilkington, L. (2008) *Orius gracilis* (Hemiptera: Anthocoridae), a potential biocontrol agent for greenhouses in Australia. IOBC-APRS Australian and New Zealand Biocontrol Conference. 10-14 February 2008, Sydney.

Kent, D.S. & Taylor, G.S. (2008) Not in my backyard! A new species of *Acizzia* Crawford (Hemiptera: Psyllidae) damaging eggplant, *Solanum melongena* L. (Solanaceae) in eastern Australia. 39th Annual General Meeting and Scientific Conference of the Australian Entomological Society. 28 September – 1 October 2008, Orange, NSW.

Smith, S.M., Beattie, A.J. Kent, D.S. & Stow, A.J. (2008) Ploidy in the eusocial beetle, 2N or not 2N. XXIII International Congress of Entomology, 6-12 July 2008, Durban, South Africa.

Löcker, H. & Mitchell, A. (2009). Non-destructive sampling of arthropod specimens for molecular systematics – you can have

your cake and eat it too!. Australian Entomological Society's 39th AGM and Scientific Conference, Orange, NSW, 28 September – 1 October 2008. (poster)

Murray J. Fletcher

Director of the Collections

Michael J. Priest

Secretary to the Trust

STAFF

**Agricultural Scientific Collections Unit
Orange Agricultural Institute**

Entomology (ASCU)

Dr M.J. Fletcher, FRES, Research Leader (Scientific Collections),
Principal Research Scientist Mr P. Gillespie, Technical Officer III
(Insect Collection Manager)

Ms D.K. Knihinicki, Technical Officer III (Acarology)

Ms M. Davison, Technical Officer II (Enquiry Officer)

Mr H. Löcker, Technical Officer I (part time)

Mr M. Kerr, Technical Assistant (Pest Monitoring)

Ms M. Rossetto, Technical Assistant (part time) (Pest Monitoring)

Ms R. Kerslake, Technical Assistant (part time) (Pest Monitoring)

Ms Nicole Reid, Technical Assistant (part time) (Pest Monitoring)

Ms Catherine Phillips, Technical Assistant (part time) (Pest
Monitoring)

Mrs B. Löcker, Technical Assistant (part time) (mite curation)

Mycology (Herb-DAR)

Dr M.J. Priest, Special Plant Pathologist (Curator of Herb-DAR)

Dr E. Cother, Principal Research Scientist (Bacteriology)

Mrs D. Noble, Technical Officer III (Bacteriology)

Mrs N. Cother, Technical Officer III (Mycology)

Mrs K. Cowan, Clerical Assistant (Mycology)

Associated Staff

Mrs M. Mitchell, Hygiene Technician

Forest Science Centre Collections

West Pennant Hills

Mr R.H. Eldridge, Research Leader Forest Health, Forest Science
Centre Director and Curator

Dr A.J. Carnegie, Principal Research Scientist (NSWF)

Dr D.S. Kent, Insect Collection Manager (FCNI)

Mr M.A. Horwood, Research Officer Forest Health (FCNI)

Mrs K.A. Sims, Technical Officer (Part time) (FCNI and NSWF)

Associated Staff

Mr D. Binns, Flora Officer Ecologist, Coffs Harbour

Research Associates

Mr J. Walker (Herb-DAR)


Mr G.J. Goodyer (FCNI)




Statement by Members of the Trust

Pursuant to section 41C(1B) of the *Public Finance and Audit Act 1983* and in accordance with a resolution of the members of the Agricultural Scientific Collections Trust, we declare on behalf of the Trust that in our opinion:

1. The accompanying financial statements exhibit a true and fair view of the financial position of the Trust as at 30 June 2009 and transactions for the year then ended.
2. The statements have been prepared in accordance with the provisions of the *Public Finance and Audit Act 1983*, the *Public Finance and Audit Regulation 2005* and the Treasurer's Directions.
3. In the interval between the end of the financial year and the date of these financial statements no item, transaction, or event of a material and unusual nature has arisen which is likely, in the opinion of the members of the Trust, to substantially affect the results of the Trust's operations for the next financial year.


.....
Ms H Scott-Orr
Chairperson
26 November 2009


.....
Dr M J Fletcher
Director of the Collections
26 November 2009

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Director of the Collections: Dr M.J. Fletcher Secretary: Dr M.J. Priest



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Ms Helen Scott-Orr
Chairperson
Agricultural Scientific Collections Trust
Care of Department of Primary Industries
Locked Bag 21
ORANGE NSW 2800

10 December 2009

Dear Ms Scott-Orr

STATUTORY AUDIT REPORT
For the Year Ended 30 June 2009
Agricultural Scientific Collections Trust

I have audited the financial report of Agricultural Scientific Collections Trust (the Trust) as required by the *Public Finance and Audit Act 1983* (the Act). This Statutory Audit Report outlines the results of my audit for the year ended 30 June 2009. The Act requires that I send this report to the Trust, the Minister and the Treasurer.

This report is not the Independent Auditor's Report, which expresses my opinion on the Trust's financial report. I have enclosed the Independent Auditor's Report, together with the Trust's financial report.

My audit is designed to obtain reasonable assurance the financial report is free from material misstatement. My audit is not designed to identify all matters that may be relevant to those charged with governance. Accordingly, there may be other matters of governance interest that did not come to my attention during my audit.

My audit is continuous and I may therefore identify new significant matters. If this occurs, I will write to you immediately.

Audit Result

I expressed an unmodified opinion on the Trust's financial report and I have not identified any significant matters since the previous Statutory Audit Report.

Misstatements in Financial Report

We did not detect any quantitative or qualitative misstatements in the financial report.

Compliance with Legislative Requirements

My audit procedures are targeted specifically towards forming an opinion on the Trust's financial report. This includes testing whether the Trust has complied with legislative requirements that may materially impact on the financial report. The results of the audit are reported in this context. My testing did not identify any material instances of non-compliance.

Auditor-General's Report to Parliament

As I have not identified any significant matters, commentary on Trust's financial operations will not appear in the Auditor-General's Report to Parliament. Appendix 1 to that Report will advise the audit result for the Trust.

Acknowledgment

I thank the Trust's staff for their courtesy and assistance.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Peter Barnes'.

Peter Barnes
Director, Financial Audit Services



GPO BOX 12
Sydney NSW 2001

INDEPENDENT AUDITOR'S REPORT

Agricultural Scientific Collections Trust

To Members of the New South Wales Parliament

I have audited the accompanying financial report of the Agricultural Scientific Collections Trust (the Trust), which comprises the balance sheet as at 30 June 2009, the income statement, statement of recognised income and expense and cash flow statement for the year then ended, a summary of significant accounting policies and other explanatory notes.

Auditor's Opinion

In my opinion, the financial report:

- presents fairly, in all material respects, the financial position of the Trust as at 30 June 2009, and its financial performance for the year then ended in accordance with Australian Accounting Standards (including the Australian Accounting Interpretations)
- is in accordance with section 41B of the *Public Finance and Audit Act 1983* (the PF&A Act) and the Public Finance and Audit Regulation 2005.

My opinion should be read in conjunction with the rest of this report.

The Trustees' Responsibility for the Financial Report

The Trustees are responsible for the preparation and fair presentation of the financial report in accordance with Australian Accounting Standards (including the Australian Accounting Interpretations) and the PF&A Act. This responsibility includes establishing and maintaining internal controls relevant to the preparation and fair presentation of the financial report that is free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

My responsibility is to express an opinion on the financial report based on my audit. I conducted my audit in accordance with Australian Auditing Standards. These Auditing Standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal controls relevant to the Trust's preparation and fair presentation of the financial report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Trust's internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Trustees, as well as evaluating the overall presentation of the financial report.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

My opinion does *not* provide assurance:

- about the future viability of the Trust,
- that it has carried out its activities effectively, efficiently and economically, or
- about the effectiveness of its internal controls.

Independence

In conducting this audit, the Audit Office of New South Wales has complied with the independence requirements of the Australian Auditing Standards and other relevant ethical requirements. The PF&A Act further promotes independence by:

- providing that only Parliament, and not the executive government, can remove an Auditor-General, and
- mandating the Auditor-General as auditor of public sector agencies but precluding the provision of non-audit services, thus ensuring the Auditor-General and the Audit Office of New South Wales are not compromised in their role by the possibility of losing clients or income.



Peter Barnes
Director, Financial Audit Services

10 December 2009
SYDNEY

Maturity analysis and interest rate exposure of financial liabilities

	Weighted Average Effective Int. Rate	Nominal Amount \$	Interest Rate Exposure			Maturity Dates		
			Fixed Int. Rate \$	Variable Int. Rate \$	Non-interest bearing \$	< 1 yr	1 – 5 yrs	> 5 yrs
2009								
Payables	0	4 703	0	4 703	0	4 703	0	0
2008								
Payables	0	4 703	0	4 703	0	4 703	0	0

(d) Market risk

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. The Trust has no borrowings or investments.

Interest rate risk

The Trust does not receive interest and has no borrowings or investments.

7. Valuation of the Collections

The principal assets of the Agricultural Scientific Collections Trust are the insect and mite collections, the plant pathology herbarium, the FCNI insect collection, the forest pathology collection and the forestry wood sample collection. The former two collections (known here as the ASCU collections) were originally established in 1890 with the appointment of the first scientific officers in NSW Department of Primary Industries. The three forestry collections were first established after the passing of the Forestry Act No.55 in 1916. Since that time the ASCU collections and the Forestry insect and plant pathology collections have been augmented regularly through the addition of specimens representing records of insects, mites, fungi, bacteria, viruses and nematodes associated with agricultural or forestry activity in New South Wales. Each addition of a specimen to the collections also adds a data label bearing information on the identity, location, date of collection, name of the collector and biological information pertaining to that specimen.

This information provides data for the trade, quarantine, research and diagnostic functions of the Agricultural Scientific Collections Unit and the Forest Health Research Unit. The identity information has been added progressively by specialist taxonomists, many with world authority status, over many years and much of the information is now irreplaceable because the original source is no longer available. Therefore, due to the irreplaceable nature of these collections, valuation would be extremely difficult.

In addition to this collection information, the ASCU collections include many unique reference specimens known as primary type specimens. These are used by taxonomists as the only valid reference point for individual scientific names and are established by the taxonomist who originally names a species.

The location of each of these primary type specimens is published with the original description of a species, this being a requirement of the International Codes for Zoological and Botanical Nomenclature. In addition to the collections themselves, the Trust assets held in the ASCU, Orange, include original paintings of insects by E.H. Zeck, many in colour, and original paintings of plant diseases by Margaret Senior. These have been used for many years to illustrate departmental publications on insects, mites and plant diseases in NSW and images of these are provide on the NSW DPI website at <http://www.dpi.nsw.gov.au/aboutus/services/collections/scientific-illustrations/>.

Although irreplaceable, an exercise was conducted in November 2000, based on valuation models used by other Institutions, to find an indicative value of the collections. This exercise indicated that, even though unreliable, the value of the ASCU collections alone may be in the vicinity of \$25million.

END OF AUDITED FINANCIAL STATEMENTS

219.01. If trade terms are not specified, payment is made no later than the end of the month following the month in which an invoice or a statement is received. Treasurer's Direction 219.01 allows the Minister to award interest for late payment. The rate of interest applied during the year was nil (2008 – nil).

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

INCOME STATEMENT FOR THE YEAR ENDED 30 JUNE 2009

	Notes	2009 \$	2008 \$
Income			
Grants		391 922	345 293
Sale of Cultures		0	2 300
		391 922	347 593
Expenditure			
Salary Costs -DPI	3	376 922	330 293
Temporary Assistance		466	0
Freight		12	0
Purchases		589	1 178
Books		352	440
Fees for Services Rendered		2 527	2 800
Audit Fees		4 275	4 275
Travelling Expenses		749	0
Trustee Meeting Expenses		1 171	1 171
		385 892	340 157
SURPLUS / (DEFICIT) FOR THE YEAR FROM ORDINARY ACTIVITIES		6 030	7 436

The accompanying notes form part of these financial statements

The table below summarises the maturity profile of the Trust's financial liabilities, together with the interest rate exposure.

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

Notes to and forming part of the Financial Statements for the year ended 30 June 2009

1. Summary of Significant Accounting Policies

(a) Report Entity

The Trust is constituted under Section 5 of the Agricultural Scientific Collections Trust Act 1983 which commenced on 9 November 1984. This Act gives statutory protection to the scientific collections of the NSW Department of Primary Industries, ensuring their long-term maintenance and improvement. At the present time, there are five collections vested in the Trust. The Plant Pathology Herbarium and the Insect and Mite Collection are housed in the Agricultural Scientific Collections Unit at the Orange Agricultural Institute and the FCNI Collection, the Forestry Wood Sample Collection and the Forestry Plant Pathology Collection are housed at the NSW Department of Primary Industries office at West Pennant Hills.

The Trust operates from an annual Consolidated Fund appropriation to the Minister for the NSW Department of Primary Industries and this is identified as a separate item for operating purposes.

Standard operations of the Trust were carried out by officers of NSW Department of Primary Industries and their salaries, wages and overhead costs were not paid by the Trust. It is not possible to reliably estimate the total value of material expenditure incurred by the Department in direct support of the Trust. This is due to the number of staff located throughout the State that have some input into the maintenance of the collections and the interrelationship with normal departmental duties. However, salary costs relating to the staff located in the Trust buildings in Orange and West Pennant Hills are recognised in the Statements, as outlined in Note 3.

The Financial Report for the year ended 30 June 2009 has been authorised for issue by the Trust on 26th November 2009.

(b) Basis of Preparation

The Trust's financial report is a general purpose financial report which has been prepared in accordance with:

- applicable Australian Accounting Standards (which include Australian Accounting Interpretations); and
- the requirements of the Public Finance and Audit Act 1983, and Regulation.

Judgements, key assumptions and estimations management has made are disclosed in the relevant notes to the financial report.

All amounts are rounded to the nearest dollar and are expressed in Australian currency.

(c) Statement of Compliance

The financial statements and notes comply with Australian Accounts Standards which include Australian Accounting Interpretations.

(d) Expense Recognition

Expense is measured at the fair value of the consideration or contribution paid or payable. The value of accrued expense is based on historical data or direct evidence.

(e) Income Recognition

Income is measured at the fair value of the consideration or contribution received or receivable. Contributions (including grants and donations) are generally recognised as income when the Trust obtains control over the assets comprising the contributions. Control over the contributions is normally obtained upon the receipt of the cash.

(f) Other Provision

Other provisions exist when: the Trust has a present legal or constructive obligation as a result of a past event; it is probable that an outflow of resources will be required to settle the obligation; and a reliable estimate can be made of the amount of the obligation.

(g) Accounting for the Goods and Services Tax (GST)

Revenues, expenses and assets are recognised net of the amount of GST, except that:

- the amount of GST incurred by the agency as a purchaser that is not recoverable from the Australian Taxation Office is recognised as part of the cost of acquisition of an asset or as part of an item of expense and
- receivables and payables are stated with the amount of GST included.

(h) Plant and Equipment

All Plant and Equipment owned by the Trust have been fully depreciated.

(i) Payables

These amounts represent liabilities for goods and services provided to the Trust and other amounts. Payables are recognised initially at fair value, usually based on the transaction cost or face value.

Subsequent measurement is at amortised cost using the effective interest method. Short-term payables with no stated interest rate are measured at the original invoice amount where the effect of discounting is immaterial.

(j) New Australian Accounting Standards issued but not effective

At report date, a number of Australian Accounting Standards have been issued by the AASB but are not yet operative. These have not been early adopted by the Trust. These standards have been assessed for their possible impact on the financial report, if any, in the period of their initial application. The assessment concluded that there will be no material impact.

2. Contingent Liabilities

There were no contingent liabilities in respect of the Trust as at 30 June 2009.

3. Salary Costs

The cost of salaries paid by NSW Department of Primary Industries on behalf of staff who maintain the five collections is estimated to be \$376,922 for 2009 (2008 - \$330,293).

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

Notes to and forming part of the Financial Statements for the year ended 30 June 2009

4. Commitments

There were no Operating Commitments outstanding as at 30 June 2009 (30 June 2008 - Nil).

5. Reconciliation of Cash Flows from Operating Activities to Operating Result

	2009	2008
	\$	\$
Operating Surplus / (Deficit)	6 030	7 436
Increase in Accruals	0	687
Net Cash Used in Operating Activities	6 030	8 123

6. Financial Instruments

The Trust's principal financial instruments are outlined below. These financial instruments arise directly from the Trust's operations or are required to finance the Trust's operations. The Trust does not enter into or trade financial instruments, including derivative financial instruments, for speculative purposes.

The Trust's main risks arising from financial instruments are outlined below, together with the Trust's objectives,

policies and processes for measuring and managing risk. Further quantitative and qualitative disclosures are included throughout this financial report.

The Board has overall responsibility for the establishment and oversight of risk management and reviews and agrees policies for managing each of these risks. Risk management policies are established to identify and analyse the risks faced by the Trust, to set risk limits and controls and to monitor risks.

(a) Financial instrument categories

Financial Assets Class:	Note	Category	Carrying Amount	
			2009	2008
			\$	\$
Cash and cash equivalents		N/A	38 025	31 995

Financial Liabilities Class:	Note	Category	Carrying Amount	
			2009	2008
			\$	\$
Payables		Financial liabilities measured at amortised cost	4 703	4 703

(b) Credit Risk

Credit risk arises when there is the possibility of the Trust's debtors defaulting on their contractual obligations, resulting in a financial loss to the Trust. The maximum exposure to credit risk is generally represented by the carrying amount of the financial assets (net of any allowance for impairment).

Credit risk arises from the financial assets of the Trust, including cash, receivables, Trust deposits and advances receivable. No collateral is held by the Trust. The Trust has not granted any financial guarantees.

Credit risk associated with the Trust's financial assets, other than receivables, is managed through the selection of counterparties and establishment of minimum credit rating standards. Trust deposits held with NSW TCorp are guaranteed by the State.

Cash

Cash comprises cash on hand which is part of the NSW Department of Primary Industries (DPI) bank account. Transactions of the Trust are recognised in relevant amounts recorded in the DPI financial statements.

Receivables – trade debtors

All trade debtors are recognised as amounts receivable at balance date. Procedures for the collection of outstanding amounts is managed by DPI.

The Trust is not materially exposed to concentrations of credit risk to a single trade debtor or group of debtors. There are no debtors due or past due.

(c) Liquidity risk

Liquidity risk is the risk that the Trust will be unable to meet its payment obligations when they fall due. The Trust continuously manages risk through monitoring future cash flows and maturities planning to ensure adequate holding of high quality liquid assets.

During the current and prior years, there were no defaults or breaches on any loans payable. No assets have been pledged as collateral. The Trust's exposure to liquidity risk is deemed insignificant based on prior periods' data and current assessment of risk.

The liabilities are recognised for amounts due to be paid in the future for goods or services received, whether or not invoiced. Amounts owing to suppliers (which are unsecured) are settled in accordance with the policy set out in Treasurer's Direction

AGRICULTURAL SCIENTIFIC COLLECTIONS TRUST

Notes to and forming part of the Financial Statements for the year ended 30 June 2009

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The table below summarises the maturity profile of the Trust's financial liabilities, together with the interest rate exposure.

Maturity analysis and interest rate exposure of financial liabilities

	Weighted Average Effective Int. Rate	Nominal Amount \$	Interest Rate Exposure			Maturity Dates		
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END OF AUDITED FINANCIAL STATEMENTS



<http://www.agric.nsw.gov.au/Hort/ascu/>