

Curriculum Vitae

Brent John Sinclair

Department of Biological Sciences

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Present Position: Postdoctoral Scholar, Dept. of Biological Sciences, University of Nevada-Las Vegas. November 2004 – present

Host: Dr Stephen P. Roberts

Employment History:

October 2001-October 2004: New Zealand Science and Technology Postdoctoral Fellow, Department of Botany & Zoology, University of Stellenbosch, South Africa.

Host: Prof. Steven L. Chown

Research Field: Ecological physiology of arthropods.

Academic Qualifications:

2001: PhD (Zoology), University of Otago, New Zealand.

Thesis topic: “The Ecology and Physiology of New Zealand Alpine and Antarctic Arthropods” (Supervisor: Dr David Wharton).

1996: BSc (1st Class Honours), Zoology, Otago

Awards Received

- 2000** Claude McCarthy Travel Fellowship to attend VIII International Symposium on Cold Hardiness in Animals and Plants, Victoria, BC, Canada.
- 1998** Best Student Poster, New Zealand Ecological Society / Ecological society of Australia joint meeting.
- 1997** Sir Robin Irvine Antarctic Scholar
University of Otago Postgraduate Scholar
Freemasons Postgraduate Scholar
- 1996** Marion Fyfe Prize in Zoology
Freemasons Undergraduate Scholar
- 1995** University of Otago Senior Scholar in Science
G. H. Satchell Prize in Zoology
David Stewart Beattie Award
- 1994** Annual Zoology Prize (University of Auckland)
R. M. Cassie Memorial Prize in Biometry (University of Auckland)
- 1992** Top Scholar in New Zealand University Bursary Biology

Teaching Experience

Research Supervision

PhD -Matthew Scott (2000 - 2001 Ecology MSc programme, Upgraded to PhD 2002-present, University of Otago).

Ecological processes on frost patterned ground on the Old Man Range, Central Otago, New Zealand. (Co-Supervisor with Assoc.-Prof. K. Dickinson, Botany Department and Dr B. Barrett, Agresearch).

MSc – Caroline Williams (Completed January 2004, Zoology, University of Otago, now a science writer in Malaysia).

Haemolymph correlates of parasite-induced behavioural changes in an Amphipod-Nematode model system. (Co-Supervisor with Prof. R. Poulin, Zoology Department).

BSc(Hons)

Saskia Goldberg (Completed 2004, University of Stellenbosch, now travelling). Biological thresholds and microclimate on sub-Antarctic Marion Island. (Co-supervisor with Prof. S.L. Chown).

Elrike Marais (Completed 2002, University of Stellenbosch, now a PhD student, University of Stellenbosch).

Inter- and intra- individual variation in Discontinuous Gas Exchange in the Table Mountain cockroach *Aptera fusca*. (Co-Supervisor with Prof. S.L. Chown and Dr C.J. Klok).

Honors Programme (UNLV)

Theresa Nilson (NIH BRIN Summer Fellow 2005, Honors thesis Fall Semester 2005). Cross-tolerance between cold and other abiotic stressors in *Drosophila melanogaster*: Insight into the mechanisms of rapid cold-hardening. (Co-Supervisor with Drs Steve Roberts and Allen Gibbs).

Thesis Examination

- 2005 External Examiner for PhD Thesis submitted by E.M. Hugo, Faculty of Agriculture, University of Stellenbosch, South Africa.

Undergraduate Research Supervision

(University of Otago)

Ecology 313 - Ecology Field Course. Terrestrial arthropods and alpine environments, including supervision of project groups and design of structured activities (2000, 2001).

Zoology 312 - Parasitology (1997). Parasites of native New Zealand cockroaches.

Zoology 313 - Environmental Physiology (1996, 1997). Cold tolerance of Collembola. (2000) Thermal ecology of mealworms, Cold tolerance of cockroaches, Drought Tolerance of Mealworms (2001).

Zoology 315 - Behavioural Ecology (1996). Biology of cave weta in the Dunedin area.

Graduate Level Teaching

(University of Otago)

Ecology 450 - Special Topic (Cold Climate Ecosystems). Module leader 'Insect Cold Tolerance' (2000), Antarctic Terrestrial Invertebrates (2001).

Zoology 413 – Environmental Physiology. Insect Cold Tolerance (2001).

Zoology 402 - Techniques of Wildlife Management (1997). Field trip and discussion leader on sampling design, handling invertebrates and the Alpine habitat.

Undergraduate Level Teaching

(University of Stellenbosch)

Soölogie 244 – Functional Biology of Invertebrates (2002, 2003). Guest lectures on Anhydrobiosis; Laboratory on interpreting microclimate data using Microsoft Excel Macros. Supercooling points (Laboratory, 2003)

BDE 244 – Biodiversity and Ecology (2004). Guest lectures on the scientific method, experimental design and writing and publishing a paper in ecology.

(University of Otago)

Lectures

Zoology 313 - Environmental Physiology (1999, 2000, 2001) Insect Cold and Drought Tolerance.

Practical Coursework – Demonstrating

Ecology 201 – Applied Ecology (2001) – Senior Demonstrator for semester-long experimental project (Maternity Leave Position).

Biology 111 - Biology of Cells (1997-2001) (Including Senior Demonstrating/lab supervision responsibilities).

Biology 112 - Biology of Animals (1997-2000) (Including Senior Demonstrating).

Genetics 212 - Introduction to Eukaryotic Genetics (2000).

Zoology 316 - Introduction to Biological Data Analysis and Computing (1997).

Other

Departmental Statistics Advisory Team member (1997-2001).

Research Activities

Research Grants Pending

2005 Principal Investigator, National Institutes of Health R21 (Exploratory/Developmental) 'Cryopreservation of the Model Organism *Drosophila melanogaster*'. Co-Investigators: S.P. Roberts, A.G. Gibbs (UNLV), V. Kostal (Czech Academy of Sciences). US\$ 406,375.

This grant has been awarded a priority score of 130 (on a scale of 100[good] to 500) and consequently has a very high probability of being funded, subject to budgetary approval.

Research Grants Received

2004 South African National Antarctic Programme. 'Cumulative impacts of environmental stress on indigenous and introduced species'. (Co-Principal Investigator with Prof. S. L. Chown).

ZAR43000 plus support-in-kind of ZAR100 000.

2003-2004 National Geographic Society 'Cold tolerance of Southern African insects' (Principal Investigator).

US\$ 15,751

2002-2003 Logistic support from Antarctica New Zealand for Event K140 Biology of Antarctic Springtails (Event Leader and Co-Principal Investigator with Prof. S. L. Chown). Support-in-kind of NZ\$ 263,000.

2001-2004 New Zealand Science and Technology Postdoctoral Research Fellowship 'Ecophysiology of Arthropods living in extreme environments'. NZ\$ 201,482

1998-2000 National Geographic Society (Principal Investigator) Ecology and physiology of microarthropods at Cape Bird, Ross Island, Antarctica. US\$ 8,765

1998 Visiting Scientist Expenses, Terrestrial and Freshwater Life Sciences, British Antarctic Survey. £ 500.

1997-2000 Logistic support from Antarctica New Zealand for Event K067 Ecology of terrestrial Antarctic fauna (Field Leader, with Dr D. A. Wharton [Principal Investigator]). Support-in-kind of c. NZ\$ 100,000.

1997 - 1999 Miss E. L. Hellaby Indigenous Grasslands Research Trust (Principal Investigator) 'Ecophysiology of New Zealand alpine insects'. NZ\$ 18,630

Current Collaborations

Dr Steve Roberts & Dr Allen Gibbs, Department of Biological Sciences, University of Nevada, Las Vegas, NV, USA

Rapid Cold-Hardening in Drosophila

A comparative approach to cryopreservation of Drosophila melanogaster larvae

(With Dr. V. Kostal, Institute of Entomology, Czech Academy of Sciences)

Prof. Steven Chown, Department of Zoology, University of Stellenbosch, South Africa

Ecophysiology of arthropods living in extreme environments.

Prof. Greg Blatch, Dept. of Biochemistry, Rhodes University, Grahamstown, South Africa

Heat Shock Protein expression in Antarctic Arthropods.

Prof. David Marshall, Department of Biology, Universiti Brunei Darussalam, Brunei.

Ecology and distribution of Continental Antarctic Mites.

Dr Gregor Yeates, Landcare Research, Palmerston North, New Zealand.

Ecology and distribution of Terrestrial Nematodes at Cape Hallett, Antarctica.

Dr B. Janse van Rensburg & Dr M. Robertson, Department of Zoology and Entomology, Univ. Pretoria, South Africa

Ecology of Invertebrates in the Drakensberg Mountains.

Research Visits

2003 Prof. David Marshall. Discipline of Zoology, University of Durban-Westville, South Africa.

Prof. Greg Blatch, Department of Biochemistry, Rhodes University, South Africa.

2002 Dr Jan Crafford. Department of Zoology, University of Venda, South Africa.

2001 Dr Philippe Vernon. Station Biologique, Paimpoint. Université Rennes 1, France.

Dr Martin Holmstrup & Ms Heidi Sjursen. Department of Terrestrial Ecology, National Environmental Research Institute, Silkeborg, Denmark.

Dr Hans Ramløv. Institute of Life Sciences and Chemistry, Roskilde University, Denmark.

1998 Dr M. Roger Worland & Prof. W. Block. Terrestrial and Freshwater Life Sciences, British Antarctic Survey, Cambridge, UK.

Research Skills and Experience

- Supervision of paid and volunteer field and research assistants.
- Insect ecophysiology: Cold tolerance, Gas Chromatography, Open-flow respirometry, Nanoliter Osmometry, Enzyme assay, SDS-PAGE and 2-dimensional protein electrophoresis, Western Blots, Long oligonucleotide cDNA microarrays, qRT-PCR.
- Data analysis, including standard and computer-intensive techniques. Experience with a variety of software including R, SAS, Statistica, PRIMER, CANOCO, BLOSSOM and Minitab.
- Planning and conducting fieldwork in New Zealand mountain and lowland areas, Antarctica, sub-tropical forest, desert and mountains in Southern Africa, sub-Antarctic Marion Island. Volunteer fieldwork throughout New Zealand including Botany, Zoology, Conservation and Glaciology.

Peer Review for Scientific Journals

Acta Oecologica
Canadian Journal of Zoology
Comparative Biochemistry and Physiology
CryoLetters
Ecological Entomology
Ecology
European Journal of Entomology
Functional Ecology

Great Lakes Entomologist
Integrative and Comparative Biology
Journal of Experimental Biology
Journal of Insect Physiology
Physiological Entomology
Polar Biology
South African Journal of Science
Trends in Ecology and Evolution

Peer Review for Granting Agencies

Australian Antarctic Division
Czech Academy of Sciences
Natural Environment Research Council (UK)

National Geographic Society
National Science Foundation (USA)

Professional Memberships

New Zealand Ecological Society
New Zealand Entomological Society

Royal Society of New Zealand
Society for Integrative and Comparative Biology

Committees and Administrative Duties

International

Convenor, Animal Cold Hardiness Discussion List
(more than 50 members in over 15 countries).
Contact bjjs@sun.ac.za

National Level

Convenor, New Zealand Ecological Society and
Ecological Society of Australia Joint Student
Session (1998).

Best student presentation judge, SICB divisions of
Ecology and Evolution and Comparative
Physiology and Biochemistry (2005).

University Level

Founder, University of Stellenbosch Post-Doctoral
Society (2001), Chairperson, Executive
Committee (2002, 2003).

Department Level

Convenor, Seminar Series, Department of Zoology,
University of Stellenbosch (2002)

Activity: Insects in cold places. Hands-on-Science
Summer School (1996, 1998, 1999, 2000).

Organising Committee:

Zoology Annual Colloquium (1996),

Zoology Revue (1996),

Zoology Stand for Otago Careers Expo (1996),

New Zealand Postgraduate Life Sciences Conference
(2000).

Zoology Department Research and Postgraduate

Teaching Strategic Planning Committee (1998).

Staff-Student Liaison Committee Representative (1993,
1996).

External

Chairperson of Entomological Society of New Zealand
Otago Branch (2000,2001),

Organiser of 'Creepy Creature ID Parade', Dunedin
International Science Festival (2000).

Research Output

35 Papers in peer-reviewed journals; 2 report contributions; 1 book review; 11 invited seminars; 27 conference presentations.

Peer-reviewed Journal Publications

In Press

Sinclair, B.J. & Chown, S.L. Rapid cold-hardening in a Karoo beetle, *Afrinus* sp. *Physiological Entomology*.

Sinclair, B.J. & Stevens, M.I. Terrestrial microarthropods of Victoria Land and Queen Maud Mountains, Antarctica: implications of climate change. *Soil Biology & Biochemistry*.

Sinclair, B.J., Terblanche, J.S., Scott, M.B., Blatch, G., Klok, C.J. & Chown, S.L. Environmental physiology of three species of springtail at Cape Hallett, North Victoria Land, Antarctica. *Journal of Insect Physiology*.

2005

Parr, C.L., **Sinclair, B.J.**, Anderson, A.N., Gaston, K.J. & Chown, S.L. (2005) Constraint and competition in assemblages: a cross-continental and modelling approach for ants. *American Naturalist* **165**: 481-494.

Sinclair, B.J. & Chown, S.L. (2005) Deleterious effects of repeated cold exposure in a sub-Antarctic caterpillar. *Journal of Experimental Biology* **208**: 869-879.

Sinclair, B.J. & Chown, S.L. (2005) Climatic variability and hemispheric differences in insect cold tolerance: Support from southern Africa. *Functional Ecology* **19**: 214-221.

Sinclair, B.J. & Chown, S.L. (2005) Caterpillars benefit from thermal ecosystem engineering by Wandering Albatrosses on sub-Antarctic Marion Island. *Biology Letters* DOI: 10.1098/rsbl.2005.0384.

Sinclair, B.J. & Roberts, S.P. (2005) Acclimation, shock and hardening in the cold. *Journal of Thermal Biology* **30**: 557-562.

Terblanche, J.S., **Sinclair, B.J.**, Klok, C.J., McFarlane, M.L. & Chown, S.L. (2005) The effects of acclimation on thermal tolerance, desiccation resistance and metabolic rate in *Chirodica chalconota* (Coleoptera: Chrysomelidae). *Journal of Insect Physiology* **51**: 1013-1023.

2004

Chown, S.L., **Sinclair, B.J.**, Leinaas, H.P. & Gaston, K.J. (2004) Hemispheric asymmetries in biodiversity – A serious matter for ecology. *PLoS Biology*. DOI: 10.1371/journal.pbio.0020406

Klok, C. J., **Sinclair, B. J.** & Chown, S.L. (2004) Upper thermal tolerance and oxygen-limitation in terrestrial arthropods. *Journal of Experimental Biology* **207**: 2361-2370.

Nondula, N., Marshall, D.J., Baxter, R., **Sinclair, B.J.** & Chown, S.L. (2004) Life history and osmoregulatory ability of *Telmatogeton amphibius* (Chironomidae) at Marion Island. *Polar Biology* **27**: 629-635.

Sinclair, B.J., Klok, C.J & Chown, S.L. (2004) Metabolism of the sub-Antarctic caterpillar *Pringleophaga marioni* during cooling, freezing and thawing. *Journal of Experimental Biology* **207**: 1287-1294. (Featured article)

Sinclair, B.J., Marshall, D.J., Singh, S., & Chown, S.L. (2004) Cold tolerance of Littorinidae from Southern Africa: Intertidal snails are not constrained to freeze tolerance. *Journal of Comparative Physiology B* **174**: 617-624.

Williams, C.M., Poulin, R. & **Sinclair, B.J.** (2004) Increased haemolymph osmolality suggests a new route for behavioural manipulation of *Talorchestia quoyana* (Amphipoda: Talitridae) by its mermithid parasite. *Functional Ecology* **18**: 685-691.

2003

Sinclair, B.J., Klok, C.J., Scott, M.B., Terblanche, J.S. & Chown, S.L. (2003) Diurnal variation in supercooling points of three species of Collembola from Cape Hallett, Antarctica. *Journal of Insect Physiology* **49**: 1049-1061.

Sinclair, B.J., Vernon, P., Klok, C.J. & Chown, S.L. (2003) Insects at Low Temperatures: An Ecological Perspective. *Trends in Ecology and Evolution* **18**: 257-262.

Sinclair, B.J., Addo-Bediako, A. & Chown, S.L. (2003) Climatic variability and the evolution of insect freeze tolerance. *Biological Reviews* **78**: 181-195.

Sinclair, B.J. & Chown, S.L. (2003) Rapid cold hardening responses to high temperature and desiccation, but not to low temperature in the freeze tolerant sub-Antarctic caterpillar *Pringleophaga marioni* (Lepidoptera, Tineidae). *Journal of Insect Physiology* **49**: 45-52.

2002

Sinclair, B.J. & Chown, S.L. (2002) Haemolymph osmolality and thermal hysteresis activity in 17 species of arthropods from sub-Antarctic Marion Island. *Polar Biology* **25**: 928-933.

Sinclair, B.J. (2002) Effects of increased temperatures simulating climate change on terrestrial invertebrates on Ross Island, Antarctica. *Pedobiologia* **46**: 150-160.

Sjursen, H. & **Sinclair, B.J.** (2002) On the cold hardiness of *Stereotydeus mollis* (Acari: Prostigmata) from Ross Island, Antarctica. *Pedobiologia* **46**: 188-195.

2001

Sinclair, B.J. (2001) Biologically relevant environmental data: Macros to make the most of microclimate recordings. *CryoLetters* **22**: 125-134.

Sinclair, B.J. (2001) Field Ecology of Freeze-Tolerance: Interannual variation in cooling rates, freeze-thaw and thermal stress in the microhabitat of the alpine cockroach *Celatoblatta quinque maculata*. *Oikos* **93**: 286-293.

Sinclair, B.J. (2001) On the distribution of Terrestrial invertebrates at Cape Bird, Ross Island, Antarctica. *Polar Biology* **24**: 394-400.

Sinclair, B.J., Lord, J.M. & Thompson, C.M. (2001) Microhabitat selection and seasonality of alpine invertebrates. *Pedobiologia* **45**: 107-120.

Sinclair, B.J. & Sjursen, H. (2001) Cold tolerance of the Antarctic springtail *Gomphiocephalus hodgsoni* (Collembola: Hypogastruridae). *Antarctic Science* **13**: 271-279.

Sinclair, B.J. & Sjursen, H. (2001) Terrestrial invertebrate abundance and habitat in Keble Valley, Ross Island, Antarctica. *Pedobiologia* **45**: 134-145.

2000

Sinclair, B.J. (2000) Water relations of the freeze-tolerant New Zealand alpine cockroach *Celatoblatta quinque maculata* (Dictyoptera: Blattidae). *Journal of Insect Physiology* **46**: 869-876.

1999

Sinclair, B.J. (1999) Insect cold tolerance: How many kinds of frozen? *European Journal of Entomology* **96**: 157-164.

Sinclair, B.J., Worland, M.R., & Wharton, D.A. (1999) Ice nucleation and freezing tolerance in New Zealand alpine and lowland weta, *Hemideina spp.* (Orthoptera; Stenopelmatidae). *Physiological Entomology* **24**: 56-63.

1998

Block, W., Wharton, D.A. & **Sinclair, B.J.** (1998) Cold tolerance of a New Zealand alpine cockroach, *Celatoblatta quinque maculata* (Dictyoptera: Blattidae). *Physiological Entomology* **23** 1-6.

1997

Sinclair, B.J. (1997) Seasonal variation in freezing tolerance of the New Zealand alpine cockroach *Celatoblatta quinque maculata*. *Ecological Entomology* **22**: 462-467.

Sinclair, B.J. & Wharton, D.A. (1997) Avoidance of Intracellular Freezing by the New Zealand Alpine Weta *Hemideina maori* (Orthoptera: Stenopelmatidae). *Journal of Insect Physiology* **43**: 621-625.

Worland, M.R., **Sinclair, B.J.** & Wharton, D.A. (1997) Ice nucleator activity in a New Zealand alpine cockroach *Celatoblatta quinque maculata* (Dictyoptera: Blattidae). *Cryo-Letters* **18**: 327-334.

Manuscripts in Review

Sinclair, B.J., Scott, M.B., Klok, C.J., Terblanche, J.S., Marshall, D.J., Reyers, B. & Chown, S.L. A survey of terrestrial arthropods at Cape Hallett, North Victoria Land, Antarctica. Submitted to *Antarctic Science*.

Deere, J.A., **Sinclair, B.J.**, Marshall, D.J. & Chown, S.L. Phenotypic plasticity of thermal tolerances in five oribatid mite species from sub-Antarctic Marion Island. Submitted to *Journal of Insect Physiology*.

Report Contributions

McCarthy, J. J., Canziani, O. F., Leary, N. A., Dokken, D. J. & White, K. S. (eds). (2001). *Climate Change 2001: Impacts, Adaptations and Vulnerability*. Intergovernmental Panel on Climate Change (IPCC), Geneva. (Contributor to Chapter 16: Polar Regions (Arctic and Antarctic), edited by O. Anisimov & B. Fitzharris).

Waterhouse, E. J. (ed.) (2001). *Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica*. Antarctica New Zealand, Christchurch. (Contributor to Terrestrial Biology Chapter).

Book review

Sinclair, B. J. (2002). Insect Giants – Out of the Grey. Review of: Field, L. (ed.) 2001. *The Biology of Wetas, King Crickets and their Allies*, CABI, Oxford. *New Zealand Journal of Ecology* **26**: 91-92.

Invited Seminars

Sinclair, B.J. (2004) What happens when caterpillars freeze and thaw (and freeze and thaw, and freeze and thaw...)? School of Biological Sciences, Monash University, Melbourne, Australia.

(2005) Department of Biological Sciences, University of Nevada, Las Vegas, NV, USA.

Department of Biological Sciences, Simon Fraser University, Vancouver, Canada.

Sinclair, B.J. (2003) Insect Cold Tolerance in the Lab, Field, and Future.

Institute of Arctic Biology, University of Alaska, Fairbanks, AK, USA.

Department of Biochemistry and Department of Zoology and Entomology, Rhodes University, South Africa.

Sinclair, B.J., Klok, C. J., Scott, M.B. & Terblanche, J. S. (2003). Report-back on 2002/03 Antarctic field season.

Antarctica New Zealand Christchurch Office, February 2003.

Dept. of Zoology, Univ., Stellenbosch Research Seminar March 2003.

School of Life Sciences and Engineering, University of Durban-Westville, South Africa.

Sinclair, B. J., Addo-Bediako, A. & Chown, S. L. (2001). Why are there so many freeze tolerant insects in the Southern Hemisphere?

Keynote address, Dept. of Zoology, University of Stellenbosch Departmental Research meeting.

Sinclair, B. J. (2001). Antarctic Springtails: Cold Tolerance, Climate Change and Conservation.

Department of Zoology, University of Otago, New Zealand.

Université Rennes 1, Station Biologique, Paimpont, France.

Conference Presentations and Posters

Underlined = presenting author, *asterisk marks poster presentations. Last five years shown.

Sinclair, B.J. & Roberts, S.P. (2005). 26 easy measures of insect cold tolerance.

International Symposium on environmental physiology of ectotherms and plants, Roskilde, Denmark.

White Mountain Research Station physiological ecology meeting, Bishop, CA, USA.

Sinclair, B.J. & Chown, S.L. (2005). Climatic variability and hemispheric differences in insect cold tolerance: Support from southern Africa.

Society for Integrative and Comparative Biology, San Diego, CA, USA.

Sinclair, B.J., Klok, C.J. & Chown, S.L. (2004). Metabolism of the sub-Antarctic caterpillar *Pringleophaga marioni* during cooling, freezing and thawing.

*3rd International Conference of Comparative Physiology and Biochemistry in Africa, Ithala, South Africa.

XXII International Congress of Entomology, Brisbane, Australia.

Chown, S.L., **Sinclair, B.J.** & Klok, C.J. (2004). Insect Cold Hardiness: phylogenetic signal, ecological pattern and evolutionary implications.

3rd International Conference of Comparative Physiology and Biochemistry in Africa, Ithala, South Africa.

Klok, C.J., Terblanche, J.S., **Sinclair, B.J.** & Chown, S.L. (2004). Critical Thermal Limits: new insights from respirometry.

3rd International Conference of Comparative Physiology and Biochemistry in Africa, Ithala, South Africa.

Chown, S.L., **Sinclair, B.J.**, Klok, C.J., & Mercer, R.D. (2004). Physiological flexibility and biological responses to climate change.

Shipboard science seminar, SA Agulhas Voyage 115, Marion Island relief April 2004.

Sinclair, B.J., Addo-Bediako, A. & Chown, S.L. (2004). Biogeography and climatic variability as drivers of terrestrial arthropod cold tolerance strategies: Is the cold different in the Southern Hemisphere?

Southern Connections IV, Cape Town, South Africa.

Chown, S.L., Klok, C.J., **Sinclair, B.J.** & Terblanche, J.S. (2003). Physiological flexibility and biological responses to climate change.

Climate Change Symposium, National Botanical Institute, Kirstenbosch, Cape Town, South Africa.

- Parr, C.L., Sinclair, B.J., Andersen A.N., Robertson, H.G. & Chown, S.L. (2003). Competition and the regulation of ant assemblages: Convergence of pattern and mechanism across multiple scales.
British Ecological Society Annual Meeting. Manchester, U.K.
Southern Connections IV, Cape Town, South Africa (2004).
- Sinclair, B.J., Klok, C.J., Scott, M.B., Terblanche, J.S. & Chown, S.L. (2003). Diurnal SCP variation in collembola at Cape Hallett, Antarctica.
*VIII International Symposium on Cold Hardiness of Animals and Plants, Ceske Budejovice, Czech Republic.
- Sinclair, B.J. & Chown, S.L. (2003). Rapid Cold Hardening in the sub-Antarctic caterpillar *Pringleophaga marioni*.
Zoological Society of Southern Africa. Cape Town, South Africa.
- Klok, C.J., Terblanche, J.S., Sinclair, B.J. & Chown, S.L. (2003). Thermal limit respirometry in Tsetse.
Zoological Society of Southern Africa. Cape Town, South Africa.
- Scott, M.B., Dickinson, K.J.M, Barratt, B.I.P. & Sinclair, B.J. (2001) Winter microclimates and the distribution of invertebrates within alpine hummock formations.
*5th Invertebrate Biodiversity and Conservation Conference, Adelaide, Australia.
- Sinclair, B. J., Addo-Bediako, A. & Chown, S. L.(2001). Why are there so many freeze tolerant insects in the Southern Hemisphere?
IV European Workshop on Invertebrate Ecophysiology, St Petersburg, Russia.
- Sinclair, B. J. & Sjørnsen, H. (2001). Cold tolerance of the Antarctic Springtail *Gomphiocephalus hodgsoni*.
*VIII SCAR International Biology Symposium, Amsterdam, The Netherlands.
- Sinclair, B. J. (2000). Winter ecology of the New Zealand alpine cockroach *Celatoblatta quinque maculata*.
Temp2000 - VII International Symposium on Cold hardiness in Animals and Plants, Victoria, BC, Canada.
CryoLetters **21**: 198.
- Sinclair, B. J. (2000). Winter and the alpine cockroach *Celatoblatta quinque maculata*: A stressful time of life?
New Zealand Postgraduate Life Sciences Conference, Dunedin, New Zealand.
The Miss E. L. Hellaby Indigenous Grasslands Research trust Tenth Seminar, Dunedin, New Zealand.
- Sinclair, B. J. (2000). Why are there so many freeze tolerant insects in the Southern Hemisphere?
Ecology, Biodiversity and Conservation Research Group Evolutionary Ecology Symposium, Dunedin, New Zealand.

Science Communication

Public Talks

- Sinclair, B.J.** (2002). Polar and alpine adventures. Mountain Club of South Africa Stellenbosch Section.
- Sinclair, B.J.** (2001). Ecology and Physiology of New Zealand Alpine Insects. Forest and Bird Otago Branch.
- Sinclair, B. J.** (2000). The Compleat Polar Entomologist. Otago Section of the New Zealand Alpine Club.
- Sinclair, B. J.** (2000). Antarctic Entomology. Otago Tramping and Mountaineering Club; Entomological Society of New Zealand Otago Branch.
- Sinclair, B. J.** (1999). Overwintering Ecology of Otago's Alpine Cockroaches. The Entomological Society of New Zealand Otago Branch.
- Sinclair, B. J.** (1997). Lifestyles of the Cold and Crunchy. The Entomological Society of New Zealand Otago Branch.

Popular Science Writing

- Sinclair, B.J.** (in press). Cold Hardiness. In: Riffenburgh, B. (ed.) *Encyclopedia of the Antarctic*. Routledge: New York.
- Sinclair, B.J.** & Terblanche, J.S. (2004). On Ice. *Men's Health* (South African Edition), April – 180-186.
- Sinclair, B.J.** (2003). Icy Resilience the Key to Survival in Antarctica's Land Animals. *Science in Africa*
<http://www.scienceinAfrica.co.za/2003/november/springtail.htm>
- Sinclair, B. J.** (2000). Antarctica: Realm of the Springtail. *New Zealand Alpine Journal* 113-114.
- Sinclair, B. J.** (1998). Lifestyles of the cold and crunchy. *Australasian Science* **19(9)**: 30-32.
- Sinclair, B. J.** (1996). Feature Creature: The Antarctic springtail *Cryptopygus antarcticus* Star Weekender 1 September 1996.

Television Programme Involvement

- One day of filming for Natural History New Zealand Limited/National Geographic documentary 'Iceworlds'.
- Two days of filming and advice for Danish Television production 'Viden Om'.
- Advice for segment of 'What Now?' 16 April 2000. Television New Zealand.
- 'Frozen Wetas' *Get Real* 27 May 1996. Taylormade productions/Television New Zealand.

Printed and News Media Involvement

- Press releases and associated newspaper articles in South Africa and New Zealand associated with 2002/03 Antarctic trip.
- Title page story: 'Research Update'. National Geographic Magazine, February 2001.
- 'Chilling Out in Antarctica'. Earth Almanac. National Geographic Magazine, July 2000.
- 'Rock and Pillar Weta freezes solid in winter'. Neville Peat. Otago Daily Times Wednesday Magazine, 14 August 1996.