

CV for Lawrence R. Kirkendall

Born: 29 Nov. 1950

Nationality: USA (permanent resident, Norway; fluent in Norwegian)

Present position: Professor of Biology

Academic degrees (USA): Ph.D., Univ. Michigan, 1981; B.A., Univ. California, Santa Cruz, 1973

Work experience (1992-present*)

Professor of Biology, University of Bergen (2011–present)

Associate Professor of Biology, University of Bergen (1996–2011)

Adjunct Professor, School of Agronomy, Univ. of Costa Rica (1995)

Assistant Professor of Zoology, University of Bergen (1992–1996)

*prior to Nov. 1992, I held a series of postdoc's and temporary positions, at Norwegian Inst. Forest Research (1991-1992) and Univ. Oslo (1981-1990). I was also a guest researcher for 8 months (1990) at University of Lund (Sweden). During my PhD studies, I was a Research Assistant in the Museum of Zoology, and Teaching Assistant for various biology courses, at Univ. Michigan. Prior to beginning the PhD program, I worked for one year as a California State Park Ranger.

Research interests and activities

My research focuses primarily on (1) the evolutionary and ecological consequences of regular inbreeding as an alternative to outbreeding (focusing on bark beetles), and (2) biodiversity patterns (and taxonomy) of American bark beetles. My coworkers and I are studying population structure and phylogeography of endemic and cosmopolitan inbreeding bark beetle complexes (using morphology, AFLP, microsatellites, and DNA sequencing); the taxonomy of cryptic bark beetle species complexes (morphology, RFLP, sequencing); and patterns in biodiversity such as elevational and latitudinal gradients in species richness. I collaborated from 1994 to 2005 with a longterm international biodiversity inventory project in Costa Rica ("ALAS"). Finalizing and analysing that dataset (ca 600 species, ca 35,000 specimens) will be the primary focus of my next decade of research, and involves collaborations with Norwegian and international researchers. In particular, I will be using this database to test hypotheses for (1) why inbreeding is so successful in tropical bark beetles, (2) elevational gradients in species richness, (3) effects of host plant diversity on species richness of phytophagous insects, and (4) ecological determinants of success for alien species. I recently reviewed bark beetle evolution and diversity, including the first overview of resource use and mating system data for the entire Scolytinae subfamily (247 genera) (81-page book chapter: Kirkendall et al., 2015). Over the next decade or so, I will also be writing several more collaborative bark beetle review papers, and a series of taxonomic papers and producing identification tools for selected groups of neotropical bark beetles which are especially well represented in these collections.

Parallel to this, I am continuing to address the question of the costs and benefits of sexual reproduction (see publication list: "**Parthenogenesis and sex**", especially Meirmans et al., 2012 in Quarterly Review of Biology). Stephanie Meirmans and I are working on a comprehensive review of the phylogenetic distribution of regular inbreeding, and on a theoretical paper comparing inbreeding, parthenogenesis, and outbreeding.

Because inbreeders extremely good dispersers, they are a significant component of bark beetle faunas, and this has led to a continuing interest in **invasion biology** (see publication list). I recently wrote the first review of invasive bark beetles of Europe (Kirkendall and Faccoli, 2010) and contributed to a book chapter on the topic (Sauvard et al., 2010). I have two new MSc students who will study competition between invasive inbreeding and outbreeding seed beetles.

Finally, my growing involvement in bark beetle taxonomy (using both morphological and molecular characters) has led to the start of what will be series of descriptions and revisions, over the next decade, and has resulted in my being recruited as a subject editor for the leading zoological taxonomy journal, *Zootaxa*.

As is reflected in my publications, I have conducted field work in Norway, Costa Rica (every year 1994–2005), Canary Islands, Madeira, Chile, USA, Bangladesh, Panama, Belize, the Seychelle islands, Bulgaria, and China.

Project leadership, academic and professional committees, scientific review work, public outreach

Major grants

Initiated and led, "Applications of Molecular Techniques in Phylogenetic Biology", NFR, 1998-1999, kr. 1.0 millioner, and a Strategisk Univ. Program 2000-2003, NFR, "Applications of Molecular Techniques in Systematic Biology", kr. 8.1 millioner.

Project leader, NFR project, "Plural approaches in evolutionary biology; the adaptive significance of sex", kr. 1.5 millioner, carried out by PhD student Stephanie Meirmanns (*née* Hamm).

International consulting (see publication list: "FAO reports")

Consultant, UN Food & Agric. Organization: Southern beech decline and ambrosia beetles, Chile (2007)

Consultant, Norwegian Forestry Group: Bark beetle outbreak in Belize (2004)

Consultant, UN Food & Agric. Organization: Platypodines and dying sandragon trees, Seychelles (2003)

Informal consultations, plant protection agencies of The Netherlands, Chile and Costa Rica (various years).

Academic and professional committees

I have participated in a variety of departmental or faculty committees, mostly regarding teaching but also committees re-organizing biology and re-organizing biology teaching for the newly formed Biology Department. Currently, I am on the department chair's advisory committee (*instituttrådet*: elected, 2013-17) and the Master degree teaching committee.

Internationally, I served one term (2001-2004) as a Council Member for the European Society of Evolutionary Biology.

TEACHING COMMITTEES, NATIONAL

University representative, National Panel on Biology Grading (2010-11)

University representative, National Reference Panel for Biology (2006-7)

Faculty representative, National Reference Panel for Biology (2004-05)

TEACHING COMMITTEES, UNIVERSITY- OR FACULTY-LEVEL (Natural Sciences Faculty)

Faculty committee to improve English competence (2006)

Biology representative, University hearing on Quality Reform (2006)

Faculty education committee (2003-2004)

Quality Reform Working Group

TEACHING COMMITTEES, DEPARTMENTAL (after biology re-organization)

Member of committee re-organizing biology teaching, 2008-2009

Headed the teaching committee responsible for Masters students in biodiversity, evolution and ecology

(*Masterstyret I*, 2006-2008), and member of the department-level committee (2004-2009), and Master degree teaching committee (2009 – present)

External Postgraduate Committees

Paal Krokenes, University of Oslo, 1996 (PhD); Katharina Peer, University of Bern, Switzerland, 2004 (PhD); Karolina Koivisto, University of Bangor, Wales, 2008 (MSc); Trond Erling Barstad, Norw. Univ. Life Sciences, 2006 (MSc).

External Examiner, PhD

Ivar Mysterud, University of Oslo, 2005

Representation, national meetings

I represented the Department of Biology at the national dialogue meeting about the newly formed International Panel for Biodiversity and Ecosystem Services - IPBES (2012). I also represented the Univ. Bergen at the Norway/UNEP Expert Conference on Biodiversity (Trondheim, 1993), and I represented the Natural Sciences Faculty at the Global Biodiversity Information Facility (GBIF) meeting in Oslo (2003).

Organizing workshops and symposia, international lecturing, training non-Univ. Bergen students

Member of the committee which arranged the international Bergen Summer Research School course "Surf & Turf: Ecological Perspectives on Food Production from Marine and Terrestrial Systems", and chaired the discussion "Food or biodiversity vs Food and biodiversity: Whither conservation?" (June 2013)

Held two lectures (in Spanish), International Course on Forest Protection, Medellín, Colombia (2008)

Held a workshop on taxonomy and biology of bark beetles, Univ. Medellín, Colombia (2008)

Held a workshop on taxonomy and biology of bark beetles, Univ. Austral de Chile, Valdivia, Chile (2007)

Held two lectures on biodiversity, Beijing Normal University, Beijing, China (2004)

Lectured and led student field projects, for Organization of Tropical Studies and University of Costa Rica field ecology courses, Costa Rica (2003-2006)

Co-organizer, a workshop on Sandragon Wilt Disease, Mahe, Seychelles (2003)

Co-organizer, European Entomology Congress workshop on bark beetle and timber borer taxonomy, Ceske Budjovice, Czech Republic (1998)

Helped organize a symposium (Oslo, Norway) then co-edited resultant collection of papers with Nils Chr. Stenseth: special section of *Holarctic Ecology* (1989) on bark beetle population dynamics (21 contributions, 151 pp.)

Co-organizer with N. C. Stenseth a Nordic Researcher Course "Geographic Parthenogenesis" (1986, one-week course, Finse, Norway, budget Dkr 250,000)

Field training, bark beetle ecology, PhD student from USA (1)

Training professionals and MSc students in bark beetle taxonomy: Argentina forest service (1); Univ. Panama (1), Norwegian Univ. of Life Sciences (1)

Hosted and advised a Fulbright Scholar from the USA (academic year 2003-2004)

Peer review

I regularly review manuscripts for a wide variety of journals in evolution, ecology and taxonomy, but my main contribution to reviewing is as a subject editor for the foremost journal in animal taxonomy, *Zootaxa*, where I am responsible for Scolytinae and Platypodinae. I am also occasionally asked to review scientists (e.g. for Smithsonian Tropical Research Institute) and grant proposals from other countries (most recently, Austria and Switzerland).

Recent invited talks (international meetings)

2012. "Bark beetles in live plants." Pacific Coast Entomological Society, San Francisco, California.

2011. "Ecological genetics of a successful invasive generalist ambrosia beetle, *Xylosandrus morigerus*, in Costa Rica". Fourth Workshop on Genetics of Bark Beetles and Associated Microorganisms (University of West Hungary, Sopron) .

2011. "Native ambrosia beetles (*Gnathotrupes* spp.) and Southern Beech Decline in Chile." Novel risks with bark and wood boring insects in broadleaved and conifer forests (University of West Hungary, Sopron).

2008. "Climate change and the primary threats to biodiversity in Latin America." NOLAN 2008 - Latin American Futures. Bergen, Norway.

2004. "Biodiversity of tropical rainforest bark beetles and timber borers: results from the ALAS project." 52nd Annual Meeting of the Entomological Society of America, Salt Lake City, Utah.

2004. "What can we learn about sex, from studying extreme inbreeding?" PARTNER workshop 3: "Diversity in Asexuals - Patterns and Processes". Muenster, Germany.

2002. "Biodiversity of Tropical Rainforest Bark Beetles and Timber Borers: Results from an Intensive Survey." Association for Tropical Biology and Conservation, Annual Meeting, Panama City, Panama.

Recent public lectures

- Biology Department seminar, 2013: "Adaptive incest: the ecology and evolution of extreme inbreeding."
BFU, 2012: "Extreme inbreeding: why, when, where?" (Student Society of Biologists, *Biologisk fagutvalg*)
BFU, 2011: "From puppet to puppet master: humans as an evolutionary force"
- Darwinsdag* 2014: I arranged a half-day symposium at Haukeland Univ. Hospital "Evolution and Medicine", and held a lecture "What is Darwinian Medicine, and should it matter to me?" (in collaboration with Med.-Odont. faculty)
- Darwinsdag* 2008: "*Mennesket som evolusjonær drivkraft*" (Darwin Day, "Human-driven evolution")
Fag.-Ped. dag 2013: "*Hva er en art?*" (Continuing education for teachers: "What is a species?")
Fag.-Ped. dag 2006: "*Hvorfor forsker vi? Grunnforskningens rolle i vårt samfunn*" ("Why do we research? The role of basic research in society")
Fag.-Ped. dag 2004: I organized a half-day seminar on biodiversity including a lecture by me.
Fag.-Ped. dag 2000: "*Gener til glede og besvær*" ("Genes, for good and bad", on current advances in biotechnology, with Endre Willassen)

Science and Philosophy seminars, 2007: "Genetic manipulation of plants and animals: Facts, fears, and fantasies"

Teaching and student advising

I am focusing now on improving my teaching by incorporating more active learning into my courses. I was on the committee which wrote the recent, successful application to make our biology department a Center for Excellence in Teaching (SFU, "BioCEED", 5 year grant).

I have developed five new courses, including current courses BIO301 "Current Topics in Biodiversity, Evolution and Ecology" (required for all biology MSc students), BIO299 "Research Project in Biology" and BIO341 "Biodiversity", and two previous courses, "Molecular Ecology" (one year only) and "Sociobiology". I also re-designed MNF201 "Science in Our World", a course meant especially for science education students. I have taught in 10 courses and administered 6; I organized and led 3 "*hovedfagekursjoner*" (field expeditions for Masters students), to Thailand, Costa Rica, and California (USA).

In 2013, I was on the committee which arranged the international Bergen Summer Research School course "Surf & Turf: Ecological Perspectives on Food Production from Marine and Terrestrial Systems" and chaired the discussion "Food or biodiversity vs Food and biodiversity: Whither conservation? ".

I participated in the NUFU (Norwegian Council of Universities' Committee for Development Research and Education) project, "Training and Research in Tropical Zoology in Bangladesh" (project manager Torstein Solhøy, 1997-2000). I was on the steering committee for the project, and jointly responsible (with TS) for the Research Project on Mangrove Forest. In conjunction with the project I have carried out field work in the Sunderbans mangrove forest and trained a Bangladeshi PhD student

Teaching at University of Bergen

PhD students: 5

MSc & *Hovedfag* students: finished, sole or primary advisor, 23, co-advisor, 8; current, 3

Current courses Evolutionary Biology (Spring); Biodiversity (Fall); minor contributions to courses Cell Biology and Genetics, and Science in Our World

Previous courses Current Topics in Biodiversity, Evolution and Ecology; Science in our World; Evolutionary Biology for Non-Majors; Phylogeography; Molecular Ecology; Sociobiology; minor contributions, Ecology.

Nominated for teacher of the year, Mathematics and Natural Sciences Faculty (2012-13).

External teaching

PhD students: Univ. Oslo/NISK, 1 (finished 1996), Univ. Bern (Switzerland), 1 (2004)

MSc students: Univ. Oslo, 1 (1993); Norwegian University of Life Sciences, 1 (2006); Univ. Wales, 1 (2008)

Guest lecturer, field course in general ecology (BIO102) (2013, two weeks)

Guest lecturer, field courses in tropical ecology, Organisation for Tropical Studies, in Costa Rica (2003-2006, ca 2–3 days each year)

I organized and taught an intensive course in biodiversity at Chittagong Univ., Bangladesh (1997)

Lecturer/Administrator, Evolutionary Biology (University of Oslo, 1987, 1989)

Lecturer, Tropical Ecology (NORAGRIC, 1982)

Lawrence R. Kirkendall: Publications classified by topic

Most can be downloaded at <https://uib.academia.edu/LawrenceKirkendall>

ResearchGate profile: https://www.researchgate.net/profile/Lawrence_Kirkendall/stats

BIODIVERSITY

General

Kirkendall, L. R., P. H. W. Biedermann, and B. H. Jordal. 2015. Evolution and diversity of bark and ambrosia beetles, pp. 85-156. In F. E. Vega and R. W. Hofstetter [Eds], *Bark Beetles, Biology and Ecology of Native and Invasive Species*. Elsevier, San Diego.

Invasion biology

Gohli, J., T. Selvarajah, **L. R. Kirkendall**, and B. H. Jordal (In review, Feb. 2015). Anthropogenic effects are not a requirement for successful worldwide colonization in sib-mating ambrosia beetles. (**Proceedings of the Royal Society of London, Series B**)

Andersen, H. F., B. H. Jordal, M. Kambestad, and **L. R. Kirkendall**. 2012. Improbable but true: the invasive inbreeding ambrosia beetle *Xylosandrus morigerus* has generalist genotypes. **Ecology and Evolution** 2: 247-257.

Kirkendall L. R., and M. Faccoli. 2010. Bark beetles and pinhole borers (Curculionidae, Scolytinae, Platypodinae) alien to Europe. In: Cognato A. I., Knizek M. (Eds) *Sixty years of discovering scolytine and platypodine diversity: A tribute to Stephen L. Wood*. **ZooKeys** 56: 227-251. doi: 10.3897/zookeys.56.529

Sauvard, D., M. Branco, F. Lakatos, M. Faccoli, and **L. R. Kirkendall**. 2010. Weevils and bark beetles (Coleoptera, Curculionoidea). Chapter 8.2. In: Roques A. et al. (Eds) *Alien Terrestrial Arthropods of Europe*. **BioRisk** 4(1): 219–266. doi: 10.3897/biorisk.4.64.

Kirkendall, L. R., Dal Cortivo M., and E. Gatti. 2008. First record of the ambrosia beetle, *Monarthrum mali* (Curculionidae, Scolytinae) in Europe. **Journal of Pest Science** 81:175-178.

Cai, Y. W., X. Y. Cheng, R. M. Xu, D. H. Duan, and **L. R. Kirkendall**. 2008. Genetic diversity and biogeography of red turpentine beetle *Dendroctonus valens* in its native and invasive regions. **Insect Science** 15: 291-301.

Kirkendall, L. R., and F. Ødegaard. 2007. Ongoing invasions of old-growth tropical forests: establishment of three incestuous beetle species in Central America (Curculionidae, Scolytinae). **Zootaxa** 1588: 53–62.

Castillo, A., F. Infante, G. Lopez, J. Trujillo, **L. R. Kirkendall**, and F. E. Vega. 2004. Laboratory parasitism by *Phymastichus coffea* (Hymenoptera : Eulophidae) upon non-target bark beetles associated with coffee plantations. **Florida Entomologist** 87: 274-277.

Bark beetle (and ambrosia fungus) taxonomy, systematics and biogeography

Sullivan, B. T., A. Nino, B. Moreno, C. Brownie, J. Macias-Samano, S. R. Clarke, **L. R. Kirkendall**, and G. Zuniga. 2012. Biochemical evidence that *Dendroctonus frontalis* consists of two sibling species in Belize and Chiapas, Mexico. **Annals of the Entomological Society of America** 105: 817-831.

Cognato, A. I., N. Barc, M. Philip, R. Mech, A. D. Smith, E. Galbraith, A. J. Storer, and **L. R. Kirkendall**. 2010. The native and introduced bark and ambrosia beetles of Michigan (Coleoptera: Curculionidae, Scolytinae). **Great Lakes Entomologist** 42: 101-120.

- Kolarik, M., and **L. R. Kirkendall**. 2010. Evidence for a new lineage of primary ambrosia fungi in *Geosmithia* Pitt (Ascomycota: Hypocreales). **Fungal Biology** 114: 676-689.
- Zanuncio, A. J. V., Pastori, P.L., **Kirkendall, L. R.**, Lino-Neto, J., Serrao, J. E. and J. C. Zanuncio. 2010. *Megaplatypus mutatus* (Coleoptera: Curculionidae: Platypodinae) attacks hybrid *Eucalyptus* L'Heritier de Brutelle clones in southern Espirito Santo, Brazil. **Coleopterists Bulletin** 64: 81-83.
- Kirkendall, L. R.**, M. Faccoli, and H. Ye. 2008. Description of the Yunnan shoot borer, *Tomicus yunnanensis* Kirkendall & Faccoli sp n. (Curculionidae, Scolytinae), an unusually aggressive pine shoot beetle from southern China, with a key to the species of *Tomicus*. **Zootaxa** 1819: 25-39.
- Hulcr, J. , Kolarik, M., and **L. R. Kirkendall**. 2007. A new record of fungus-beetle symbiosis in *Scolytodes* bark beetles (Scolytinae, Curculionidae, Coleoptera). **Symbiosis** 43: 151-159.
- Kirkendall, L. R.** 2006. A new host-specific ambrosia beetle, *Xyleborus vochysiae* (Curculionidae: Scolytinae) from Central America, breeding in live trees. **Annals of the Entomological Society of America** 99: 211-217.
- Jordal, B. H., **Kirkendall, L. R.** and K. Harkestad. 2004. Phylogeny of a Macaronesian radiation: host-plant use and possible cryptic speciation in *Liparthrum* bark beetles. **Molecular Phylogenetics and Evolution** 31: 554-571.
- Jordal, B. H., Normark, B. B., Farrell, B. D., **Kirkendall, L. R.** 2002. Extraordinary haplotype diversity in haplodiploid inbreeders: Phylogenetics and evolution of the sib-mating bark beetle genus *Coccotrypes*. **Molecular Phylogenetics and Evolution** 23: 171-188.
- Kirkendall, L. R.**, and S. L. Wood. 2000. Cloud forest bark and ambrosia beetles (Scolytidae, Platypodidae) of Costa Rica, pages 117-118. In Nadkarni, N. M. and N. T. Wheelwright (ed.), *Ecology and Conservation of Monteverde, a Tropical Cloud Forest*. **Oxford University Press**, New York.
- Roeper, R. A., D. V. Zestos, B. J. Palik and **L. R. Kirkendall**. 1987. Distribution and host plants of *Corthylus punctatissimus* (Coleoptera: Scolytidae) in the lower peninsula of Michigan. **Great Lakes Entomologist** 20: 69-70.
- Kirkendall, L. R.** 1982. *Carphoborus dunni* (Coleoptera: Scolytidae) rediscovered, in tamarack. **Coleopterists Bulletin** 36: 400-401.

Miscellaneous biodiversity

- Secades, P., L. Wanntorp, and **L. R. Kirkendall**. (in preparation) Morphology and ecology of *Gunnera* and its hybrids. (for **Plant Systematics and Evolution**)
- Hatteland, B. A., E. Hauge, **L. R. Kirkendall**, and T. Solhøy. 2005. Dispersal abilities and breeding periods of ground beetles (Coleoptera, Carabidae) in a coastal area of central Norway. *Norwegian Journal of Entomology* 52: 49-56.
- Hatteland, B. A., E. Hauge, T. Solhøy, and **L. R. Kirkendall**. 2004. New records of Carabidae (Coleoptera) from coastal North Trøndelag, Central Norway. **Fauna Norvegica** 24: 31-35.
- Rees, D. J., Dioli, M. and **Kirkendall, L. R.** 2003. Molecules and morphology: evidence for cryptic hybridization in African *Hyalomma* (Acari: Ixodidae). **Molecular Phylogenetics and Evolution** 27: 131-142.

ECOLOGY AND EVOLUTION OF REPRODUCTIVE SYSTEMS

Parthenogenesis and sex

- Meirmans, S., Meirmans, P. G. & **Kirkendall, L. R.** (2012) The costs of sex: Facing real-world complexities. **Quarterly Review of Biology** 87: 19-40.
- Normark B. B and **L. R. Kirkendall.** 2009. Parthenogenesis in Insects and Mites, pp. 753-757. In V. H. Resh and R. T. Cardé [eds.], *Encyclopedia of Insects, 2nd edition.* **Academic Press**, Amsterdam.
- Meirmans, S., A. Skorping, Loyning, M. K. and **L. R. Kirkendall.** 2006. On the track of the Red Queen: bark beetles, their nematodes, local climate and geographic parthenogenesis. **Journal of Evolutionary Biology** 19: 1939-1947.
- Kirkendall, L. R.** and B. B. Normark. 2003. Parthenogenesis. Pages 851-856 in Resh, V. H. and Cardé, R. T. (eds.), *Encyclopedia of Insects.* **Academic Press.**
- Løyning, M. K. , and **L. R. Kirkendall.** 1996. Mate discrimination in a pseudogamous bark beetle (Coleoptera: Scolytidae): male *Ips acuminatus* prefer sexual to clonal females. **Oikos** 77: 336-344.
- Kirkendall, L. R.** 1990. Sperm is a limiting resource in the pseudogamous bark beetle *Ips acuminatus*. **Oikos** 57: 80-87.
- Kirkendall, L. R.** and N. C. Stenseth. 1990. Ecological and evolutionary stability of pseudogamy: effects of partial niche overlap between sexual and asexual females. **Evolution** 44: 698-714.
- Lanier, G. N. and **L. R. Kirkendall.** 1986. Karyology of pseudogamous *Ips* bark beetles. **Hereditas** 105: 87-96.
- Stenseth, N. C., **L. R. Kirkendall,** and N. Moran. 1985. On the evolution of pseudogamy. **Evolution** 39: 294-307.
- Deyrup, M. and **L. R. Kirkendall.** 1983. Apparent parthenogenesis in *Pityophthorus puberulus* (Coleoptera: Scolytidae). **Annals of the Entomological Society of America** 76: 400-402.
- Kirkendall, L. R.** 1981. The effects of resource quality on reproductive success in a harem polygynous bark beetle, *Pityophthorus lautus* Eichhoff. **Ph.D. dissertation, University of Michigan, Ann Arbor.**

Inbreeding: Ecology, phylogeography and evolution

- Holzman, J. P., A. J. Bohanak, **L. R. Kirkendall,** D. Gottleib, A. R. Harrari, and S. T. Kelley. 2009. Inbreeding variability and population structure in the invasive haplodiploid palm-seed borer (*Coccotrypes dactyliperda*). **Journal of Evolutionary Biology** 22: 1076-1087.
- Kirkendall, L. R.** and B. H. Jordal. 2006. The bark and ambrosia beetles (Curculionidae, Scolytinae) of Cocos Island, Costa Rica and the role of mating systems in island zoogeography. **Biological Journal of the Linnean Society** 89: 729-743.
- Berg, P. R., Dawson, D.A., Pandhal, J., **Kirkendall, L.R.,** Burke, T. 2003. Isolation and characterization of microsatellite loci from two inbreeding bark beetle species. **Molecular Ecology Notes** 3: 270-273.
- Jordal, B.J., R. A. Beaver and **L.R. Kirkendall.** 2001. Breaking taboos in the tropics: incest promotes colonization by wood-boring beetles. **Global Ecology and Biogeography** 10: 345-358.
- Kirkendall, L.R. 1993. Ecology and evolution of biased sex ratios in bark and ambrosia beetles (Scolytidae), pages 235-345. In Wrensch, D.L. and M. A. Ebbert (eds.), *Evolution and Diversity of Sex Ratio: Insects and Mites.* **Chapman and Hall,** New York.

Andreev, D., H. Breilid, **L. Kirkendall**, L. O. Brun, and R. H. French-Constant. 1998. Lack of nucleotide variability in a beetle pest with extreme inbreeding. **Insect Molecular Biology** 7:197-200.

Outbred mating systems, social behavior

Løyning, M. K. , and **L. R. Kirkendall**. 1999. Notes on the mating system of *Hylesinus varius* (F.) (Coleoptera: Scolytidae), a putatively bigynous bark beetle. **Journal of Applied Entomology** 123: 77-82.

Kirkendall, L. R., D. S. Kent, and K. F. Raffa. 1997. Interactions among males, females and offspring in bark and ambrosia beetles: the significance of living in tunnels for the evolution of social behavior, pages 181-215. In Choe, J. C. and B. J. Crespi (eds.), *The Evolution of Social Behavior in Insects and Arachnids*. **Cambridge University Press**, Cambridge, U. K.

Kirkendall, L. R. 1984. Notes on the breeding biology of some bigynous and monogynous Mexican bark beetles (Scolytidae : *Scolytus*, *Thysanoes*, *Phloeotribus*) and records for associated Scolytidae (*Hylocurus*, *Hypothenemus*, *Araptus*) and Platypodidae (*Platypus*). **Zeitschrift für angewandte Entomologie** 97: 234-244.

Kirkendall, L. R. 1984. Long copulations and post-copulatory 'escort' behaviour in the locust leaf miner, *Odontota dorsalis* (Coleoptera: Chrysomelidae). **Journal of Natural History** 18: 905-919.

Kirkendall, L. R. 1983. The evolution of mating systems in bark and ambrosia beetles (Coleoptera: Scolytidae and Platypodidae). **Zoological Journal of the Linnean Society** 77: 293-352.

Alcock, J., E. M. Barrows, G. Gordh, L. J. Hubbard, **L. Kirkendall**, D. Pyle, T. L. Ponder and F. G. Zalom. 1978. The ecology and evolution of male reproductive behaviour in the bees and wasps. **Zoological Journal of the Linnean Society** 64: 293-326.

MISCELLANEOUS ECOLOGY

Jordal, B. and **L. R. Kirkendall**. 1998. Ecological relationships of a guild of tropical beetles (Coleoptera: Curculionidae-Scolytinae, Zygopinae and Cerambycidae-Acanthocinae) breeding in *Cecropia* leafstalks (Cecropiaceae) in Costa Rica. **Journal of Tropical Ecology** 14: 153-176.

Kirkendall, L. R. 1989. Within-harem competition among *Ips* females, an overlooked component of density-dependent larval mortality. **Holarctic Ecology** 12: 477-487.

Stenseth, N. C. and **L. R. Kirkendall** (eds.). 1989. Population dynamics of bark beetles, with special reference to *Ips typographus*. **Holarctic Ecology** 12: 378-527.

Kirkendall, L. R. and N.C. Stenseth. 1989. Population dynamics of bark beetles, with special reference to *Ips typographus*: contributions of applied bark beetle studies to basic research in ecology and population biology. **Holarctic Ecology** 12: 526-527.

Stenseth, N. C. and **L. R. Kirkendall**. 1989. Population dynamics of bark beetles, with special reference to *Ips typographus*: Introduction. **Holarctic Ecology** 12: 382-383.

Kirkendall, L. R. and N. C. Stenseth. 1985. On defining "breeding once". **American Naturalist** 125: 189-204. UNREFEREED PUBLICATIONS

FAO reports

Kirkendall, L. R. 2007. Bark beetles and forest decline in the native *Nothofagus* forests of Chilean Patagonia. FAO TCP/CHI/3102: Taxonomist's report. Unpublished report, **United Nations Food and Agriculture Organization (FAO)**, unpublished report.

Boa, E., and **L. R. Kirkendall**. 2004. Sandragon wilt disease, Seychelles. **United Nations Food and Agriculture Organization (FAO)**, unpublished report.

Other unrefereed publications

- Kirkendall, L. R.** 2008. *Gnathotrupes fimbriatus* (Schedl, 1955) (Coleoptera: Curculionidae, Scolytinae). In: *Manual de plagas y enfermedades del bosque nativo en Chile [Manual of pests and diseases of the native forests of Chile]*. pp. 103-105. **United Nations Food and Agriculture Organization (FAO)**, Santiago, Chile.
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