

PROFESSOR SIR JOHN HARTLEY LAWTON

Professor Sir John H Lawton has made an astonishing number of significant contributions to Ecology. His early studies were on ecological energetics (Lawton 1969, McNeill and Lawton 1970). He then worked on experiments and models of arthropod predator-prey interactions (Beddington *et al.* 1975, 1976, Lawton *et al.* 1975), and more generally on population dynamics (Hassell *et al.* 1976, Gurney *et al.* 1983), before embarking on his internationally renowned work on insect-plant interactions, and community structure (Strong *et al.* 1984, Lawton 1978, 1983), focussing on the insect herbivore assemblages found on bracken (*Pteridium aquilinum*) throughout the world (Lawton 1976, 1982). The main focus of this work was on the genesis and maintenance of biodiversity (Lawton and Schroeder 1977, Lawton and Strong 1981) in one of the most species-rich groups of organisms in the world, namely the phytophagous insects. From this central core, his work on assemblages of insect herbivores has taken him in a number of highly significant and original directions, including the fractal dimension of plant surfaces (Morse *et al.* 1985) the concepts of ‘indirect competition’ and ‘enemy-free space’ (Jeffries and Lawton 1984, Holt and Lawton 1993), induced defences in plants (Fowler and Lawton 1984), and biological control of plants and insects (Beddington *et al.* 1978, Lawton 1988). More recently, he has focussed on the impacts of global change on populations and communities of organisms (Lawton 2000).

Underpinning virtually all his work is a search for major patterns, regularities and ‘rules’ in ecological assemblages, linking population abundance, body-size, range-size, local and regional species richness and life-history characteristics (Gaston and Lawton 1988, Lawton 1990, Cornell and Lawton 1992, Blackburn *et al.* 1993). He

was studying ‘macroecology’ long before it was distinguished by having its own name (Lawton and Schroeder 1977, Lawton 1983, Jeffries and Lawton 1985, Hawkins and Lawton 1987, Lawton and Warren 1988, Pimm *et al.* 1991). He summarised his views on general laws in ecology in a highly influential paper in *Oikos* (Lawton 1999).

John Lawton has used all the major ‘tools’ available to ecologists to understand the diversity of the natural world (field observations, long-term studies, field manipulation experiments, laboratory experiments, laboratory microcosms and mesocosms, large-scale pattern analysis of major data-sets, and mathematical models). His abilities as a naturalist have enabled him to study a remarkable range of organisms (birds, insects of many kinds, mammals, plants, even nematodes), appropriate for answering particular questions. Few ecologists in the world can claim to have his breadth and depth of understanding of the diversity of the natural world. His work has often been controversial, and some of it has now clearly been shown to be wrong; but his work has never been dull. As he himself has said: “It is better to be wrong about an interesting question that prompts others to do better, than to be right about a boring question that nobody cares about”.

Specific highlights of Lawton's exceptional career in ecology include:

1. Founding Director of the NERC Centre for Population Biology (CPB), Imperial College, Silwood Park, where he mentored many distinguished young scientists early in their careers, and who now have major roles to play in ecological science, including Kevin Gaston, James Glover, Susan Harrison, Brad Hawkins, Bill Kunin, Sharon Lawler, Shahid Naeem, Chris Thomas and Phil Warren.

2. At CPB, Lawton was the driving force behind the development of the Ecotron Controlled Environment Facility (Lawton *et al.* 1993), which has produced some of the most innovative (and, it has to be said, controversial) experiments in ecology over the last decade, linking biodiversity, climate change, population dynamics and ecosystem processes. The first experiment exploring the relationship between biodiversity and ecosystem processes (Naeem *et al.* 1994) was carried out in the Ecotron. Subsequent major experiments in this facility include the impacts of rising atmospheric CO₂ concentrations on ecosystem processes (Jones *et al.* 1998), and the effects of loss of key groups of soil organisms on ecosystem processes (Bradford *et al.* 2002). Lawton is widely regarded as a pioneer in ecology for his work with large, controlled environment facilities (Lawton 1995), addressing some of the most pressing environmental issues of the day in a manner that is often impossible in field experiments.
3. Also at CPB, Lawton lead the EU BIODDEPTH Project on Biodiversity and Ecosystem Processes, the first ‘continental-scale’ experiment in ecology, focussing on the relationship between loss of plant biodiversity and ecosystem processes at replicated sites across the whole of Europe (Hector *et al.* 1999). BIODDEPTH was selected as the winner, across all environmental research projects in the EU, for the Earth Science Section nomination for the Descartes Prize 2001.
4. In his *View from the Park* essays in *Oikos*, written from CPB over a period of ten years, Lawton was a strong advocate of the role of ecological science in delivering a sustainable future.
5. Over a period of 11 years, Lawton was first a Council Member, and then Chairman of the Royal Society for the Protection of Birds (RSPB). RSPB is the largest, voluntary wildlife conservation body in Europe, and during his

Chairmanship membership passed the one million mark. The RSPB Chairman has regular, direct access to Ministers, and RSPB has considerable influence over the development of UK environmental policy, ranging from sustainable development, global climate change, EU Common Agricultural Policy, EU Common Fisheries Policy etc. He was instrumental in establishing RSPB's current reserve strategy – going for big, landscape level reserves (a considerable novelty in Britain!), and massive habitat recreation and restoration.

6. Lawton is also currently a Vice President of the British Trust for Ornithology (BTO) (which leads the world in the long-term monitoring of bird populations), and is a Trustee of WWF UK. He has recently agreed to take over the Programme Committee of WWF UK. WWF specifically recruited his help because of his international reputation in the science of biodiversity conservation.
7. In his role as Chief Executive of the UK Natural Environment Research Council, Lawton led one of the six grant-awarding UK Research Councils. NERC has a budget of over £300 million a year, and employs over 2500 staff directly, and at any one time supports over 900 PhD students and 1000 postdocs in UK universities. NERC includes internationally recognised organisations such as the British Antarctic Survey and the British Geological Survey. Lawton refocused NERC science onto critical areas underpinning the sustainability of the Earth system, reflected in NERC's new science strategy *Science for a Sustainable Future*. NERC scientists play a central role in advising the UK Government on sustainability issues.
8. As a member of the highly influential Royal Commission on Environmental Pollution he played a significant part in writing the report which now forms the basis of the UK and EU's legislation on release of GMO's into the environment.

Other significant environmental problems addressed during his membership included Freshwater Quality, Incineration, Sustainable Transport and Environmental Standards. In 2005 Lawton became Chairman of the Commission.

9. In 2005 Lawton became President of the British Ecological Society - an appointment that reflects the great esteem with which he is regarded in the ecological community.

Professor Sir John Lawton has had an exceptional scientific career and the British Ecological Society strongly supports his nomination for the Ramon Margalef Prize in Ecology and Environmental Sciences.

Signed on behalf of the British Ecological Society:

(Dr Hazel J Norman, Executive Secretary, BES)

Date:

CURRICULUM VITAE

PROFESSOR SIR JOHN H. LAWTON CBE, FRS

Personal Details

Date of birth: 24 September 1943
Nationality: British
Family: Married to Dot; two grown-up children, five grandchildren

Career and Positions Held

Undergraduate, Department of Zoology, University of Durham (1962-1965),
(First Class Honours degree, 1965),
Research student, Department of Zoology, University of Durham (1965-1968),
(Ph.D. awarded 1969).

Demonstrator in Animal Ecology, Department of Zoology, Oxford University,
(1968-1971).

Lecturer, University of York (1971-1978), then:
Senior Lecturer (1978-1982),
Reader (1982-1985),
Professor (personal chair) (1985-1989).

Director, NERC Centre for Population Biology and Professor of Community
Ecology, Imperial College of Science, Technology and Medicine, London (1989
- 1999).

Chief Executive, Natural Environment Research Council (1999- 2005).

Chairman, Royal Commission on Environmental Pollution (2005-continuing)

Honorary and Adjunct Positions

Honorary Visiting Research Fellow, Natural History Museum, London 1990 -
2005.

Adjunct Scientist, Institute of Ecosystem Studies, New York, 1992 - 2000.

Fellow of Institute of Arable Crops Research, Rothamsted, April 1998 - 2000.

Honorary Visiting Professor, University of York, 1998 – continuing.

Honorary Visiting Professor, Imperial College, Silwood Park, 1999 – continuing.

Selected Honours and Prizes

Elected Fellow of the Royal Society of London, 1989.

CBE in The Queens Birthday Honours List, 1997.

Knighthood in the New Year Honours list, 2005.

Honorary degrees: Lancaster 1993; Birmingham 2005; York 2005; Aberdeen
2006; East Anglia 2006; Fellowship of Imperial College 2006.

President's Gold Medal of the British Ecological Society, 1987.
Honorary Life Member Game Conservancy Trust, 1995.

Elected Member of European Environmental Research Organisation, 1996.
ECI Prize Winner 1996 in the Field of Terrestrial Ecology.
British Ecological Society's Marsh Award for Ecology, 1996.
Distinguished Statistical Ecologist Award, INTECOL, 1998.
Kempe Award for Distinguished Ecologists, Sweden, 1998.
Zoological Society of London Frink Medal, 1998.
Honorary Life Member, Royal Entomological Society, 2001.
Leader of the EU BIODEPTH Project, selected as the winner of the Earth
Science Section nominations for the Descartes Prize, 2001.
Society for Conservation Biology La Roe Award, 2002
Japan Prize, Science and Technology for Conservation of Biodiversity, 2004

Current External Professional-Related Activities

Vice President, Royal Society for the Protection of Birds
Vice President, British Trust for Ornithology
Trustee, WWF-UK, and Chair of Programme Committee
President British Ecological Society

Editorial Work

Editor, *Bulletin of the British Ecological Society*, 1971 - 1978.
Editor, *Ecological Entomology*, 1979 -1988.
Other previous editorial Board membership: *Animal Conservation*, *Ecological
Entomology*,
Journal of Animal Ecology, *Oecologia*, *Oikos*, *Encyclopaedia of Biodiversity*,
Frontiers in Ecology and the Environment
Senior Editor, (jointly with Professor G. Likens). *Methods in Ecology*
(Blackwell Science), 1989 - 2005.

Selected Other Professional Activities (1990 onwards)

Royal Commission on Environmental Pollution Member, 1990 – 1996
Council Member of the Royal Society for the Protection of Birds, 1987 – 1993;
Chairman of Council, 1993 – 1998; Vice President 1999 – continuing.
Member of the Scientific Steering Committee of the Global Change and
Terrestrial
Ecosystems Core Project of IGBP, 1990 - 1993, and Activity leader within Focus
3 for IGBP, 1990 - 1993.
Member of the Technology Foresight Panel on Agriculture, Natural Resources
and Environment, 1994.
Member of Scientific Advisory Board, US National Center for Ecological
Analysis &
Synthesis, Santa Barbara, CA, 1995 – 1997.

Member of NERC Council, Resources and Strategy Group, and Chairman of the Terrestrial and Freshwater Science and Technology Board, 1995 - 1999.
Chairman, EU Framework IV TERI-CA Research Initiative, 1998 – 1999.
Chairman, Imperial College Environment Office, 1998 – 1999.
Member and Vice-chair of International Group of Funding Agencies, 1999 - 2005.
Chairman, Royal Botanic Gardens, Kew, Science Review, 2001.
Chairman, International Review of CSIRO's Biodiversity Programme, Canberra, 2001
Member, Salters Nuffield Biology Advisory Panel, 2001- continuing.
Member, Chief Scientific Advisor's Energy Research Review Group, 2001 – 2002.
Member, Royal Society of London's International Policy Committee, 2003 – 2006.
Member, Science Advisory Council of DEFRA (Department for Environment Food and Rural Affairs, April 2004 - 2005

Graduate Students

48 graduate students have successfully completed their PhDs under my supervision.

Research Interests

Theoretical and experimental population dynamics and community ecology. Impacts of global environmental change on populations, communities and ecosystems. Biological pest control. The use of controlled environment facilities for ecological research. Large scale patterns and processes in ecology. Biodiversity and conservation. Biodiversity and ecosystem processes.

Television Programmes

"The 300-million years war" in the BBC Q.E.D. series which dealt with insect-plant interactions. Scientific Advisor and Presenter. Broadcast 1985, repeat 1987.

"The State of the Planet". Three part BBC programme presented by David Attenborough. Scientific Advisor, and appearance as Commentator in all three programmes. Broadcast 2000.

Publications

Over 320 papers, articles and book chapters, including 17 refereed papers in *Nature* and 7 in *Science*.

Second most highly cited scientist in Environment/Ecology in world in ISI rankings 2003

Books and Edited Symposia:

Strong, D. R., Lawton, J. H., Southwood, T. R. E. (1984). *Insects on Plants: Community Patterns and Mechanisms*. Blackwell, Oxford. 293pp.

Chaloner, W. G., Harper, J. L., Lawton, J. H. (Editors, 1991). *The Evolutionary Interactions of Animals and Plants*. The Royal Society, London. 288pp.

Jones, C. G., Lawton, J. H. (Editors, 1995). *Linking Species and Ecosystems*. Chapman and Hall, New York. 387pp.

Lawton, J. H., May, R. M. (Editors, 1995). *Extinction Rates*. Oxford University Press, Oxford. 233pp.

Lawton, J. H. (2000). *Community Ecology in a Changing World*. Excellence in Ecology 11. Ecology Institute, Oldendorf/Luhe.

Lawton, J.H., Marotzke, J., Marsh, R., McCave, I.N. (Editors, 2003) *Abrupt Climate Change: Evidence, Mechanisms and Implications*. *Philosophical Transactions of the Royal Society A*, 361, 1827-2078.

PUBLICATIONS LIST FOR PROFESSOR SIR JOHN H LAWTON

Books and edited symposia

Strong, D.R., Lawton, J.H., & Southwood, T.R.E. (1984) *Insects on Plants.*

Community Patterns

and *Mechanisms*. Blackwell Scientific, Oxford. 313pp.

Chaloner, W.G., Harper, J.L., & Lawton, J.H. (eds) (1991) *The Evolutionary*

Interactions of

Animals and Plants. Philosophical Transactions of the Royal Society, B, 333, 175-305.

Chaloner, W.G., Harper, J.L., & Lawton, J.H. (eds) (1991) *The Evolutionary*

Interactions of

Animals and Plants. Royal Society of London, 288pp.

Lawton, J.H. & May, R.M. (eds) (1994) *Estimating Extinction Rates*. Sir Joseph

Banks

Anniversary Meeting. Philosophical Transactions of the Royal Society, B, 344, 1-104.

Jones, C.G. & Lawton, J.H. (eds) (1995) *Linking Species and Ecosystems*. Chapman

and Hall, New

York. 387pp.

Lawton, J.H. & May, R.M. (eds) (1995) *Extinction Rates*. Oxford University Press,

Oxford. 233pp.

Lawton, J.H. (2000) *Community Ecology in a Changing World*. Ecology Institute,

Oldendorf/Luhe.

227pp.

Lawton, J.H., Marotzke, J., Marsh, R. & McCave, I.N. (eds) (2003) Abrupt Climate Change:

Evidence, Mechanisms and Implications. *Philosophical Transactions of the Royal Society, A*, 361, 1827-2078.

Thesis

Lawton, J.H. (1969) Studies on the Ecological Energetics of Damselfly Larvae (Odonata: Zygoptera). Thesis, University of Durham.

Papers

Lawton, J. (1959) Greenfinches building in old nests of other species. *British Birds*, 52, 433-434.

Lawton, J.H. (1965) Lesser spotted woodpeckers attacking galls. *British Birds*, 58, 302.

Lawton, J.H. (1969) Studies on the ecological energetics of damselfly larvae. *Journal of Animal Ecology*, 38, 28P-29P.

Lawton, J.H. (1970) Feeding and food energy assimilation in larvae of the damselfly (*Pyrrhosoma nymphula*) (Sulz.) (Odonata: Zygoptera). *Journal of Animal Ecology*, 39, 669-689.

Lawton, J.H. (1970) A population study on larvae of the damselfly (*Pyrrhosoma nymphula*) [Sulzer] [Odonata: Zygoptera]. *Hydrobiologia*, 36, 33-52.

Lawton, J.H. & Richards, J. (1970) Comparability of Cartesian diver, Gilson, Warburg and Winkler methods of measuring the respiratory rates of aquatic invertebrates in ecological studies. *Oecologia*, 4, 319-324.

- McNeill, S. & Lawton, J.H. (1970) Annual production and respiration in animal populations. *Nature*, 225, 472-474.
- Lawton, J.H. (1971) Ecological energetics studies on larvae of the damselfly (*Pyrrhosoma nymphula*) (Sulzer) (Odonata: Zygoptera). *Journal of Animal Ecology*, 40, 385-423.
- Lawton, J.H. (1971) Maximum and actual field feeding rates in larvae of the damselfly (*Pyrrhosoma nymphula*) (Sulzer) (Odonata: Zygoptera). *Freshwater Biology*, 1, 99-111.
- Lawton, J.H. (1972) Sex ratios in Odonata larvae, with particular reference to the Zygoptera. *Odonatologica*, 1, 209-219.
- Lawton, J.H. & McNeill, S. (1972) Pollution and world primary production. *Biological Conservation*, 4, 329-334.
- Lawton, J.H. & McNeill, S. (1973) Primary production and pollution. *Biologist*, 20, 171-179.
- Wood, T.G. & Lawton, J.H. (1973) Experimental studies on the respiratory rates of mites (Acari) from beech-woodland leaf-litter. *Oecologia*, 12, 169-191.
- Lawton, J.H., Blumenthal, U., & Fisher, A. (1974) A survey of the invertebrates of the Pocklington Canal. *The Naturalist*, January/March 1974, 19-24.

Beddington, J.R., Free, C.A., & Lawton, J.H. (1975) Dynamic complexity in predator-prey models

framed in difference equations. *Nature*, 255, 58-60.

Bell, G. & Lawton, J.H. (1975) The ecology of the eggs and larvae of the smooth newt (*Triturus*

vulgaris) (Linn.). *Journal of Animal Ecology*, 44, 393-423.

Lawton, J.H. & Eastop, V.F. (1975) A bracken feeding *Macrosiphum* (Hem., Aphididae) new to

Britain. *Entomologist's Gazette*, 26, 135-138.

Lawton, J.H., Hassell, M.P., & Beddington, J.R. (1975) Prey death rates and rate of increase of

arthropod predator populations. *Nature*, 255, 60-62.

Beddington, J.R., Free, C.A., & Lawton, J.H. (1976) Concepts of stability and resilience in

predator-prey models. *Journal of Animal Ecology*, 45, 791-816.

Beddington, J.R., Hassell, M.P., & Lawton, J.H. (1976) The components of arthropod predation 2.

The predator rate of increase. *Journal of Animal Ecology*, 45, 165-185.

Hassell, M.P., Lawton, J.H., & Beddington, J.R. (1976) The components of arthropod predation 1.

The prey death rate. *Journal of Animal Ecology*, 45, 135-164.

Hassell, M.P., Lawton, J.H., & May, R.M. (1976) Patterns of dynamical behaviour in single-species

populations. *Journal of Animal Ecology*, 45, 471-486.

Lawton, J.H. (1976) The structure of the arthropod community on bracken. *Botanical Journal of*

the Linnean Society, 73, 187-216.

Speight, M.R. & Lawton, J.H. (1976) The influence of weed-cover on the mortality imposed on

artificial prey by predatory ground beetles in cereal fields. *Oecologia*, 23, 211-223.

Free, C.A., Beddington, J.R., & Lawton, J.H. (1977) On the inadequacy of simple models of mutual

interference for predation and parasitism. *Journal of Animal Ecology*, 46, 543-554.

Hassell, M.P., Lawton, J.H., & Beddington, J.R. (1977) Sigmoid functional responses by

invertebrate predators and parasitoids. *Journal of Animal Ecology*, 46, 249-262.

Lawton, J.H. & Schroeder, D. (1977) Effects of plant type, size of geographical range and

taxonomic isolation on number of insect species associated with British plants.

Nature, 265, 137-140.

Pimm, S.L. & Lawton, J.H. (1977) Number of trophic levels in ecological communities. *Nature*,

268, 329-331.

Beddington, J.R., Free, C.A., & Lawton, J.H. (1978) Characteristics of successful natural enemies

in models of biological control of insect pests. *Nature*, 273, 513-519.

- Beddington, J.R. & Lawton, J.H. (1978) On the structure and behaviour of ecosystems. *Journal de Physique*, 39, 39-43.
- Lawton, J.H. (1978) *Olethreutes lacunana* (Lepidoptera: Tortricidae) feeding on bracken. *Entomologist's Gazette*, 29, 131-134.
- Lawton, J.H. (1978) Starling interfering with blackbird's nest. *British Birds*, 71, 594.
- Lawton, J.H. & Pimm, S.L. (1978) Population dynamics and the length of food chains. *Nature*, 272, 190.
- Pimm, S.L. & Lawton, J.H. (1978) On feeding on more than one trophic level. *Nature*, 275, 542-544.
- Lawton, J.H. & Pimm, S.L. (1979) Some real communities are unstable. *Nature*, 279, 822.
- Lawton, J.H. & Price, P.W. (1979) Species richness of parasites on hosts: agromyzid flies on the British Umbelliferae. *Journal of Animal Ecology*, 48, 619-637.
- Lawton, J.H. & Rallison, S.P. (1979) Stability and diversity in grassland communities. *Nature*, 279, 351.
- McArdle, B.H. & Lawton, J.H. (1979) Effects of prey-size and predator-instar on the predation of *Daphnia* by *Notonecta*. *Ecological Entomology*, 4, 267-275.

- Lawton, J.H., Thompson, B.A., & Thompson, D.J. (1980) The effects of prey density on survival and growth of damselfly larvae. *Ecological Entomology*, 5, 39-51.
- Pimm, S.L. & Lawton, J.H. (1980) Are foodwebs divided into compartments? *Journal of Animal Ecology*, 49, 879-898.
- Smith, D.R. & Lawton, J.H. (1980) Review of the sawfly genus *Eriocampidea* (Hymenoptera: Tenthredinidae). *Proceedings of the Entomological Society of Washington*, 82, 447-453.
- Kirkwood, R.S.M. & Lawton, J.H. (1981) Efficiency of biomass transfer and the stability of model food-webs. *Journal of Theoretical Biology*, 93, 225-237.
- Lawton, J.H. (1981) Moose, wolves, Daphnia and Hydra: on the ecological efficiency of endotherms and ectotherms. *American Naturalist*, 117, 782-783.
- Lawton, J.H., Cornell, H., Dritschilo, W., & Hendrix, S.D. (1981) Species as islands: comments on a paper by Kuris et al. *American Naturalist*, 117, 623-627.
- Lawton, J.H. & Hassell, M.P. (1981) Asymmetrical competition in insects. *Nature*, 289, 793-795.
- Lawton, J.H. & Strong, D.R.J. (1981) Community patterns and competition in folivorous insects. *American Naturalist*, 118, 317-338.

Rigby, C. & Lawton, J.H. (1981) Species-area relationships of arthropods on host plants:

herbivores on bracken. *Journal of Biogeography*, 8, 125-133.

Fowler, S.V. & Lawton, J.H. (1982) The effects of host-plant distribution and local abundance on

the species richness of agromyzid flies attacking British umbellifers.

Ecological Entomology, 7, 257-265.

Lawton, J.H. (1982) Vacant niches and unsaturated communities: a comparison of bracken

herbivores at sites on two continents. *Journal of Animal Ecology*, 51, 573-595.

Brown, K.C., Lawton, J.H., & Shires, S.W. (1983) The effects of insecticides on invertebrate

predators and their cereal aphid prey: laboratory experiments. *Environmental Entomology*, 12, 1747-1750.

Gurney, W.S.C., Nisbet, R.M., & Lawton, J.H. (1983) The systematic formulation of tractable

single-species population models incorporating age structure. *Journal of Animal Ecology*, 52, 479-495.

Heads, P.A. & Lawton, J.H. (1983) Studies on the natural enemy complex of the holly leaf-miner:

the effects of scale on the detection of aggregative responses and the implications for biological control. *Oikos*, 40, 267-276.

Heads, P.A. & Lawton, J.H. (1983) Tit predation on the holly leaf-miner: the effect of prickly

leaves. *Oikos*, 41, 161-164.

- Lawton, J.H. (1983) Plant architecture and the diversity of phytophagous insects.
Annual Review of Entomology, 28, 23-39.
- Thompson, P.M. & Lawton, J.H. (1983) Seed size diversity, bird species diversity and interspecific competition. *Ornis Scandinavica*, 14, 327-336.
- Attah, P.K. & Lawton, J.H. (1984) The invasion of rape crops by insect pests, with special reference to pollen beetles, *Meligethes* spp. *Aspects of Applied Biology*, 6, 265-274.
- Fowler, S.V. & Lawton, J.H. (1984) Foliage preferences of birch herbivores: a field manipulation experiment. *Oikos*, 42, 239-248.
- Heads, P.A. & Lawton, J.H. (1984) Bracken, ants and extrafloral nectaries II. The effect of ants on the insect herbivores of bracken. *Journal of Animal Ecology*, 53, 1015-1031.
- Jeffries, M.J. & Lawton, J.H. (1984) Enemy free space and the structure of ecological communities. *Biological Journal of the Linnean Society*, 23, 269-286.
- Lawton, J.H. & Heads, P.A. (1984) Bracken, ants and extrafloral nectaries I. The components of the system. *Journal of Animal Ecology*, 53, 995-1014.
- Pickup, J., Thompson, D.J., & Lawton, J.H. (1984) The life history of *Lestes sponsa* (Hansemann): larval growth (Zygoptera: Lestidae). *Odonatologica*, 13, 451-459.

Fowler, S.V. & Lawton, J.H. (1985) Rapidly induced defenses and talking trees: the Devil's

advocate position. *American Naturalist*, 126, 181-195.

Heads, P.A. & Lawton, J.H. (1985) Bracken, ants and extrafloral nectaries III. How insect

herbivores avoid ant predation. *Ecological Entomology*, 10, 29-42.

Jeffries, M.J. & Lawton, J.H. (1985) Predator-prey ratios in communities of freshwater

invertebrates: the role of enemy free space. *Freshwater Biology*, 15, 105-112.

Lawton, J.H. & MacGarvin, M. (1985) Interaction between bracken and its insect herbivores.

Proceedings of the Royal Society of Edinburgh (Section B), 86, 125-131.

Morse, D.R., Lawton, J.H., Dodson, M.M., & Williamson, M.H. (1985) Fractal dimension of

vegetation and the distribution of arthropod body lengths. *Nature*, 314, 731-733.

Heads, P.A. & Lawton, J.H. (1986) Beat back bracken biologically. *New Scientist*, 1525, 40-43.

Lawton, J.H. & Brown, K.C. (1986) The population and community ecology of invading insects.

Philosophical Transactions of the Royal Society of London, B, 314, 607-617.

MacGarvin, M., Lawton, J.H., & Heads, P.A. (1986) The herbivorous insect communities of open

and woodland bracken: observations, experiments and habitat manipulations.

Oikos, 47, 135-148.

Mithen, S.J. & Lawton, J.H. (1986) Food-web models that generate constant predator-prey ratios.

Oecologia, 69, 542-550.

Churcher, P.B. & Lawton, J.H. (1987) Predation by domestic cats in an English village. *Journal of*

Zoology, 212, 439-455.

Crowley, P.H., Nisbet, R.M., Gurney, W.S.C., & Lawton, J.H. (1987) Population regulation in

animals with complex life-histories: formulation and analysis of a damselfly model. *Advances in Ecological Research*, 17, 1-59.

Gaston, K.J. & Lawton, J.H. (1987) A test of statistical techniques for detecting density dependence

in sequential censuses of animal populations. *Oecologia*, 74, 404-410.

Hartley, S.E. & Lawton, J.H. (1987) Effects of different types of damage on the chemistry of birch

foliage, and the responses of birch feeding insects. *Oecologia*, 74, 432-437.

Hawkins, B.A. & Lawton, J.H. (1987) Species richness for parasitoids of British phytophagous

insects. *Nature*, 326, 788-790.

Lawton, J.H. (1987) Daphnia population dynamics in theory and practice. *Trends in Ecology and*

Evolution, 2, 233-234.

Lawton, J.H., MacGarvin, M., & Heads, P.A. (1987) The effects of altitude on the abundance and

species richness of insect herbivores on bracken. *Journal of Animal Ecology*, 56, 147-160.

Warren, P.H. & Lawton, J.H. (1987) Invertebrate predator-prey body size relationships: an explanation for upper triangular food webs and patterns in food web structure? *Oecologia*, 74, 231-235.

Bergelson, J.M. & Lawton, J.H. (1988) Does foliage damage influence predation on the insect herbivores of birch? *Ecology*, 69, 434-445.

Burge, M.N., Lawton, J.H., & Taylor, J.A. (1988) The prospects of biological control of bracken in Britain. *Aspects of Applied Biology*, 16, 299-309.

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