University of Birmingham

Dr Susannah Thorpe

Senior Lecturer

School of Biosciences (/schools/biosciences/index.aspx)

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About

Dr Thorpe's expertise lies in the field of ecmorphology. Her research is about understanding how organisms get to be built the way they are built, and the consequences of their design for patterns of resource use, interactions with other species, and for patterns of evolution. Specific themes in her lab at present are the evolution of human bipedalism; how animals (including humans) interact with complex habitats and the cognitive demands of complex locomotion

Qualifications

- BA (Hons) 1993 University of Sheffield, Archaeology and Prehistory
- PhD 1997 University of Leeds, comparative mechanics of gait in humans and chimpanzees
- Postdoc & Honourary Research fellow 1997-2002 University of Liverpool, evolution of human bipedalism
- Postdoc 2002-2003 University of Cape Town, neuromaturation of gait in children
- 2003-2005 University of Birmingham, Development Director for Biosciences
- 2005-2011 University of Birmingham, Lecturer in Locomotor Ecology and Biomechanics
- 2011- present University of Birmingham, Senior Lecturer in Locomotor Ecology and Biomechanics

Teaching

I lead the second year Human Evolution, Adaptation and Behaviour Module (Bio263) and the third year Human Evolution Module (Bio380). I teach extensively on both these modules and focus on key themes in Human evolution such as the evolution of bipedalism, sociality, language and culture.

My teaching philosophy is to engage students in critical discussion of key research questions and employ up-to-date research equipment and material to support the learning process. I also teach on the third year module 'Advanced Topics in Animal Behaviour' (Bio392) which is designed around the principles of Inquiry-based learning and I lecture on primate conservation in Bio372. In addition, I run a residential field-based final year project module with Jackie Chappell at Trentham Monkey Forest, which is designed to give students first-hand experience of researching animals in a natural habitat.

Postgraduate supervision

For a list of possible PhD projects offered by Dr Thorpe:

www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Thorpe (http://www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Thorpe)

Research

Research Theme within School of Biosciences: Organisms and Environment

Lab website address: **www.biosciences-labs.bham.ac.uk/thorpe/ (http://www.biosciences-labs.bham.ac.uk/thorpe/)**

Primate locomotor ecology, evolution of bipedalism and vertebrate musculo-skeletal biomechanics

I study the association between animal form, function and performance, through lab and zoo-based studies of functional morphology and biomechanics, combined with field studies of the performance of animals in their natural habitat.

The study of functional morphology and biomechanics allows us to ask how animal structures work; whether observed structures are superior to possible alternatives for given behaviours and how different structures can serve the same mechanical function. It shows how particular designs have been favoured by natural selection because they work better than the alternatives, or because they are particularly economical of energy of materials (Alexander, 1988). Ecomorphology builds on this approach by relating the structures of different animals to aspects of their environment, such as resource availability (Alexander, 1988; Wainwright, 1991). In my laboratory we work in the broad field of ecomorphology, but specialise on adaptations of the locomotor system.

Specific themes in my lab at present are the evolution of human bipedalism; how animals (including humans) interact with complex habitats and the cognitive demands of complex locomotion.

Publications

Neufuss J, Hesse B, Thorpe SKS, Vereecke EE, D'Aout K, Schilling N (In press) Fibre type composition in the lumbar perivertebral muscles of primates: Implications for the evolution of apes. **Journal of Anatomy**

Roberts AM, Thorpe SKS (in press) Bipedalism, birth and brains. **Journal of Zoology**.

Eves FF; Taylor-Covill GAH, Thorpe SKS (in press) Pedestrians who avoid stairs report them as steeper than those who climb them. **Psychological Science**

Tecwyn EC; Thorpe SKS; Chappell JM (in press) Orangutans (Pongo pygmaeus) and bonobos (Pan paniscus) plan their moves in the paddle-box task, but not when they have to inhibit a prepotent response. Behavioural Processes

van Casteren A; Sellers WI, Thorpe SKS, Coward S; Crompton RH, Ennos AR (2013) Mechanical properties of tree branches and their exploitation in the tropical rainforest canopy by Sumatran orang-utan (Pongo abelii) PlosOne 8 (7) e67877 DOI: 10.1371/journal.pone.0067877

Manduell KL, Harrison ME, Thorpe SKS (2012) Variation in habitat structure and support availability: The interaction of wild orangutans with their environment in Sumatra (*Pongo abelii*) and Borneo (*Pongo pygmaeus wurmbii*). **American Journal of Primatology** 74, 1128-1142

van Casteren A; Sellers WI, Thorpe SKS, Coward S; Crompton RH, Ennos AR (2012) Nest Building Orangutans Demonstrate Engineering Know-How to Produce Safe, Comfortable Beds. **Proceedings of the National Academy of Sciences 109, 6873-6877**

van Casteren A; Sellers WI, Thorpe SKS, Coward S; Crompton RH, Ennos AR (2012) Why don't branches snap? The mechanics of bending failure in three temperate angiosperm trees. **Trees-Structure and Function**. 26, 789-797

Tecwyn EC; Thorpe SKS; Chappell JM (2012) What cognitive strategies do orangutans (*Pongo pygmaeus*) use to solve a trial-unique puzzle-tube task incorporating multiple obstacles? Animal Cognition 15:121-133

Myatt JP, Crompton RH, Payne-Davis RC, Savage R, Vereecke EE, Gunther MM, Thorpe SKS. (2012) Functional adaptations in the forelimb muscles of non-human great apes. **Journal of Anatomy** 220:13-28

Myatt JP, Crompton RH, Thorpe SKS (2011). Hindlimb muscle architecture in nonhuman great apes and a comparison of methods for analysing inter-species variation **Journal of Anatomy 219:150-166**

Myatt JP, Crompton RH, Thorpe SKS (2011) A new method for recording complex positional behaviours and habitat interactions in primates. **Folia Primatologica 82:13-24**

Badhe SP, Lynch JB, Thorpe SKS, Bainbridge LC (2010) Operative treatment of Linburg-Comstock Syndrome. **Journal of Bone and Joint Surgery** 92b:1278-1281.

Crompton RH, Sellers WI and Thorpe SKS (2010) Arborealism, Terrestrialism and Bipedalism. **Philosophical Transactions of the Royal Society B** 365: 3301-3314

Chappell JM & Thorpe SKS (2010) AI Inspired Biology: Does AI Have Something to Contribute to Biology? **Proceedings of the International Symposium on AI Inspired Biology**. A Symposium at the AISB 2010 Convention, Leicester, UK. SSAISB: The Society for the Study of Artificial Intelligence and the Simulation of Behaviour. ISBN: 1902956923

Thorpe, SKS, Holder R and Crompton RH. (2009) Orangutans employ unique strategies to control branch flexibility **Proceedings of the National Academy of Sciences** 106 (31): 12646-12651.

Thorpe, SKS, Holder R and Crompton RH. (2007) Origin of human bipedalism as an adaptation for locomotion on flexible branches **Science** 316:1328-1331

Thorpe, SKS, Crompton RH and Alexander, R.McN. (2007) Orangutans utilise compliant branches to lower the energetic cost of locomotion. **Biology Letters** 3: 253-256