Contents

no. 1, 23 February 2009

Editorial
  By B. Charlesworth

Meeting report
Meshing molecules and management: a new era for natural resource conservation
  By E. K. Latch and J. A. Ivy

Animal behaviour
Reversed optimality and predictive ecology: burrowing depth forecasts population change in a bivalve
  By J. A. van Gils, C. Kraan, A. Dekinga, A. Koolhaas, J. Drent, P. de Goeij and T. Piersma
Sleeping gulls monitor the vigilance behaviour of their neighbours
  By G. Beauchamp

Vocal cues of ovulation in human females
  By G. A. Bryant and M. G. Haselton

Grunting for worms: seismic vibrations cause Diplocardia earthworms to emerge from the soil
  By O. Mitra, M. A. Callaham Jr, M. L. Smith and J. E. Yack

Mating behaviour in Lymnaea stagnalis pond snails is a maternally inherited, lateralized trait
  By A. Davison, H. T. Frend, C. Moray, H. Wheatley, L. J. Searle and M. P. Eichhorn
An infanticide attempt by a free-roaming feral stallion (Equus caballus)
  By M. E. Gray

Comment. Potential confounds to an assay of cross-generational fitness benefits of mating and male seminal fluid
  By T. A. F. Long, A. D. Stewart and P. M. Miller

Invited reply. Support for a pluralistic view of behavioural evolution
  By N. K. Priest, D. A. Roach and L. F. Galloway

Biomechanics
The recruitment of different compartments within a muscle depends on the mechanics of the movement
  By J. M. Wakeling

Conservation biology
Diversity and depletions in continental carnivore guilds: implications for prioritizing global carnivore conservation
  By F. Dalerum, E. Z. Cameron, K. Kunkel and M. J. Somers
Scale effects in species distribution models: implications for conservation planning under climate change
  By C. Seo, J. H. Thorne, L. Hannah and W. Thuiller

Evolutionary biology
Opinion piece. Evolution and evolvability: celebrating Darwin 200
  By J. F. Y. Brookfield

Palaeogenomics of pterosaurs and the evolution of small genome size in flying vertebrates
  By C. L. Organ and A. M. Shedlock

The role of predator selection on polymorphic aposematic poison frogs
  By B. P. Noonan and A. A. Comeault

No evidence for an evolutionary trade-off between learning and immunity in a social insect
  By A. Alghamdi, N. E. Raine, E. Rosato and E. B. Mallon

Selection on sperm morphology under relaxed sperm competition in a wild passerine bird
  By S. Calhim, H. M. Lampe, T. Slagsvold and T. R. Birkhead

Circum-menopausal effects on women’s judgements of facial attractiveness
  By J. Vukovic, B. C. Jones, L. M. DeBruine, A. C. Little, D. R. Feinberg and L. L. M. Welling

Global change biology
Comment. Crying wolf: concluding that wolves were not restored
  By L. D. Mech

Invited reply. Wishful thinking: imagining that the current Great Lakes wolf is the same entity that existed historically
  By J. A. Leonard and R. K. Wayne

Marine biology
Diel vertical migration of Arctic zooplankton during the polar night

Fish ears are sensitive to sex change
By S. P. W. Walker and M. I. McCormick 73

Neurobiology
Daytime micro-naps in a nocturnal migrant: an EEG analysis
By T. Fuchs, D. Maury, F. R. Moore and V. P. Bingman 77

Palaeontology
Parallels between playbacks and Pleistocene tar seeps suggest sociality in an extinct sabretooth cat, Smilodon
By C. Carbone, T. Maddox, P. J. Funston, M. G. L. Mills, G. F. Grether and B. Van Valkenburgh 81

Physiology
Metabolic ageing in individual zebra finches
By B. Moe, B. Rønning, S. Verhulst and C. Bech 86
Autotomy reduces immune function and antioxidant defence
By S. Slos, M. De Block and R. Stoks 90
The evolution of water balance in Glossina (Diptera: Glossinidae): correlations with climate
By E. Kleynhans and J. S. Terblanche 93
Comment. Artiodactyl ‘success’ over perissodactyls in the late Palaeogene unlikely to be related to the carotid rete: a commentary on Mitchell & Lust (2008)
By C. Janis 97
Invited reply. Artiodactyl success and the carotid rete
By G. Mitchell and A. Lust 99

Population genetics
Genetic analysis of historic western Great Lakes region wolf samples reveals early Canis lupus/lycaon hybridization
By T. Wheeldon and B. N. White 101

Special feature
Brain evolution
Guest edited by Tom V. Smulders

Introduction. Darwin 200: special feature on brain evolution
By T. V. Smulders 105
Opinion piece. Exploring the early origins of the synapse by comparative genomics
By K. S. Kosik 108
Opinion piece. Evolutionary conservation of mechanisms for neural regionalization, proliferation and interconnection in brain development
By H. Reichert 112
Opinion piece. Non-laminar cerebral cortex in teleost fishes?
By H. Ito and N. Yamamoto 117
Opinion piece. Avian evolution: from Darwin’s finches to a new way of thinking about avian forebrain organization and behavioural capabilities
By A. Reiner 122
Why are there so few smart mammals (but so many smart birds)?
By K. Isler and C. P. Van Schaik 125
Opinion piece. Revisiting the cognitive buffer hypothesis for the evolution of large brains
By D. Sol 130
Opinion piece. Telencephalon enlargement by the convergent evolution of expanded subventricular zones
By G. F. Striedter and C. J. Charvet 134
Opinion piece. The relevance of brain evolution for the biomedical sciences
By T. V. Smulders 138
Opinion piece. Adult hippocampal neurogenesis of mammals: evolution and life history
By I. Amrein and H.-P. Lipp 141

Meeting report
Biodiversity research sets sail: showcasing the diversity of marine life
By T. J. Webb 145

Animal behaviour
Tactical reproductive parasitism via larval cannibalism in Peruvian poison frogs
By J. L. Brown, V. Morales and K. Summers 148
From coprophagy to predation: a dung beetle that kills millipedes
By T. H. Larsen, A. Lopera, A. Forsyth and F. Génier 152
Sexual segregation of pelagic sharks and the potential threat from fisheries
By G. R. Mucientes, N. Queiroz, L. L. Sousa, P. Tarroso and D. W. Sims 156
Latent inhibition of predator recognition by embryonic amphibians
By M. C. O. Ferrari and D. P. Chivers 160
Swamp sparrows modulate vocal performance in an aggressive context
By A. L. DuBois, S. Nowicki and W. A. Searcy 163
Lactating red squirrels experiencing high heat load occupy less insulated nests
By C. U. Guillemette, Q. E. Fletcher, S. Boutin, R. M. Hodges, A. G. McAdam
and M. M. Humphries 166
Evidence for egg discrimination preceding failed rejection attempts in a small cuckoo host
By A. Antonov, B. G. Stokke, A. Moksnes and E. Røskaft 169
Calculated reciprocity after all: computation behind token transfers in orang-utans
By V. Dufour, M. Pelé, M. Neumann, B. Thierry and J. Call 172
Indirect cues of nest predation risk and avian reproductive decisions
By M. Mönkkönen, J. T. Forsman, T. Kananoja and H. Ylönen 176
Oestadiol level and opportunistic mating in women
By K. M. Durante and N. P. Li 179
Production and perception of communicatory signals in a noisy environment
By D. A. Luther and R. H. Wiley 183
Assessment and decision-making in a Caribbean damselfish: nest-site quality influences prioritization
of courtship and brood defence
By J. M. Leese, J. L. Snekser, A. Ganim and M. Itzkowitz 188
Interactions between background matching and motion during visual detection can explain why
cryptic animals keep still
By C. C. Ioannou and J. Krause 191
Free amino acids as phagostimulants in cricket nuptial gifts: support for
the ‘Candymaker’ hypothesis
By S. Warwick, K. Vahed, D. Raubenheimer and S. J. Simpson 194
The impact of host aggressiveness on sex allocation by the gregarious parasitoid wasp
Cotesia glomerata (L.)
By S. Tanaka 197

Biomechanics
Suction is kid’s play: extremely fast suction in newborn seahorses

Conservation biology
Opinion piece. Marine mammals’ influence on ecosystem processes affecting fisheries in
the Barents Sea is trivial
By P. J. Corkeron 204
Tropical deforestation alters hummingbird movement patterns
By A. S. Hadley and M. G. Betts 207
Comment. Selective harvesting with equations: comment on ‘Should hunting mortality mimic
the patterns of natural mortality?’
By R. B. O’Hara 211
Invited reply. With or without equations: what are the dos and don’ts of hunting?
By R. Bischof, A. Mysterud and J. E. Swenson 213

Evolutionary biology
Opinion piece. Darwin’s ‘one special difficulty’: celebrating Darwin 200
By J. M. Herbers 214
Moderation of pathogen-induced mortality: the role of density in Bacillus thuringiensis virulence
By B. Raymond, R. J. Ellis and M. B. Bonsall 218

Convergent evolution of ‘creepers’ in the Hawaiian honeycreeper radiation
By D. M. Reding, J. T. Foster, H. F. James, H. D. Pratt and R. C. Fleischer 221

Electrifying love: electric fish use species-specific discharge for mate recognition
By P. G. D. Feulner, M. Plath, J. Engelmann, F. Kirschbaum and R. Tiedemann 225

Flight behaviour attenuates the trade-off between flight capability and reproduction in a wing polymorphic cricket
By P. A. Guerra and G. S. Pollack 229

Consistent male–male paternity differences across female genotypes
By C. D. H. Sherman, E. Wapstra and M. Olsson 232

Deep-sea mystery solved: astonishing larval transformations and extreme sexual dimorphism unite three fish families

Asymmetric reproductive isolation during simultaneous reciprocal mating in pulmonates
By A. Wiwegweaw, K. Seki, H. Mori and T. Asami 240

Sites of evolutionary divergence differ between olfactory and gustatory receptors of *Drosophila*
By A. Gardiner, R. K. Butlin, W. C. Jordan and M. G. Ritchie 244

Global change biology
Potential impacts of climate change on the winter distribution of Afro-Palaearctic migrant passerines
By M. Barbet-Massin, B. A. Wallther, W. Thuiller, C. Rahbek and F. Jiguet 248

Extreme weather events influence dispersal of naïve northern fur seals

Marine biology
Marine hybrid hotspot at Indo-Pacific biogeographic border

Parental effects on offspring life histories: when are they important?
By J. M. Donelson, P. L. Munday and M. I. McCormick 262

Comment. A rebuttal to the claim natural beaches confer fitness benefits to nesting marine turtles
By M. P. B. Fuentes and M. Hamann 266

Invited reply. Natural beaches produce more hatchling marine turtles than developed beaches, despite regional differences in hatching success
By D. A. Pike 268

Neurobiology
The movement of motion-defined contours can bias perceived position
By S. Durant and J. M. Zanker 270

Physiology
Feeding muscles scale differently from swimming muscles in sunfish (Centrarchidae)
By A. M. Carroll, A. M. Ambrose, T. A. Anderson and D. J. Coughlin 274

Population ecology
Costs of reproduction in a long-lived bird: large clutch size is associated with low survival in the presence of a highly virulent disease

Relationships between population size and pollen fates in a moth-pollinated orchid
By S. D. Johnson, E. Torninger and J. Ågren 282

Population genetics
Genetic compatibility and hatching success in the sea lamprey (*Petromyzon marinus*)
By R. Rodriguez-Muñoz and T. Tregenza 286

no. 3, 23 June 2009

Meeting report
New frontiers in biologging science
By C. Rutz and G. C. Hays 289

Animal behaviour
Design complexity in termite-fishing tools of chimpanzees (*Pan troglodytes*)
By C. Sanz, J. Call and D. Morgan 293

The beluga whale produces two pulses to form its sonar signal
By M. O. Lammers and M. Castellote 297

*Biol. Lett.* (2009)
Stopover decision during migration: physiological conditions predict nocturnal restlessness in wild passerines
By L. Fusani, M. Cardinale, C. Carere and W. Goymann

Behavioural phase polyphenism in the Australian plague locust (Chortoicetes terminifera)
By L. J. Gray, G. A. Sword, M. L. Anstey, F. J. Clissold and S. J. Simpson

Bumble-bees learn the value of social cues through experience
By E. Leadbeater and L. Chittka

Social structure influences extra-pair paternity in socially monogamous mammals
By A. Cohas and D. Allainé

Biomechanics
Opinion piece. Raising the sauropod neck: it costs more to get less
By R. S. Seymour

Conservation biology
Reduced heterozygosity impairs sperm quality in endangered mammals
By J. L. Fitzpatrick and J. P. Evans

Geographically extensive hybridization between the forest trees American butternut and Japanese walnut
By S. M. Hoban, T. S. McCleary, S. E. Schlarbaum and J. Romero-Severson

Hybridization rapidly reduces fitness of a native trout in the wild

Evolutionary biology
Opinion piece. On the problems of a closed marriage: celebrating Darwin 200
By J. R. Pannell

Human kin recognition is self- rather than family-referential
By P. Bressan and G. Zucchi

Trade-off between age of first reproduction and survival in a female primate
By G. E. Blomquist

Comment. Free radicals run in lizard families: a mitochondrial uncoupling phenomenon or not?
By F. Criscuolo and F. Bouillaud

Invited reply. Free radicals run in lizard families without (and perhaps with) mitochondrial uncoupling
By M. Olsson, M. Wilson, T. Uller and C. Isaksson

Genome biology
The genome sizes of megabats (Chiroptera: Pteropodidae) are remarkably constrained
By J. D. L. Smith and T. R. Gregory

Global change biology
The scaling of green space coverage in European cities
By R. A. Fuller and K. J. Gaston

Reduced abundance of insects and spiders linked to radiation at Chernobyl 20 years after the accident
By A. P. Möller and T. A. Mousseau

Marine biology
Ockham’s razor gone blunt: coenzyme Q adaptation and redox balance in tropical reef fishes
By M. Gagliano, W. C. Dunlap, R. de Nys and M. Depczynski

Stable isotopes document the trophic structure of a deep-sea cephalopod assemblage including giant octopod and giant squid
By Y. Cherel, V. Ridoux, J. Spitz and P. Richard

Neurobiology
Tiger moths and the threat of bats: decision-making based on the activity of a single sensory neuron
By J. M. Ratcliffe, J. H. Fullard, B. J. Arthur and R. R. Hoy

Palaeontology
Stem sarcopterygians have primitive polybasal fin articulation
By M. Zhu and X. Yu

Function and hydrostatics in the telson of the Burgess Shale arthropod Burgessia
By J.-P. Lin

Physiology
Comment. Comment on Coomes et al. ‘Scaling of xylem vessels and veins within the leaves of oak species’
By C. A. Price and B. J. Enquist

Invited Reply. Response to comment on Coomes et al. ‘Scaling of xylem vessels and veins within the leaves of oak species’
   By D. A. Coomes and L. Sack 381

Population ecology
A tiger cannot change its stripes: using a three-dimensional model to match images of living tigers and tiger skins
   By L. Hiby, P. Lovell, N. Patil, N. S. Kumar, A. M. Gopalaswamy and K. U. Karanth 383

Population genetics
Landscape modelling spatial bottlenecks: implications for raccoon rabies disease spread

Special feature
Whole organism perspectives on understanding molecular evolution
Guest edited by Lindell Bromham

Introduction. Putting the ‘bio’ into bioinformatics
   By L. Bromham 391
Upper-limit mutation rate estimation for a plant RNA virus
   By R. Sanjuán, P. Agudelo-Romero and S. F. Elena 394
Modelling mitochondrial site polymorphisms to infer the number of segregating units and mutation rate
   By M. D. Hendy, M. D. Woodhams and A. Dodd 397
Opinion piece. Why do species vary in their rate of molecular evolution?
   By L. Bromham 401
Evolutionary rate variation in Old World monkeys
   By N. Elango, J. Lee, Z. Peng, Y.-H. E. Loh and S. V. Yi 405
Opinion piece. Are sex-biased genes more dispensable?
   By J. E. Mank and H. Ellegren 409
Mitochondrial whims: metabolic rate, longevity and the rate of molecular evolution
   By N. Galtier, R. W. Jobson, B. Nabholz, S. Glem and P. U. Blier 413
Opinion piece. Effective population size and the rate and pattern of nucleotide substitutions
   By M. Woolfit 417
Opinion piece. An examination of phylogenetic models of substitution rate variation among lineages
   By S. Y. W. Ho 421
Inferring evolutionarily significant units of bacterial diversity from broad environmental surveys of single-locus data
   By T. G. Barraclough, M. Hughes, N. Ashford-Hodges and T. Fujisawa 425
The α-proteobacteria: the Darwin finches of the bacterial world
   By T. J. G. Ettema and S. G. E. Andersson 429
\n\nno. 4, 23 August 2009

Meeting report
Animal migration: linking models and data beyond taxonomic limits
   By S. Bauer, Z. Barta, B. J. Ens, G. C. Hays, J. M. McNamara and M. Klaassen 433
150 years beyond Darwin’s Origin of species: finding new approaches to reconstruct early animal phylogeny
   By R. Loesel 436

Animal behaviour
Stress and the costs of extra-territorial movement in a social carnivore
   By A. J. Young and S. L. Monfort 439
Hypoxic coma as a strategy to survive inundation in a salt-marsh inhabiting spider
   By J. Pétillon, W. Maingbe and D. Renault 442
Adaptive social immunity in leaf-cutting ants
   By T. N. Walker and W. O. H. Hughes 446
Field crickets change mating preferences using remembered social information
   By N. W. Bailey and M. Zuk 449
Pre-natal stress amplifies the immediate behavioural responses to acute pain in piglets

Kea (*Nestor notabilis*) consider spatial relationships between objects in the support problem
By A. M. I. Auersperg, G. K. Gajdon and L. Huber 455

A quantitative threshold for nest-mate recognition in a paper social wasp
By A. Cini, L. Gioli and R. Cervo 459

Social structure of primate interaction networks facilitates the emergence of cooperation
By B. Voelkl and C. Kasper 462

Hitchhiking behaviour in the obligatory upstream migration of amphidromous snails
By Y. Kano 465

Nectar, not colour, may lure insects to their death
By K. F. Bennett and A. M. Ellison 469

Where do penguins go during the inter-breeding period? Using geolocation to track the winter dispersion of the macaroni penguin
By C. A. Bost, J. B. Thiebot, D. Pinaud, Y. Cherel and P. N. Trathan 473

Larval zebrafish rapidly sense the water flow of a predator’s strike
By M. J. McHenry, K. E. Feitl, J. A. Strother and W. J. Van Trump 477

Stress hormone dynamics: an adaptation to migration?
By A. L. K. Nilsson and M. I. Sandell 480

Macrogeographical variation in the song of a widely distributed African warbler
By L. Benedict and R. C. K. Bowie 484

**Biomechanics**

Morphology, performance, fitness: functional insight into a post-Pleistocene radiation of mosquitofish
By R. B. Langerhans 488

**Community ecology**

Opinion piece. Missing the rarest: is the positive interspecific abundance–distribution relationship a truly general macroecological pattern?
By A. Komonen, J. Päivinen and J. S. Kotiaho 492

**Conservation biology**

Large population sizes mitigate negative effects of variable weather conditions on fruit set in two spring woodland orchids
By H. Jacquemyn, R. Brys and O. Honnay 495

Quantitative analysis of the effects of the exotic Argentine ant on seed-dispersal mutualisms
By M. A. Rodriguez-Cabal, K. L. Stuble, M. A. Nuñez and N. J. Sanders 499

**Evolutionary biology**

Opinion piece. Darwin would have loved DNA: celebrating Darwin 200
By L. Bromham 503

Does a predatory insect contribute to the divergence between cave- and surface-adapted fish populations?
By M. Tobler 506

Gliding hexapods and the origins of insect aerial behaviour
By S. P. Yanoviak, M. Kaspari and R. Dudley 510

Positive Darwinian selection results in resistance to cardioactive toxins in true toads (Anura: Bufonidae)

Body size differences do not arise from divergent mate preferences in a species pair of threespine stickleback
By M. L. Head, E. A. Price and J. W. Boughman 517

Evolution of seahorses’ upright posture was linked to Oligocene expansion of seagrass habitats
By P. R. Teske and L. B. Beheregaray 521

**Evolutionary developmental biology**

Humans at tropical latitudes produce more females
By K. J. Navara 524

Skin of the Cretaceous mosasaur *Plotosaurus*: implications for aquatic adaptations in giant marine reptiles
By J. Lindgren, C. Alwmark, M. W. Caldwell and A. R. Fiorillo 528

**Global change biology**

Global changes and animal phenotypic responses: melanin-based plumage redness of scops owls increased with temperature and rainfall during the last century
By F. Galeotti, D. Rubolini, R. Sacchi and M. Fasola 532

*Biol. Lett.* (2009)
Methane emission by plant communities in an alpine meadow on the Qinghai-Tibetan Plateau: a new experimental study of alpine meadows and oat pasture

By S. Wang, X. Yang, X. Lin, Y. Hu, C. Luo, G. Xu, Z. Zhang, A. Su, X. Chang, Z. Chao and J. Duan

Climate change effects on migration phenology may mismatch brood parasitic cuckoos and their hosts

By N. Saino, D. Rubolini, E. Lehikoinen, L. V. Sokolov, A. Bonisoli-Alquati, R. Ambrosini, G. Boncoraglio and A. P. Møller

Climate change and sexual size dimorphism in an Arctic spider


Marine biology

Foraging segregation between two closely related shearwaters breeding in sympatry

By J. Navarro, M. G. Forero, J. González-Solís, J. M. Igual, J. Bécares and K. A. Hobson

Effects of food on bacterial community composition associated with the copepod Acartia tonsa Dana

By K. Tang, C. Dziellas, K. Hutalle-Schmelzer and H.-P. Grossart

Neurobiology

Dynamic neuromodulation of aggression by vasotocin: influence of social context and social phenotype in territorial songbirds

By J. L. Goodson, D. Kabelik and S. E. Schrock

Palaeontology

Postcranial skeletal pneumaticity and air-sacs in the earliest pterosaurs

By R. J. Butler, P M. Barrett and D. J. Gower

Comment. Coincidence or evidence: was the sabretooth cat Smilodon social?

By C. Kiffner

Invited reply. Sociality in Rancho La Brea Smilodon: arguments favour ‘evidence’ over ‘coincidence’

By B. Van Valkenburgh, T. Maddox, P. J. Funston, M. G. L. Mills, G. F. Grether and C. Carbone

Physiology

Sonar-induced temporary hearing loss in dolphins

By T. A. Mooney, P. E. Nachtigall and S. Vlachos

Effects of floral thermogenesis on pollen function in Asian skunk cabbage Symplocarpus renifolius

By R. S. Seymour, Y. Ito, Y. Onda and K. Ito

Population ecology

Plant height–crown radius and canopy coverage–density relationships determine above-ground biomass–density relationship in stressful environments

By X. Dai, X. Jia, W. Zhang, Y. Bai, J. Zhang, Y. Wang and G. Wang

Population genetics

Consanguinity and susceptibility to infectious diseases in humans


Vocal discrimination of potential mates by female giant pandas (*Ailuropoda melanoleuca*)
By B. D. Charlton, Y. Huang and R. R. Swaisgood 597

Risk-sensitive mating decisions in a visually compromised environment
By B. B. M. Wong, M. Järvenpää and K. Lindström 600

Life-history strategies affect aphid preference for yellowing leaves
By J. K. Holopainen, G. Semiz and J. D. Blande 603

How universal are human mate choices? Size does not matter when Hadza foragers are choosing a mate
By R. Sear and F. W. Marlowe 606

**Biomechanics**

Pitch then power: limitations to acceleration in quadrupeds
By S. B. Williams, H. Tan, J. R. Usherwood and A. M. Wilson 610

**Conservation biology**

Opinion piece. Science should not be abandoned in a bid to resolve whaling disputes
By J. Cooke, R. Leaper and V. Papastavrou 614

Mesopredators constrain a top predator: competitive release of ravens after culling crows
By T. W. Bodey, R. A. McDonald and S. Bearhop 617

Carry-over effect of captive breeding reduces reproductive fitness of wild-born descendants in the wild
By H. Araki, B. Cooper and M. S. Blouin 621

**Evolutionary biology**

Opinion piece. Parasites—the new frontier: celebrating Darwin 200
By P. Schmid-Hempel 625

Plasticity in probabilistic reaction norms for maturation in a salmonid fish
By K. Morita, J. Tsuboi and T. Nagasawa 628

Tree shrew lavatories: a novel nitrogen sequestration strategy in a tropical pitcher plant
By C. M. Clarke, U. Bauer, C. C. Lee, A. A. Tuen, K. Rembold and J. A. Moran 632

Body condition but not dietary restriction prolongs lifespan in a semelparous capital breeder
By M. M. Kasumovic, R. C. Brooks and M. C. B. Andrade 636

Bone growth marks reveal protracted growth in New Zealand kiwi (*Aves, Apterygidae*)
By E. Bourdon, J. Castanet, A. de Ricqlès, P. Scofield, A. Tennyson, H. Lamrous and J. Cubo 639

Differences in the 2nd to 4th digit length ratio in humans reflect shifts along the common allometric line
By L. Kratochvíl and J. Flegr 643

**Palaeontology**

Coordinated shifts to non-planktrophic development in spatangoid echinoids during the Late Cretaceous
By J. A. Cunningham and C. H. Jeffery Abt 647

**Population ecology**

Comment. Apparent extinction or insufficient sampling?: comment on ‘Deforestation and apparent extinctions of endemic forest beetles in Madagascar’
By M. Röös and E. Pineda 651

Invited reply. Deforestation and tropical insect extinctions
By I. Hanski, E. Meyke and M. Miinala 653

**Population genetics**

Admixture analysis of stocked brown trout populations using mapped microsatellite DNA markers: indigenous trout persist in introgressed populations
By M. M. Hansen and K.-L. D. Mensberg 656

**Special feature**

Sexual conflict and sex allocation: evolutionary principles and mechanisms
Guest edited by Tracey Chapman

**Biol. Lett.** (2009)
Testosterone is associated with harem maintenance ability in free-ranging grey-headed flying-foxes, *Pteropus poliocephalus*

By S. M. Klose, J. A. Welbergen and E. K. V. Kalko

Probing aggressive motivation in a cichlid fish

By G. Arnott and R. Elwood

Sex-ratio biasing towards daughters among lower-ranking co-wives in Rwanda

By T. V. Pollet, T. W. Fawcett, A. P. Buunk and D. Nettle

Predictive motor activation during action observation in human infants

By V. Southgate, M. H. Johnson, T. Osborne and G. Csibra

Community ecology

Herbivore release through cascading risk effects

By M. H. Schmidt-Entling and E. Siegenthaler

Comment. Sometimes the obvious answer is the right one: a response to ‘Missing the rarest: is the positive interspecific abundance–distribution relationship a truly general macroecological pattern?’

By T. M. Blackburn and K. J. Gaston

Invited reply. On the obvious positive interspecific relationship between abundance and distribution: a reply to Blackburn and Gaston

By J. S. Kotiaho, A. Komonen and J. Päivinen

Evolutionary biology

Rapid induction of immune density-dependent prophylaxis in adult social insects

By M. X. Ruiz-González, Y. Moret and M. J. F. Brown

*Mhc* polymorphisms fail to explain the heritability of phytohaemagglutinin-induced skin swelling in a wild passerine

By C. Bonneauaud, J. S. Sinsheimer, M. Richard, O. Chastel and G. Sorci

Should I stay or should I go? The *Ectodysplasin* locus is associated with behavioural differences in threespine stickleback

By R. D. H. Barrett, T. H. Vines, J. S. Bystriansky and P. M. Schulte

Female presence influences sperm velocity in the guppy

By C. Gasparini, A. V. Peretti and A. Pilastro

Sexual selection against deleterious mutations via variable male search success

By K. MacLellan, M. C. Whitlock and H. D. Rundle

A distinct infection cost associated with trans-generational priming of antibacterial immunity in bumble-bees

By B. M. Sadd and P. Schmid-Hempel

The evolution of growth rates on an expanding range edge

By B. L. Phillips

Environmentally induced responses co-opted for reproductive altruism

By A. M. Nedelcu

Bitter taste perception in Neanderthals through the analysis of the *TAS2R38* gene

By C. Laloue-Fox, E. Gigli, M. de la Rasilla, J. Fortea and A. Rosas

Divergence time of the two regional medaka populations in Japan as a new time scale for comparative genomics of vertebrates


*Evolutionary developmental biology*

Life history, sexual dimorphism and ‘ornamental’ feathers in the mesozoic bird

*Confuciusornis sanctus*

By W. S. Peters and D. S. Peters

*Global change biology*

‘Tales of *Symphonia*’: extinction dynamics in response to past climate change in Madagascan rainforests

By M. Virah-Sawmy, M. B. Bonsall and K. J. Willis

Climate change: is the dark Soay sheep endangered?

By S. K. Maloney, A. Fuller and D. Mitchell

*Marine biology*

Whisker isotopic signature depicts migration patterns and multi-year intra- and inter-individual foraging strategies in fur seals

By Y. Cherel, L. Kernaléguen, P. Richard and C. Guinet
Palaeontology
Miocene skinks and geckos reveal long-term conservatism of New Zealand’s lizard fauna
Arthropod remains in the oral cavities of fossil reptiles support inference of early insectivory
   By S. P. Modesto, D. M. Scott and R. R. Reisz 838
High-fidelity X-ray micro-tomography reconstruction of siderite-hosted Carboniferous arachnids
   By R. Garwood, J. A. Dunlop and M. D. Sutton 841

Pathogen biology
Crowded locusts produce hatchlings vulnerable to fungal attack
   By G. A. Miller, J. K. Pell and S. J. Simpson 845

Phylogeny
FORDISC and the determination of ancestry from cranial measurements
   By M. Elliott and M. Collard 849

Physiology
Strategic (adaptive) hypothermia in bull dromedary camels during rut; could it increase reproductive success?
   By G. Grigg, L. Beard, B. Dörges, J. Heucke, J. Coventry, A. Coppock and S. Blomberg 853
Long-lived sperm in the geothermal bryophyte Pohlia nutans
   By T. N. Rosenstiel and S. M. Eppley 857

Population genetics
Opinion piece. Adaptation as organism design
   By A. Gardner 861
AMI AND SCOPE

Launched as an independent journal in 2005, Biology Letters is a primarily online, peer-reviewed journal that publishes short, high-quality articles from across the biological sciences. The scope of Biology Letters is vast: publishing high-quality research articles and opinion pieces in any area of the biological sciences. However, we have particular strengths in the biology, evolution and ecology of whole organisms. Articles submitted to Biology Letters benefit from our broad scope and readership, dedicated media promotion and an average turnaround time of 4 weeks to first decision. The journal is particularly suited to researchers that require high visibility due to its cross-disciplinary nature or novel findings.

GUIDANCE FOR AUTHORS

Selection criteria

The criteria for selection are scientific excellence, originality and interest across disciplines within biology. Papers are assessed by the Editorial Board for suitability before full peer-review. Their recommendations are passed to the Editor. The Editor is responsible for all editorial decisions and he makes these decisions based on the reports received from the referees and the Editorial Board.

Publishing format

Biology Letters are published regularly online and in bi-monthly print issues. Along with all Royal Society journals, we are committed to archiving and providing perpetual access. Although the printed version of Biology Letters is limited to 2500 words, it is the facility for Electronic Supplementary Material (ESM). Contents of the ESM might include details of methods, derivations of equations, large tables of data, DNA sequences and computer programs. However, the printed version must include enough detail to satisfy most non-specialist readers. Supplementary data up to 10MB is placed on the Society’s website free of charge. Larger datasets must be deposited in recognised public domain databases by the author.

Conditions of publication

Articles must not have been published previously, nor be under consideration for publication elsewhere. The main findings of the article should not have been reported in the main media. Like many journals Biology Letters employs a strict embargo policy where the reporting of a scientific article by the media is embargoed until a specific time. The Editor has final authority in all matters relating to publication.

For full submission guidelines, further details about the journal and access to all journal content please visit the Biology Letters website at rbl.royalsocietypublishing.org

The Royal Society is an independent scientific academy founded in 1660 and self-governing under Royal Charter. The Society has three roles, as the Royal Society of the United Kingdom, as a learned society, and as a funding body.

The objectives of the Royal Society are to:
- recognise excellence in science
- support leading-edge scientific research and its applications
- stimulate international interaction
- further the role of science, engineering and technology in society
- promote the public’s understanding of science
- provide independent authoritative advice on matters relating to science, engineering and technology
- encourage research into the history of science

For further information on the Society’s activities, please contact the following departments on the extensions listed by dialling +44 (0) 207 839 5561, or visit the Royal Society website at royalsociety.org.

Research Support (UK grants and fellowships)
Research appointments: 2547
Research grants: 2539
Conference grants: 2540
Science Advice
General enquiries: 2585
Science Communication
General enquiries: 2572
International Exchanges (for grants enabling research visits between the UK and most other countries (except the USA))
General enquiries: 2555
Library and Information Services
Library/archive enquiries: 2606

Cover image: New Zealand Isabell, such as this wild pair of Duoandalus’ geckos (Hoplodactylus duoandalus), has remained evolutionarily conservative for at least 16–19 million years. (See pages 833–837; photo by Rod Morris.)