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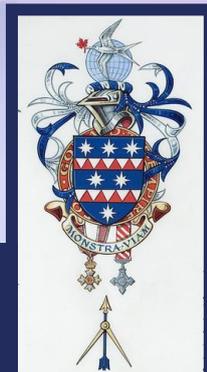
10th RIN Conference on Animal Navigation

10-12 April 2019

Royal Holloway College, UK

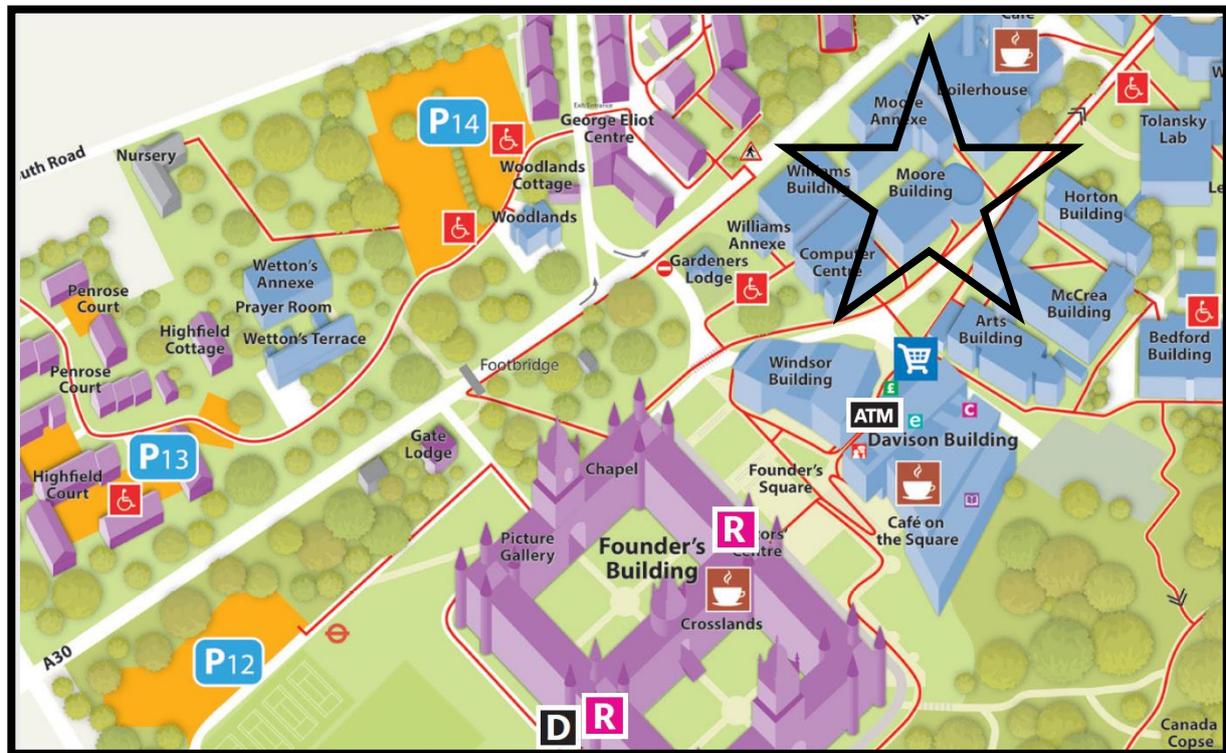
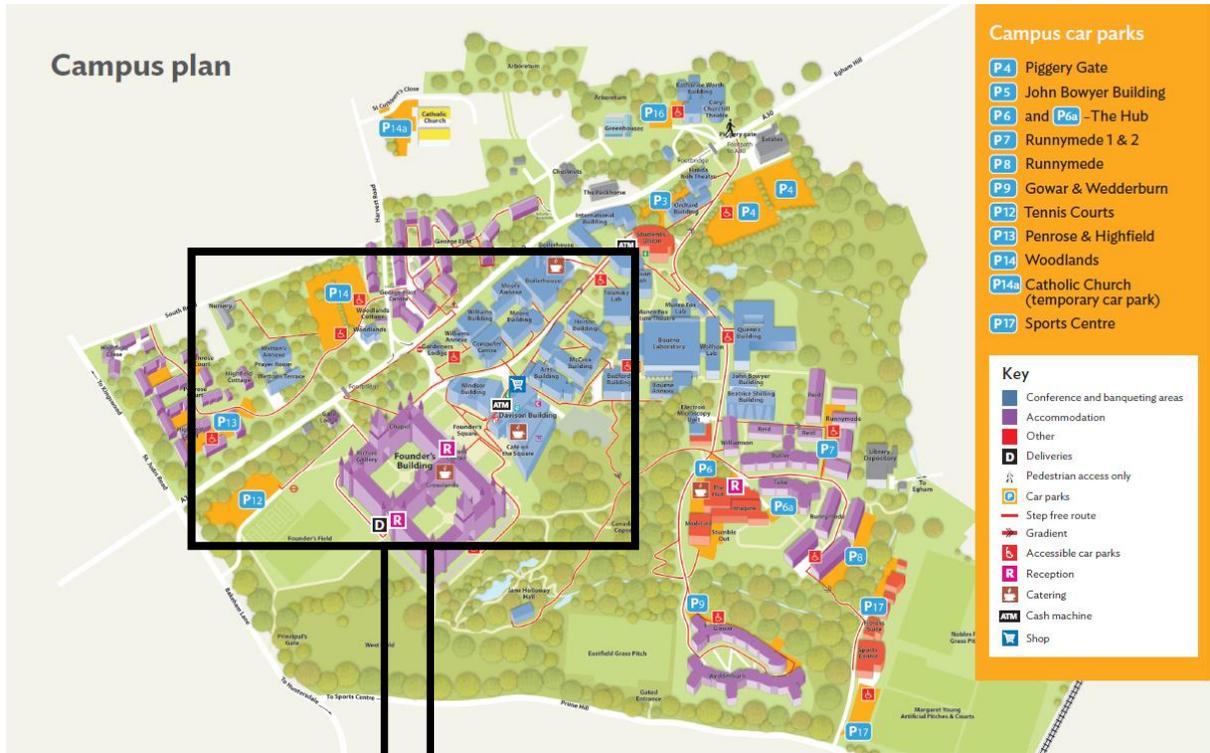


**The Company of
Biologists**



Hosted by the Royal Institute of Navigation's Animal Navigation Group (ANG)

Maps



Useful Information

Organising Committee

Dr Miriam Liedvogel, Chair Animal Navigation Group

Dr Emily Baird, Honorary Secretary Animal Navigation Group

Group Captain David Broughton, Past Director RIN

John Pottle, Director RIN

Louisa Chanter, Events Organisation RIN

Dr Clare Stead, Communications Manager RIN

The Venue

The Tenth International Conference on Animal Navigation, hosted by the Animal Navigation Special Interest Group of the Royal Institute of Navigation (RIN) in the UK, will be held at Royal Holloway College, Egham, Surrey, TW20 0EX, in the Runnymede borough of Surrey, UK, on 10-12 April 2019. No animals or pets are allowed on the site.



How to get there

By air

For those arriving at London airports, we strongly recommend that you do not take the expensive black cabs, but call either Windsor Cars <http://www.windsorcars.com/> (+44 1753 677677).

Windsor Cars have a dedicated email for pre-booking journeys: bookings@windsorcars.com.

Most local taxi companies know the Royal Holloway campus well and should be able to drop you at the correct area for check-in.

Taxi from Heathrow

If pre-booked, the cash price from London Heathrow (any terminal) is approximately £28.00. The driver will meet you in arrivals with a named sign.

The driver will meet you at a given location within arrivals. The collection point at Terminals 1-4 is at W H Smith in arrivals. At Terminal 5, the collection point is at Costa Coffee. The collection point will be confirmed when you call. Please note payment by credit card will incur a charge.

Taxi from Gatwick

A taxi from Gatwick costs £68.00 and must be pre-booked. This price includes a 40 minute waiting time and parking for up to an hour once the flight has landed. Please note payment by credit card will incur a charge.

Sharing a taxi with other delegates will help keep costs to a minimum.

Useful Information

By bus

There is a reasonable bus service from Heathrow Terminal 5 to Royal Holloway. The number 8 bus leaves from outside Terminal 5 and not from the Central Bus Station. If you arrive at another terminal, please follow flight connection signs for internal airport transfer to T5. Timetables for the number 8 can be found through the following link:

<https://www.firstgroup.com/berkshire-thames-valley/plan-journey/timetables/?operator=1&page=1&redirect=no>.

By train

There are frequent services from London Waterloo to Egham (35-40 minutes); Woking to Egham (35 minutes, change at Weybridge) and Reading to Egham (40 minutes). Services at weekends, especially those on Sundays, are less frequent than on weekdays. Train links to the rest of the country are available via the London stations or Reading. There are usually taxis waiting outside Egham station to take you to Royal Holloway, which is located less than a mile from the station. <https://www.southwesternrailway.com/>.

By car

Royal Holloway is on the A30, 19 miles from central London and about a mile south-west of the town of Egham. It is 2 miles from junction 13 of the M25 (London Orbital). After leaving the motorway, take the A30 west, signposted to Bagshot and Camberley (this is the Egham by-pass). At the first roundabout, take the second exit. At the second roundabout, take the second exit and continue on the A30 up Egham Hill. Royal Holloway is on the left at the top of the hill. Free parking is available on campus. The car parks are indicated on the campus map.

The SAT NAV post code is TW20 0EX.

Car parking arrangements

RIN Conference delegates will not need to register their vehicles in advance and therefore the car park signage requesting visitors to register their vehicles does not apply. The campus map shows a variety of car parks on site. For RIN Conference guests, we would suggest P4 or P8 car parks.

As car parking spaces are free of charge, they cannot be booked and are allocated on a first come, first served basis. In the unlikely event that the on-campus car parks are full, please use P14 or I4a on the north side of the A30, off Harvest Road.

Please note no parking is allowed on the roads by the Halls of Residence, or in the reserved bays along the west side of Founder's, opposite the hockey field. All parking must be legal, or Penalty Charge Notices will be issued.

Accommodation

Check in

From Tuesday 9 April 2019

Regular check-in is from 16.00 at the Hub Reception.

If you will be arriving late at night, please email newhalls@royalholloway.ac.uk or call +44 [0] 1784 443285, before your arrival date.

For those arriving as the conference starts, check-in will be available from the reception area in the Moore Building.

If your arrival is later than 22.00, our security staff at The Hub reception will be able to issue your key and give directions to your room. If a member of the security team has provided the key, please ensure you check in with The Hub or Founder's reception the following day to confirm your arrival. Our security team can be contacted on +44 [0] 1784 443063.

Useful Information

Our Customer Services team can be contacted on +44 [0]1784 443052 between 07:00 and 22:00 if required.

No vacancies exist for those who have not pre-booked accommodation.

Halls of Residence have shared kitchen/social areas, allowing ample opportunity to network with your fellow delegates. Cooking is not permitted in these kitchens but you may use microwaves and refrigerators. Tea and coffee making facilities are available in the kitchens for delegates to use.

Rooms also include:

- Full bed linen
- Basic toiletries and towels
- WiFi
- Tea and coffee making facilities are available in the shared kitchen (Fairtrade products)
- En-suite bathroom with a toilet, hand basin and shower.

Please remember to bring electrical adaptors with you if travelling from abroad and note that rooms do not have shaver sockets.

Check-out

It is important that all residential delegates check out by 10:00 on the day of departure. Please return room key cards to the Hub reception to complete the check-out process. Limited luggage storage is available at the Hub reception, so if required a room in the Moore Building can be used as a luggage store.

Taxis for departure can be ordered through the Conference Assistants on the day and taxi share is encouraged to avoid a higher carbon footprint for the conference and to save money.

The Conference

Registration will take place in the foyer of the Moore Building on the campus plan from 10:00 on Wednesday 10 April 2019.

Meals

Breakfasts

Cooked and Continental breakfast is available on a self-service basis from 7.00am to 9.00am in the Founder's Dining Hall from Wednesday 10 to Friday 12 April 2019.

Lunches

Buffet lunch will be available in the Moore Atrium, on Wednesday 10, Thursday 11 and Friday 12 April 2019.

Dinners

Pre-dinner drinks receptions – details to be confirmed.

Buffet Dinner will be served from 19.00 on Wednesday 10 April in Founder's Dining Hall.

A Banquet Dinner will be served in the Picture Gallery on Thursday 11 April. Details to be confirmed.

Internet

Free WiFi access to 'CampusNet', our high speed wireless internet service, is available across the entire campus. Each conference is issued with a unique guest username and password which will allow you to register on the WiFi network and provide you with access for the duration of your stay. Although access is available across the campus, we do advise that presenters bring any essential documents or media with you in a hard or digital copy.

To log on:

- Open internet browser
- Of the 2 available options, click on the 'Guest User' option
- Terms of use - confirm acceptance
- Enter username and password:

Username:RIN2019

Password:WIFI2019

After 60 seconds, you will be asked to close down and open the browser again. You will only have to complete this registration process once for the duration of your stay. The same username and password will be required if accessing the internet in the bedrooms. Details are provided on the reverse of your key envelope.

If for any reason the above instructions do not work, please enter the following into your browser:

nac.rhul.ac.uk/ and press enter. Follow the instructions on screen and enter the above Username and Password when prompted.

You will only have to complete this process once as the code covers the duration of your stay/event.

1000	Registration and coffee
1200	Buffet Lunch
1245	Welcome and housekeeping notices
S1 Magnetic Compass	
1300	Magnetic compass orientation in the presence of RF fields: zebra finches can be trained to Larmor-frequency, but not broadband RF fields Rachel Muheim, Lund University
1315	The sensitivity threshold of magnetic orientation of a long-distant migrant bird to radio-frequency magnetic fields Kirill Kavokin, St. Petersburg State University
1330	Garden warblers are not disoriented by oscillating magnetic fields applied to their eyes Julia Bojarinova, St. Petersburg State University
1345	Magnetic declination as a map tool in songbird migrants Nikita Chernetsov, Biological Station Rybachy, Zoological Institute RAS
S2 Other Compasses	
1400	Experimental Systems Analysis - Understanding the factors that drive navigation in Homing Pigeons Ingo Schiffner, Bangor University
1415	Anosmic migrating songbirds demonstrate a compensatory response following long-distance translocation: a radio-tracking study Dmitry Kishkinev, (1) Bangor University, UK; (2) Zoological Institute of Russian Academy of Sciences
1430	Stellar compass of European robins <i>Erithacus rubecula</i> is time-independent Anna Anashina, Biological Station "Rybachy" ZIN RAS
1445	Reliance on familiar visual landmarks by anosmic pigeons Anna Gagliardo, University of Pisa
1500-1600	Coffee break
1600-1700	Flash talks
1700-1830	Poster session with reception
1900	Dinner

S3 Cryptochromes	
0900	Magnetic Compass in Animals: Why is it so fragile to noise and what is the role of cryptochromes? Thorsten Ritz, University of California, Irvine
0915	Retinal horizontal cells express Cry4: a new take on the avian light-dependent magnetic compass Atticus Pinzon-Rodriguez, Lund University
0930	The pigeon cryptochrome interactome Tobias Hochstoeger, Research Institute of Molecular Pathology (IMP)
0945 (joint talk)	Experimental Confirmation of Radical-pair-based Magnetic Field Effects in an Avian Cryptochrome Lauren Jarocho, University of Oxford Jingjing Xu, University Oldenburg
1005	Studying cryptochromes through the computational microscope Ilia Solov'yov, University of Southern Denmark
1020	Double-cone localisation and seasonal expression pattern suggest a role in magnetoreception for European robin cryptochrome 4 Anja Günther, University Oldenburg
1035-1130	Coffee break
S4 What if not Cryptochromes?	
1130	What if it's not cryptochrome? John B. Phillips, Virginia Tech
1145	Exploring the minimal functional unit of magnetoreceptor (MagR) and a roadmap to MagR2.0 Can Xie, Peking University
1200	Antibiotics effect migratory restlessness orientation in a migrating passerine: first experimental support for the symbiotic magnetoreception hypothesis Yuval Werber, Tel-Hai College
1215	Magnetic compass in pigeon retina: electroretinographic study Luba Astakhova, Sechenov Institute of Evolutionary Physiology and Biochemistry RAS
1230-1330	Buffet lunch

S5 Brain	
1330	Different structure same function: avian hippocampus and spatial memory Uwe Mayer, Center for Mind/Brain Sciences, CIMEC- University of Trento
1345	Cluster N activity in migrating nocturnal birds: Circadian control or facultative regulation? Verner Bingman, Bowling Green State University
1400	The cortical visual pathway is necessary for landmark anchoring of head direction cells in the rat James Street, University College London
1415	Evidence for a separate brain pathway processing magnetic map information in migratory birds Dmitry Kobylkov, University Oldenburg
S6 Genetics Approaches	
1430	The molecular signatures of magnetite-based magnetoreception: evidence from transcriptomics Robert Fitak, Duke University
1445	Whole brain clearing and imaging reveals magnetically activated brain regions in the mouse Lukas Landler, Research Institute of Molecular Pathology
1500	The chromatin accessibility landscape in the brain of a migrant songbird Juan Sebastian Lugo Ramos, Max Planck Institute for evolutionary biology
1515-1600	Coffee break
S7 Independent Replication & New Technologies	
1600	The importance of independent replication: a study of magnetic field effects on <i>Drosophila melanogaster</i> Marco Bassetto, University of Oxford
1615	No evidence for a magnetite-based magnetoreceptor in the lagena of pigeons Erich Pascal Malkemper, Research Institute of Molecular Pathology
1630	New technologies to address old questions of magnetic orientation in free-roaming animals Michael Painter, Czech University of Life Sciences
1645	Global analysis of immediate early gene expression in the pigeon brain Gregory Nordmann, Research Institute of Molecular Pathology
1700-1800	Jubilee talk – 10th conference in the RIN ANG series
1900	Conference dinner

S8 It's Not All About Birds (Insects)	
0900	Virtual reality exploration of bumblebees' scanning behaviour in a 3D flight arena during object discrimination Vince Gallo, Queen Mary University of London
0915	The Earth's Magnetic Field and Visual Landmarks Steer Migratory Flight Behavior in the Nocturnal Australian Bogong Moth David Dreyer, University of Lund
0930	Interactions of navigational strategies during the learning of environmental information in ants Cornelia Buehlmann, University of Sussex, School of Life Sciences
0945	Resolving the heading-direction ambiguity in vertical-beam radar observations of migrating insects Zhenhua Hao, University of New South Wales
S9 It's Not All About Birds	
1000	Biophysics of Magnetoreception Evidenced from Alpha Waves in the Human Brain Joseph Kirschvink, California Institute of Technology
1015	Planarians possess a light-independent, circadian time-dependent magnetic inclination compass Hervé Cadiou, French National Centre for Scientific Research
1030-1130	Coffee break
1130	Lassie come home: Homing strategies in hunting dogs Hynek Burda, Czech University of Life Sciences in Prague
1145	Tadpole transporting frogs use map-like spatial memory to navigate the rainforest Andrius Pašukonis, Stanford University
1200	Going home magnetically: geomagnetic imprinting in sea turtles and salmon Kenneth Lohmann, University of North Carolina at Chapel Hill
1215	Distance estimation in a coral reef fish, <i>Rhinecanthus aculeatus</i> Cecilia Karlsson, University of Oxford
1230	Diversification of the neural substrate of mental maps in primates David Vanier, Stony Brook University
1245	Closing remarks and end of conference

Posters

P1	<p>Sensory Transduction of Radio Waves by Biogenic Magnetite: An alternative to the Cryptochrome Quantum Compass Hypothesis of Magnetoreception</p> <p>Yovan Badal, California Institute of Technology</p>
P2	<p>Blue light-dependent human magnetoreception in geomagnetic food orientation</p> <p>Kwon-Seok Chae, Kyungpook National University</p>
P3	<p>Compensation for wind drift in the Thrushes during autumn nocturnal migratory flight</p> <p>Alexandra Sinelschikova, St. Petersburg State University, Biological Station Rybachy</p>
P4	<p>A reinterpretation of “Homing pigeons’ flight over and under low stratus” based on atmospheric propagation modeling of infrasonic navigational cues</p> <p>J T Hagstrum, U.S. Geological Survey</p>
P5	<p>Gravity vector theory of pigeon navigation: predicted release sites entail severe homing problems as revealed by GPS tracking</p> <p>Hans-Peter Lipp, Institute of Evolutionary Medicine, University of Zurich</p>
P6	<p>How to dig a straight tunnel? Magnetic field as heading indicator in subterranean rodents?</p> <p>Hynek Burda, Czech University of Life Sciences</p>
P7	<p>Do songbird migrants use the magnetic field during the non-migratory season?</p> <p>Alexander Pakhomov, Biological Station Rybachy ZIN RAS</p>
P8	<p>Stay orientated: visual landmarks as dominant directional cues in the rat brain</p> <p>Ningyu Zhang, University College London</p>
P9	<p>Navigation in visually ambiguous environments</p> <p>Han Yin Cheng, Institute of Behavioural Neuroscience</p>
P10	<p>Alignment behaviour in dogs</p> <p>Richard Holland, Bangor University</p>
P11	<p>Wind conditions affect nocturnal departure directions of Northern Wheatears (<i>Oenanthe oenanthe</i>) during autumn migration</p> <p>Florian Packmor, Bangor University</p>
P12	<p>The use of spatial and local cues for orientation in domestic chicks (<i>Gallus gallus</i>)</p> <p>Anastasia Morandi Raikova, CIMeC, University of Trento</p>
P13	<p>A quantum needle can provide a highly sensitive and highly robust magnetic compass</p> <p>Shawn Strausser, Department of Physics and Astronomy, University of California, Irvine, Ca 92697, USA</p>

Posters

P14	Does magnetic conditioning work on zebrafish? Laura Ziegenbalg, Department of Sensory Biology of Animals, IBU, University Oldenburg, D-26111 Oldenburg
P15	Unified Animal Navigation Theory and Einstein's Unified Field Theory Valerii Kanevskiy, High Technologies Institute, ltd
P16	Physical properties of a magnetoreceptor based on electromagnetic induction Daniel Kagerbauer, Institute of Molecular Pathology
P17	Characterization of Pigeon Cry 4: a putative light-sensitive magnetosensor Dante Maestre, Institute of Molecular Pathology
P18	In vivo 2-photon calcium imaging in the pigeon brain Simon Nimpf, Institute of Molecular Pathology
P19	The earth's magnetic field is an early compass in desert ants Robin Grob, JMU Wuerzburg
P20	Does the anatomy of higher processing centres in the lepidopteran brain reflect navigational prowess? Andrea Adden, Lund University
P21	Radiofrequency noise modifies the insect sense of time Martin Vacha, Masaryk University
P22	The neurogenomics of avian migration Gillian Durieux, Max Planck Institute for Evolutionary Biology
P23	From IscA to MagR: Origin and Dual-facet of Animal Magnetoreception Siyang Qin, Peking University
P24	Exploring the minimal functional unit of magnetoreceptor (MagR) and a roadmap to MagR2.0 Peilin Yang, School of Life Sciences, Peking University
P25	Magnetic response of the bird's lagena Marianna Zhukovskaya, Sechenov Institute of Evolutionary Physiology and Biochemistry, Russian Academy of Sciences
P26	Species and sex differences in wild poison frog homing ability Andrius Pašukonis, Stanford University
P27	Do mole-rats use the daily fluctuations of the geomagnetic field (GMF) as a zeitgeber? Sabine Begall, University of Duisburg-Essen
P28	Using brain clearing to study magnetoreception in the mole-rat Christin Osadnik, University of Duisburg-Essen
P29	Protein-protein interaction of the putative magnetoreceptor cryptochrome expressed in the avian retina Haijia Wu, University of Oldenburg

Posters

P30	Is Access to Celestial Cues in a Burrow-Nesting Seabird Essential for Fledging? Joe Wynn, University of Oxford
P31	Analyzing the non-homing pigeon - a FlowR bundle for standardized quantitative dissection of pigeon GPS tracks Hans-Peter Lipp, University of Zurich, Institute of Evolutionary Medicine
P32	Magnetically induced immediate early gene activation in the fish brain Susanne Schwarze, University Oldenburg, Institute of Biology and Environmental Science, AG Sensory Biology of Animals
P33	Studying V-formation through the help of conservation and satellites Elisa Perinot, Waldrappteam/University of Veterinary Medicine Vienna
P34	A magnetic pulse disrupts the magnetic sense of Chinook salmon Lewis C. Naisbett-Jones, University of North Carolina
P35	Formation of foraging ground attachments Kayla Goforth, University of North Carolina
P36	Ready for takeoff? A novel experimental assay to investigate the senses for navigation in migratory bats Oliver Lindecke, Leibniz Institute for Zoo and Wildlife Research
P37	How does Animal Navigation work? Richard Nissen, Editor
P38	From open spaces to cluttered places: Straight-line orientation in different visual environments Lana Khaldy, Vision Group, Lund University