# Making a career of it

## Andy Murdock describes how the Association for Geographic Information is helping early career professionals map out their futures

Having been involved with Geographic Information for more than 15 years, I have seen many changes to our industry including advances in both hardware and software, and the advent of new, disruptive technologies that have turned the sector on its head. Change is constant and, at times, it is extremely difficult to keep up with new developments, let alone shape them. For this, organisations need the best available talent ... and talent that is at the cutting edge of new skills and ideas.

The Association for Geographic Information (AGI), as the voice of the UK geospatial industry, is keen to ensure our companies and professionals are at the forefront of "what's hot" in geospatial. As part of this activity, in January 2015, AGI launched the Early Careers Network (ECN), a scheme to provide additional support, training and advice to geospatial professionals at the start of their careers and who will potentially be future industry leaders.

ECN is aimed at those who have less than 10 years commercial GI experience and is applicable to both professionals and students (AGI membership for students is free). We also have a number of ECN members who are professionals re-skilling from other industries.


Paul Naylor (left) and Charley Glynn, both from Ordnance Survey, pictured during a recent ECN webinar on cartography

### Getting better acquainted

Our goal is to create opportunities where early career professionals can meet, make friends and contacts as part of a community. To better understand their needs and expectations, the findings of a recent questionnaire (see www.agi.org.uk/news/agi/743-topline-results-of-recent-ecn-survey) have helped us deliver more relevant support and training. It has also shaped our events programme with the introduction of ECN webinars on a range of topics, from technical (such as cartography) to careers advice.

We work closely with colleagues in academia, e.g., UCL, which recently hosted a GIS Careers Day and where we provided mentoring, mock interviews and CV skills training. We also have established links with industry (including Ordnance Survey and Triad) that assist with venue hosting for events and the provision of senior staff mentors. And we are building ECN hubs within some of the larger geospatial organisations as a local focus for activities.

### Charting a course

Part of our mission is to provide information and opportunities for Continuing Professional Development (CPD) to help members maintaining their knowledge, skills, and progress to Chartered Geographer status.

For this purpose, we work closely with the Royal Geographical Society and Royal Scottish Geographical Society, both of which share our view that chartership is a key career milestone for geospatial professionals. We have held a number of joint networking events that will be extended across the country. Last year also saw the inauguration of the AGI Award for Outstanding Early Career Professional to help raise the profile of ECN members.

### Helping hand

On a personal level, I was particularly keen to help set up the ECN as, in the absence of such a helping hand during my early career, and as the sole GIS person within my organisation, non-GI managers could not always offer effective advice. I think I would also have benefitted from some tips and/or practice in preparing for that big presentation or job interview. ECN aims to provide this type of support.

ECN is run by a small group of volunteers who importantly, are mostly made up of early career professionals and who give their time to organise training, events and other activities. In doing so they also gain valuable experience, opportunities and useful connections in the industry. So if you want to get involved in the network or as a volunteer we would love to hear from you.

For more information please contact ecn@agi.org.uk. You can also access links to the webinar series and other information at www.agi.org.uk

***Andy Murdock is an experienced GIS consultant at APMgeo and leads a volunteer team of early career professionals to deliver the AGI's Early Careers Network. He is also a final assessor for the RGS Chartered Geographer (CGeog) scheme***

Image: Motorolka / Shutterstock

# Tackling a 'ticking' time bomb

As Lyme disease hits the headlines amid controversy over its symptoms and resistance to treatment, the latest technology is helping researchers north of the border tackle the issue. But educating the public remains vital, says Ruaraidh MacNeil

A rise in the number of diagnosed cases of Lyme borreliosis, or Lyme Disease as it is known, now makes it one of the most common tick-borne diseases in the northern hemisphere.

Caused by a tick bite, Lyme Disease now affects around 65,000 people a year in Europe. The number of cases confirmed in England and Wales by Public Health England (PHE) grew from 268 in 2001 to 1,112 in 2013, although it estimates the true number of new cases to be closer to 3,000. Indeed, the former head of the National Lyme Disease Testing Service has suggested that each confirmed case should be multiplied by 10, which mean the number of cases a year is nearer the 11,000 mark.

As yet there are no official figures for the number of people diagnosed with Lyme Disease in Scotland. However, Dr Roger Evans, a clinical scientist with NHS Highland, believes the number of cases reported in Scotland has increased 10-fold in the past decade.

"Anecdotal evidence from GPs suggest an increase in numbers as diagnosis improves and awareness is raised among the public and primary care health workers. Climate and ecological conditions can also prolong the tick season with the potential for people to be bitten extending beyond the summer months well into October, November and December. Milder winters also mean more ticks are out, so this is another reason why the disease is becoming more prevalent as more people spend time outdoors during these months."

## Collaborative campus

Dr Evans is part of a consortium, led by Scotland's Rural College (SRUC)'s Epidemiology Research Unit, which was awarded £250,000 by the European Space Agency's Advanced Research in Telecommunications Systems Integrated Applications Promotion programme.

The make-up of the consortium is a good example of the 'collaborative campus' model promoted by the Centre for Health Science associated with Inverness Campus .... A body that encourages business and academia to work together on a range of projects.

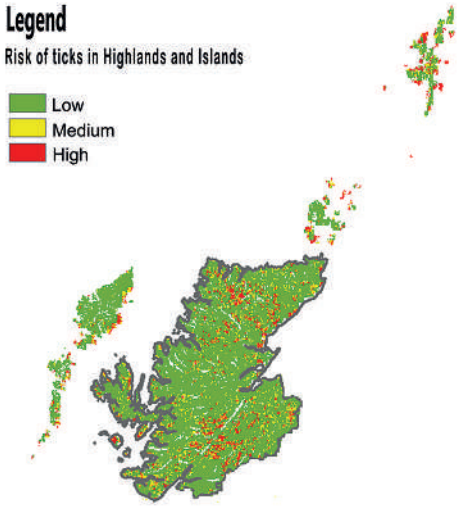
The consortium includes the National Lyme Borreliosis Testing Laboratory based at Inverness' Raigmore Hospital, NHS Highland Research and Development and Primary Care, the University of the Highlands and Islands' (UHI)'s Rural Health and Wellbeing department, Avia-GIS - a Belgian SME with a focus on agriculture and veterinary information and analysis - and Environmental Research Group Oxford which specialises in applied research for sustainable development and is working in consultation with the Scottish Government's Centre of Expertise in Animal Disease Outbreaks.

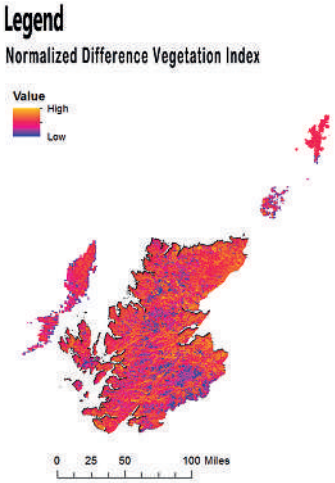
The LymeMAP system evolved under the project uses data from the testing laboratory, Earth Observation imagery, GPS satellites and end users, Spatial modelling techniques are then applied to produce maps of where the ticks are most prevalent. Users of the app are also able to upload locations of ticks and bites to the central database.

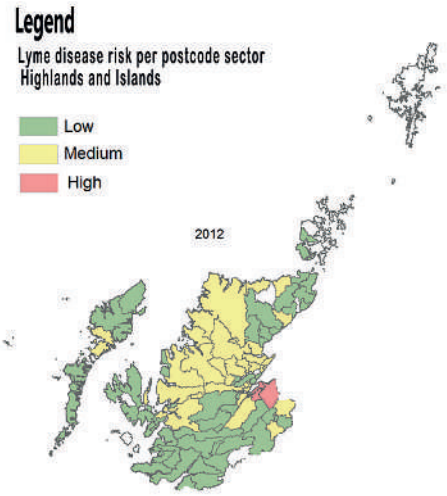
The two principal assets of LymeMAP are Earth Observation (EO) and Global Navigation Satellite Systems (GNSS). EO provides the data necessary to produce spatial distribution models of disease and vector risk, either from remotely-sensed imagery such as altitude or vegetation cover, or more distant derivatives such as land use, seasonality or bioclimatic indicators. The use of GNSS through mobile platforms and dedicated apps is essential to providing location-specific information on the risk of Lyme borreliosis and also to develop more accurate risk maps through the geo-located data submitted by users via the app.

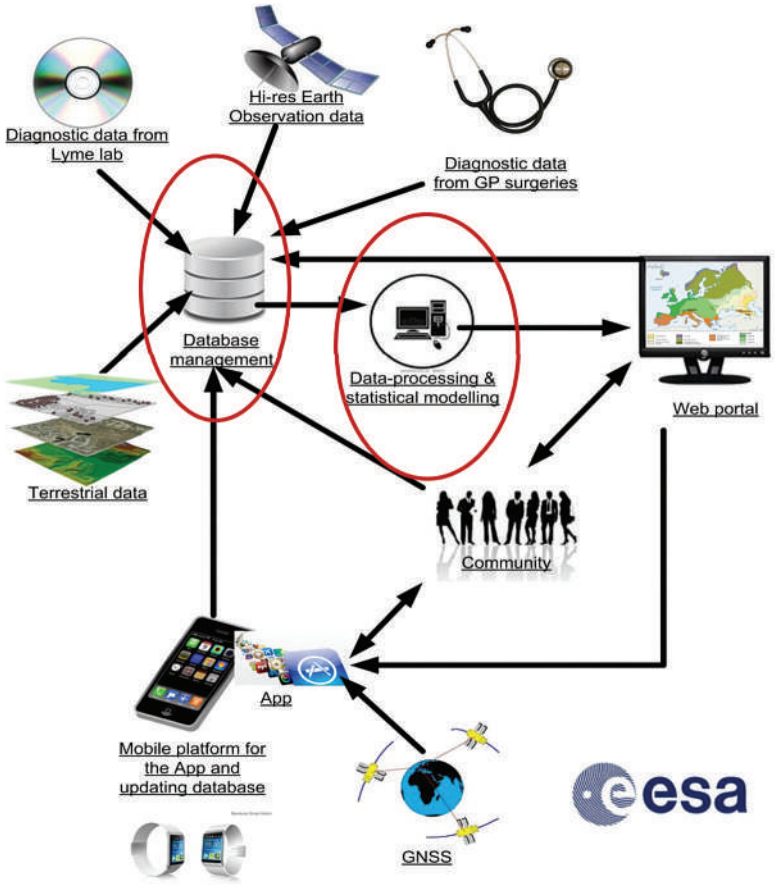
## Symptoms and diagnosis

Borrelia burgdorferi, the organism that causes Lyme disease, is carried by ticks that feed on the blood of mammals, including humans. It was




How the LymeMAP system works

first diagnosed as a separate condition in 1975 in Old Lyme, Connecticut, hence the name.

The risk of contracting the disease increases when people walk in woodland, grassland and moorland areas. Tick bites often go unnoticed - the tick can feed for several days before dropping off – and the longer it is in place the higher the risk of Lyme Disease. Diagnosis can also be difficult, says Dr Evans, because it can take time for antibodies to appear in a blood sample.

"Around 50 – 60% of people bitten by a tick with the bacterium end up with a spreading rash, in which case there is no need to test and the disease can be treated very efficiently at this early stage.

However, some people have an atypical rash which is more awkward to diagnose and blood samples often come back as negative. This doesn't necessarily mean the person hasn't got Lyme Disease, it may be that there are no antibodies produced as yet. In these instances the clinician should go ahead and treat anyway because if this first vital stage is missed a proportion of patients can go on to develop long-term symptoms which are difficult to treat as effectively."

## Public education and feedback

Educating the public about Lyme Disease is an important part of the project, with the community engagement element carried out by UHI and funded by the Robertson Trust.

The UHI's Rural Health and Wellbeing research group has been mapping stakeholders such as farmers, foresters, outdoor leisure users and people who live in areas with a high incidence of Lyme Disease, as well as disseminating information on the disease through community workshops.

Dr Evans says they have had good feedback from the public who have a real appetite for information. "From a health and safety, as well as an economic point of view, organisations and businesses that employ people exposed to infected ticks need a better tool for preventing the disease. Therefore there's a strong emphasis in this project on the educational aspect as people are keen to find out how they can prevent the disease and what to do if they're bitten.

"We've also taken on board what the public have told us as part of this project and are hoping to provide people with educational material on prevention and what to do if they are bitten. We're confident that by using the latest technology we can create an interactive and accurate Lyme disease identification and risk management system."

## Looking ahead

With the feasibility study completed at the end of March, the ESA will now review the year-long project with a view to moving to a demonstrator phase before commercialisation.

There are also plans to extend the system to other diseases that can be passed between animals and humans, as well as to other countries, funds permitting.

***Ruaraidh MacNeil is Project Director at Inverness Campus (www.invernesscampus.co.uk), the research and education arm of Highlands and Islands Enterprise (www.hie.co.uk)***

# ODL: the not-so-lonely option

## Graham Smith and Richard Armitage outline the merits and challenges of Online and Distance Learning in GIS education

The last few years have witnessed an enormous growth and uptake of online learning and training in GIS through Massive Open Online Courses (MOOCs). However, remotely-based, or distance learning in GIS has a longer history, with a number of Higher Education Institutions (HEIs) both here in the UK, and across Europe and North America having offered distance learning programmes in GIS since the early 1990s.

### On-the-job learning

It is commonplace for Online and Distance Learning (ODL) students to also work full-time. The nature of contemporary life and its many commitments typically prevent such students from being able to take time out to participate in traditional full-time face-to-face (F2F) study programmes. These time pressures, exacerbated by the dynamic nature of GIS and its ever-changing technology, continue to drive the demand for academic programmes to support people working in the GI sector.

ODL programmes offer participants the opportunity to combine study for a postgraduate degree (most commonly) while continuing to gain work experience. As such, they have proven valuable in furthering the careers of those who may be working with GIS on a daily basis but have no formal qualification in the subject.

Clearly, this type of on-the-job learning places different demands on the learner compared to more traditional delivery modes. For example, it is not uncommon for an ODL student to postpone working on an assessment to accommodate particularly busy periods at work, or to access a tutor outside normal teaching hours. This need for flexibility, together with curricula that are responsive to technological advances, has required educators to consider new modes of delivery and programme design. UNIGIS is a prime example.

### UNIGIS UK: a short history

UNIGIS UK (www.unigis.org) started in the early 1990s as a collaboration between three universities in the North of England. The joint nature of the UNIGIS MSc programme, which was unique at the time, enabled those universities to take advantage, as they still do, of the wealth of GIS expertise across the different institutions, and to offer a more comprehensive programme than would have been possible at a single HEI.

Soon after its inception, UNIGIS UK linked up with other HEIs across Europe and beyond to become part of the UNIGIS International Association (www.unigis.net) – a global network of GIS educators whose focus is on distance learning.

Throughout its 25-year history, UNIGIS UK has witnessed significant changes in terms of delivery (from posting material to the digital delivery of a multimedia-rich, virtual learning environment); curriculum developments (e.g. webGIS, programming); as well as new GIS vendor-supported software provision and technical support. However, what remains unchanged is the presence of dedicated personnel offering friendly advice and support on administrative and course-related matters.

UNIGIS UK currently operates as a joint distance learning programme between Manchester Metropolitan University and the University of Salford. It offers three different Masters programmes including GIS, GI Technologies, and Applied GIS, and will shortly embark on a programme review in 2016-17 to ensure that its courseware and materials reflect the rapidly changing nature of GIS and the GI industry.

### A new era for CPD

Recent years have seen further changes in the nature of online learning. Much has been driven by the economic downturn, as well as by the annual Continuous Professional Development (CPD) requirements for membership of professional and regulatory bodies (e.g. GIS Professional (GISP), Chartered Geographer status).

The result has been increased demand for short courses within GIS, alongside more formal qualification-based programmes. In line with this demand, UNIGIS UK will offer a range of CPD units from September 2016.

### Supporting learners online

Good lines of communication and support are vital for successful ODL. Even with current communication technologies, students can still find the learning process isolating in the absence of face-to-face access to other students and to tutors experienced on F2F programmes.

At UNIGIS, Virtual Learning Environments (VLEs) have been important in creating student 'buddy' groups and discussion lists/forums that aid both live and asynchronous communication between students and staff.

Lessons have also been learned from MOOCs, with the introduction of webinars and the greater use of multimedia to enrich course materials. These developments have helped to mitigate the "loneliness of the online distance learner", and allow students to have the benefits of distance learning while still feeling part of a programme. The success of the UNIGIS approach is demonstrated by the 25-year history of the programme.

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