



Takeaway Science

Life Sciences; Evolution in snails, the perils of looking after snakes and scientists on television

Mike Bullivant

Welcome to takeaway science, another in the series of short podcasts produced by BLAST! at the Open University. As ever we have three short sequences for you, all on some aspect of science. Later on BLAST!'s David Smith talks with herpetologist Rhys Jones from Cardiff University about snakes. After that BLAST!'s Project Manager, Emily Unell, catches up with Jenny Worthington, Project Officer for the Open University's Evolution Mega Lab to talk about snails. But first we hear from Dr David Robinson, Senior Lecturer in Biological Sciences at the OU and erstwhile head of the university's open broadcast unit about Open University broadcasting and OU science programmes on TV and radio. Asking the questions is Emily Unell.

Emily Unell

I think we all remember the programmes that the Open University used to make with the BBC, the teaching programmes um that we were famous for, that were on at five in the morning. But now we are involved with very different, much more popular programmes I would say like 'Coast' for example. Can you explain a little bit about how that change was brought about?

Dr David Robinson

Um yes, people remember the earlier broadcasts very well and they know about the present broadcasts, what they tend not to remember is the er period when we were gradually changing because we used to make programmes just for the courses that um – and they were directed particularly at the students for that course, but the drop in audience found them very entertaining and then science took the lead in making a change and we started producing programmes which were for our science students, not necessarily the particular course students and we even had our own slot, called Science Night. It was like having our own channel even though it was only generally an hour and a half long and they were very successful because they appealed to a wider science audience and at the same time the university was saying, well its actually easier to get visual and audio visual materials to students if we put it on a CD and bung it in with the stuff we are posting anyway, there are no postage costs. That's a better way to get things to people than transmission on air, but of course transmission on air was bringing us in these very large drop in audiences, we didn't want to lose that, so we shifted to working with the BBC on either series that we commissioned and totally paid for or more often now series where we are co-producers and where we think that the series really will reach that same science audience that we used to specifically target with our own programming.

Emily Unell

So the commissioning process itself, how does it work, who comes up with the ideas?

Dr David Robinson

There are really two routes for ideas, one is that someone in the university has an idea for a programme and they approach er people in the BBC to see if it can be worked up into a formal proposal. Alternatively the BBC will come to the university with a proposal that they think fits the university's brief and that may be modified and worked up with um academics in the university. Whatever the idea comes from, it will eventually end up as a formal document that is pitched to a university grouping and that university group will decide firstly whether its – the programme meets university brief, secondly whether we can have add-ons, things that go round it and thirdly whether we can afford it. But I think the important one is whether we can make more of it than just the TV programme, because TV is very ephemeral and you don't just want to put a lot of money into a TV programme and not do anything around it. So it's really the package that is the key thing I think er now in commissioning good ideas, the web,

the events, booklets, lectures and so on that go with it and make it much more than a TV programme, make it a TV event.

Emily Unell

As we all know broadcasting is changing at an amazingly rapid speed and what we now have, you know on the main channels is going to be very different, I think everyone is agreed on that in the future. So how is the OU responding to that sort of change?

Dr David Robinson

I think the OU is working out how best to respond to the change, we don't really know whether people are going to go on making what's called an appointment to view, that is they look something up in the er Radio Times, on the web and they say, that programme is going to be transmitted at nine o'clock I will make sure that I am sitting in front of the television to watch it. In some ways that is still quite a good way to receive television. There are people who want to view it, when they want to view it, I have the feeling that we are still going to be attracted to sitting down and watching television on transmission. Everybody said the cinema would disappear and it hasn't, so there will always be, I think an audience with that big TV in the corner, but there will also be a substantial demand for viewing segments of programmes, for viewing them online, for viewing them off line, on portable devices, where people can watch whenever they like.

Emily Unell

I understand that you have been involved with lots of different programmes, which has been your favourite, which is it?

Dr David Robinson

That's very difficult because I have enjoyed um so many programmes, um but of the television programmes, I think the first series of 'Coast' and the most recent Alan Titchmarsh series, 'Nature of Britain', have been the ones that possibly – that I have enjoyed the most, um but I also get a lot of pleasure out of radio, um I haven't done much radio recently, I used to do a lot more and I think that is still a very, very good medium for um reaching people and radio remains very popular, it wasn't replaced by television, so um yeah I enjoy that as well.

Emily Unell

And er finally, what's coming up in the OU sort of schedules at the minute, six months, what are we involved with?

Dr David Robinson

We are heavily involved with Darwin Year and we are involved in both the um events that surround Darwin, the television programmes and possibly some radio as well. So I think much of the programming that you will see in the science area will be concerned with Darwin um for the next year or so in one way or another.

Mike Bullivant

BLAST! Project Manager Emily Unell talking there with Dr David Robinson. Anyone with an interest in how and why we communicate science will benefit from the OU's postgraduate science course called "Communicating Science in the Information Age", a component course for the OU's taught Masters MSc in science. Using a mixture of case studies and articles, the course considers how science is communicated in different settings through a range of traditional and new media and what frameworks and methods have been proposed for researching these communications. "Communicating Science in the Information Age" explores how scientists communicate with each other and it looks at the role of public engagement activities, science centres and museums, print media and digital television and radio, in presenting science to a wider public. To learn more about this course, log onto ww3, that's the numeral 3, ww3.open.ac.uk/study, click on the link to science on the right hand side of the page and then the link to postgraduate courses and qualifications in science at the foot of the page. You will then find the course details you want under taught Masters MSc in Science. And now as promised here's BLAST!'s David Smith talking matters herpetological with Cardiff University's Rhys Jones.

Rhys Jones

I look at an abundance of different aspects of snake biology and snake genetics and the phylogeography – phylogeography is just assigning genetic code to geographical locations for you and it helps me to understand how they survived Ice Age events and the migration routes they took to Northern Europe avoiding, what mountains they avoided, what rivers they avoided, or could of acted as barriers to the migration, but I am also interested in the parasitology of these animals, for instance when we move these animals around, or we translocate these animals, one thing which isn't taken into account is the parasite load of these animals and that's a paper which I have coming out very, very soon, looking at how these animals can possibly, you know what happens when they interact when one is carrying a huge burden of parasites and one is practically absent of parasites. And the last aspect of my work is looking at non invasive ways of sampling these animals, so currently a lot of people will take blood samples or tail snips etc. which I find incredibly cruel, so I have looked at new ways of amplifying it from the shed skin and especially from faecal matter, obviously all of these things are naturally expelled by snakes and so why not utilise them, why not use them to be able to obtain genetic code. Probably the thing that has changed the most for me is that we seem to have gone away from any taxonomic aspect of snakes, we seem to have just completely delved into the genetics of snakes and I – you know I would say at the risk of probably putting all your eggs in one basket, um I know now, you know that we have got plenty of people that can tell you all about you know cytochrome B and this aspect and that aspect of the genetics of the animal, but they probably wouldn't recognise the animal they are studied if it was, you know, asleep in front of them because taxonomically and systematically they are not very good at identifying these animals.

David Smith

What would you say is your favourite snake?

Rhys Jones

Oh now you are asking. I have got, I have got a few favourite snakes, um ones that I actually keep myself, because I do a lot of rescuing of these animals, you are probably aware people buy them at 2 foot and 15 foot and later they are dumping them in the wild and then somebody has got to go in and rescue our native wildlife. So out of the animals that I have, I have got a beautiful Australian carpet python, Ozzy and he is probably the favourite snake that I have got, I absolutely love him. But around the world I have got different snakes that I admire for different reasons and one of which is Echis, which is um a snake which we find, its a viper, the saw-scaled viper which you find all through er – er Northern Kenya, Tanzania, all the way through to the Middle East and it's just because its so er – so vicious and adaptable, its not at all bothered by people, its – er – will just inhabit anywhere, its a really, really powerful little viper.

David Smith

Some of our listeners are interested in snakes, where would be the best place to go and observe them either in captivity or actually if they can go and see them in the wild?

Rhys Jones

Well there are two things I think we have – we have got to look at that question, its an interesting question, but we have got to look at it two ways. Um number one is that it will be easier for you to see snakes depending on the species within er a zoological environment obviously because they are very cryptic in their environment, they are difficult to see, um but there are certain ways, I mean if you get in touch with local um wildlife groups or even with people like myself, you know if you can find a herpetologist that will take you out into the field and you can view these animals, but with native animals, as I said, they are highly cryptic, they are very shy and so you don't want to disturb them. So if you are going out to see these animals, please remember they are wild animals, don't try and pick them up, don't try and interrupt their natural day to day habit, stay away look er – be very grateful that you have seen them, it's a very special event for you, but do not interrupt their natural life cycle.

Mike Bulivant

David Smith talking there with herpetologist Rhys Jones. Now are you interested in studying science, but wonder whether distance learning is right for you, are you worried that your

maths might let you down, did you miss out on science in school? Well if the answer to any of these questions is yes, then you could do worse than register for the Open University short course called "Science Starts Here". It's an introductory course designed specifically for those students who have done little or no science in the past and whose maths is rusty or even non-existent. Taking the course will give you an ideal chance to find out whether further OU study is right for you because it's a ten point course that runs over a fixed ten week period. So you can put your toe in the bath water without committing yourself too much. "Science Starts Here" explores the role that water plays in sustaining life, from the journey of a glass of water through the body to the effects of pollution. It also provides a gentle introduction to the basic maths and scientific vocabulary needed for S104, the OU's 60 point Interdisciplinary Science course at level one. If you want to find out more about this, or any other OU science course, log on to www3.open.ac.uk/study, click on the link to science on the right hand side of the page and follow the appropriate link under "Where to Start in Science". And so to the final sequence of this take away science podcast in which BLAST! Project Manager Emily Unell chats to Jenny Worthington about the Open University's involvement in the forthcoming evolution mega lab, a mass experiment for Darwin Year in 2009. As you will hear the OU is hoping to recruit thousands of members of the public to hunt for sapphire snails to help its biologists work out the effect of climate change on the evolution of the snails. Over to you Em.

Jenny Worthington

We are asking members of the public to go into their local gardens and public areas, anywhere where there is you know green space and hunt for snails, so that's pretty much it, and look for a particular species called sapphire which is a banded snail and it comes in two varieties, one with a brown lip to the shell and one with a white lip to the shell and we will ask people to go out and look for those and record what they find and what colours they come in and what banding patterns they come in and then go onto an internet site and enter all their data online, it's really easy to do, it's really cool because sapphire is quite a well studied species, so we have got historic populations from earlier in the century, so we can compare the results from this – from the current set with the past set and you can see if any evolutionary changes have occurred. So people will get real time feedback over what's happened between then and now.

Emily Unell

So why is the OU getting involved with this project?

Jenny Worthington

Well it's to do with the Darwin 200 and there are lots of celebrations going on around that and obviously Darwin theory of evolution, you know survival of the fittest, everything like that, because obviously changes in bird thrush populations and climate change, whether this affects the morphology of the snail and how it looks. Obviously there is a big like research angle to do there and citizenship science and getting the public involved in science and you know sparking their interest.

Emily Unell

Is it hard to find those little snails in the garden?

Jenny Worthington

Well not really, you have probably seen them out in your garden quite regularly you know, whenever, if you find snails you would be most likely to find these kind of snails appear and especially as it has been raining, they will be out in your garden.

Emily Unell

Oh okay so actually this summer is a perfect time to go and find them?

Jenny Worthington

There are loads of them on the paths, absolutely millions.

Emily Unell

I gather that you are doing it in the UK, but also across Europe?

Jenny Worthington

Well not the whole of Europe, but I think there are about ten countries involved so far.

Emily Unell

Wow.

Jenny Worthington

And they are all taking part so we are going to have a data set from all over Europe and the website is being translated into all the different languages that are taking part which is quite exciting and all the downloadable documents are being translated as well. So people will be able to take part in their own language and be able to you know fully participate.

Emily Unell

So these snails must spread quite a long way?

Jenny Worthington

Yes I think the Northern limit, I think is like South Sweden, but obviously we don't know how because obviously it gets colder – I think they are confined to Europe, they are not found in America, but there are, yeah they have got a quite wide ranging.....

Emily Unell

I mean have any predictions been made about what they think they are going to find from the snails?

Jenny Worthington

Well I think they think there is – with obviously the song thrush decline that therefore there may be more.

Emily Unell

With things like climate change, do they effect the snails and snail populations?

Jenny Worthington

I think its more the – from what I can gather, the morphology of you know how the snail looks, you know like the peppered moth survey, the industrial revolution sooted all the trees so they hypothesised that therefore the moths went to a darker colour because it camouflaged them more....

Emily Unell

Yeah.

Jenny Worthington

...and its probably similar, similar with the snails obviously you know with changes in the environment, you know therefore will the darker shell – the darker coloured snails be more prevalent than lighter ones and vice versa, depending on the environment.

Emily Unell

And also for Darwin 200 there is a whole load of stuff going on isn't there, um but the OU has got some plans in particular, can you tell me a little bit about those?

Jenny Worthington

Yeah we have got the – there is a short course Darwin evolution course, or the evolution course and then there is evolution mega lab and there is also, you know the OU are setting up like a little miniature Darwin micro site where it links to all the evolution short course, the evolution mega lab and then this Darwin micro site is quite cool because its got like a little – you upload a picture of yourself and then you can devolve it back like hundreds and thousands of years that's amazing, to see what you looked like - you know ten thousand years ago.

Emily Unell

As a Neanderthal or.....

Jenny Worthington

Yeah.

Emily Unell

Yeah, brilliant.

Jenny Worthington

It's quite – I think that should be ready in October, the marketing team are all doing that, so that's quite exciting.

Emily Unell

Yeah.

Jenny Worthington

And that will have a link to all the Darwin 200 you know activities as well, so it should be quite exciting.

Emily Unell

Why should people go out and look for snails, what's in it for them?

Jenny Worthington

They get to learn a bit about science and to realise that it is not that scary to go out into their environment and they can be a scientist for the day, you know maybe it will evoke their learning to go and bring confidence to do more – learn more about you know their local environment and maybe meet people as well with similar interests.

Emily Unell

When does your website go live?

Jenny Worthington

It launches April 2009 to the public, we have got the beta version of the website out at the moment, but it will launch officially April 2009 and run for the snail – for that year's snail season.

Emily Unell

Excellent.

Mike Bulivant

Emily Unell and Evolution Mega Lab Project Officer Jenny Worthington there. Unsurprisingly the Open University offers a third level course called "Evolution", its a wide ranging course that sets out to explain the key concepts of evolutionary science and it investigates how these account for the characteristics of living organisms and the history of life on earth. Using information from the living world and the fossil record, students learn how natural selection and other evolutionary processes produce changes in genes and populations over different timescales. They also find out how new species originate and how large scale evolutionary patterns are generated. Other topics covered in the course include the reconstruction of evolutionary relationships and the ways in which humans influence the evolution of other species. "Evolution" is a specified course in both our life sciences and geosciences degrees. To find out more about the course, log onto www3.open.ac.uk/study, click on the link to science on the right hand side of the page and follow the appropriate links. Well that's the end of this particular take away science podcast brought to you by BLAST! at the Open University. For other podcasts in this series, revisit the Open University Science Faculty website at open.ac.uk/science and if you want to find out more about some of the science outreach work carried out by the OU, visit the BLAST! web pages at Blast.open.ac.uk. Well that's all for now so from me Mike Bullivant, once again, adios amigos.