INT: Okay, so i'm aware that you are the University of [place].

INT: But could you tell me a bit more about your role within the university.

DEU06: yeah I am a senior lecturer.

DEU06: And I’m also starting a four year fellowship so I get to concentrate more on research for the next four years, and my research areas very related to the theme of your.

DEU06: Your project as well, so.

DEU06: it's about trying to improve the predictions of where species will survive and where they will be able to.

DEU06: Be resilient and persistent under climate change.

DEU06: yeah it's hoping to be using a lot of data sets different data sources and satellite data, so all the things in your.

DEU06: and as to sort of my background is.

DEU06: I actually worked in the University of [city] for a while.

DEU06: and

DEU06: i've always worked in conservation biology and on the interface between a very practical applied.

DEU06: case study based on field, ecological field data and.

DEU06: More modeling of what might happen in the future.

DEU06: So, yes or currently i've got a couple of PhD students working on specific conservation case studies to do with [species] and i've got a couple of PhD students working on the modeling side.

DEU06: and

DEU06: So yeah I guess that That gives you a flavor of different kinds of questions questions i've looked i've.

DEU06: Looked, particularly at how the landscape arrangement of habitat maybe small fragments of habitat that existing in agricultural landscapes.

DEU06: How those can.

DEU06: Support species of conservation concern and.

DEU06: How we can yeah what advice, can we give to to managers about placing new habitat.

DEU06: If they're going to do, restoration work.

DEU06: Possibly what advice, can you give them about managing the habitat.

DEU06: yeah and which different groups of species respond in different ways.

INT: with your research fellowship is that going to be focusing on a national scale.

DEU06: and hopefully international.

DEU06: International international collaborators.

DEU06: But we're going to start by developing some new methods and we're going to test them on British data because Britain does have some of the best biodiversity data.

DEU06: In the world, as you may have find out.

DEU06: Certainly goes back quite a long way.

[Irrelevant content]

INT: that's great and so i'll move on to the purposes of using species records data.

INT: yeah, and so what types of species record data, do you use.

DEU06: well.

DEU06: yeah in.

DEU06: What you interested in what I have used ever or.

INT: I think, maybe recently.

recently.

DEU06: Well, I so.

DEU06: My I could start with my my current PhD students are using.

DEU06: The.

DEU06: [wildlife research scheme] [species] transect.

DEU06: data.

DEU06: And what one is has done a paper using that another PhD student has used the European equivalent of that the European [species] monitoring scheme.

DEU06: Also GBIF if you've heard of that.

DEU06: it's the global biodiversity information facility.

DEU06: Okay, so.

DEU06: As have you heard of.

DEU06: whats the new name for it in the UK.

DEU06: Biodiversity records the nbn atlas.

INT: Yes, yeah.

DEU06: yeah so the GBIF is the international version of the nbn atlas.

Okay.

DEU06: For any species anyone wants to.

DEU06: world.

DEU06: So I have used the nbn atlas, and I.

DEU06: have used the land cover map quite a lot and the.

DEU06: Natural England priority habitat inventory.

INT: Right.

DEU06: what else yeah.

DEU06: So it seems my PhD haven't been involved in a couple of long term studies of particular [species] populations in regions of the UK, and so we sort of use that data quite a lot.

DEU06: Which is partly publicly accessible and partly it's it's held by different collaborators.

DEU06: That that basically consists of going of maps of patches there specifically how suitable for that [species] and whether it was what the populations were like.

DEU06: of that [species].

DEU06: In a particular year.

INT: And in terms of spatial extent does that vary depending on obviously the research project.

DEU06: yeah yeah.

DEU06: So it ranges I would say, from like a county level up to national, international.

DEU06: i've used some data that's derived from.

DEU06: quite high resolution.

DEU06: maps of canopy cover.

DEU06: as well.

DEU06: yeah are you interested in all kinds of landscape data or just the ones that would tell you where a species was.

INT: yeah well this species, but yeah I think that's the focus.

DEU06: yeah so I know i've been involved in studies that studied say [species] and [species].

DEU06: on farms so just went to a selection of fields and what it does, the species of [species] that were there.

INT: Okay, so quite a range then.

INT: Could you talk me through what you use that data for.

INT: Is it predominantly research.

INT: yeah yeah.

DEU06: yeah research.

DEU06: I, so I also have a knowledge exchange project which is called the[Project name] and [Project name] is a model that helps people to plan landscapes.

DEU06: Okay, so does.

DEU06: What can [Project name] needs you to feed in some habitat data may need the user to feed and somehow without data to make it work so there's a kind of a whole other aspect of my work where I might advise conservation organizations.

DEU06: or other organizations on.

DEU06: What data they could maybe find to to feed into my model.

DEU06: and

DEU06: So so it's kind of hard to summarize all of that.

DEU06: stuff that they might they might use but.

DEU06: I think it's I think it's still relevant.

DEU06: to your your project.

DEU06: in terms of trying to improve the data availability for people in future, do you run up against.

DEU06: limitations of basically.

DEU06: Not knowing whether the habitat data they have is relevant to a species, they might be interested in, or how relevant is so, for example, they might have a map of heathland, but they know that a rare species like an adder.

DEU06: can't survive in any all any old heathland, it has to be specific types and.

DEU06: And also they're quite they've declined and disappeared from a lot of places.

[Irrelevant content]

INT: um so i'll move on to data requirements.

INT: So you talked about the nbn atlas and where you obtain your data from and.

INT: Do you obtain any data elsewhere, perhaps, maybe from recorders i'm.

DEU06: From my.

DEU06: From my own collaborators yeah and sometimes directly from the.

DEU06: directly from the.

DEU06: Specialist species specialists like so [species] conservation, for example, have a big moth dataset which they as far as I know, haven't yet put on the nbn and.

DEU06: So i've used that.

DEU06: So I would contact the.

DEU06: The people that are the subjects that the taxonomic experts that do the validation of the data.

DEU06: or may see for some projects, the county records office as well.

DEU06: Just to see whether they've got anything more detailed.

DEU06: than what what's on the nbn.

INT: Do you find that that is often the case, or the nbn tends to be.

DEU06: I think that's often the case yeah.

Okay.

DEU06: very much depends on the taxonomic group.

hmm.

INT: And what what format, does it come to you, and is it raw data or yeah.

DEU06: raw data.

DEU06: Is what I normally prefer to use and.

DEU06: So with.

DEU06: All like a sometimes a GIS file.

DEU06: But normally actually prefer the raw data with the coordinates.

INT: Why is that.

DEU06: Because I analyze it using R.

Okay.

INT: What resolution of data do you use and does this differ for different purposes.

DEU06: It does differ for different purposes and.

DEU06: I.

DEU06: If I try and think of the examples i've.

DEU06: looked at it.

DEU06: If you think of the.

DEU06: UK [species] monitoring scheme it's good that that's available at a like a less than kilometer.

DEU06: resolution, I think.

DEU06: you've got the Center of the you've got the Center point to to the nearest hundred meters, but then you know that that refers to loop that somebody walked, which is about 1-2 km long.

DEU06: So I would say, for and for matching if you want to match a record to habitat he really needs to be bit better than hundred meters.

INT: Resolution.

INT: Say yeah.

and

DEU06: One kilometer is still very good.

DEU06: But.

DEU06: sort of something coarser than one kilometer starts to get not.

DEU06: Not so useful for the stuff I do.

INT: Thanks great Thank you.

INT: and obviously you do quite a bit of processing and analysis of the data.

INT: Could you give me examples of.

INT: outputs that you do or.

DEU06: visualizations that you.

produce.

DEU06: So good question you.

DEU06: You interested hearing specifically data that might have been collected by volunteers originally.

DEU06: Because there's just so many.

DEU06: um.

INT: Well, just just a couple of examples, perhaps.

DEU06: Yes, so well, the latest example with my PhD student.

DEU06: She analyzed how the grizzled skipper [species] was declining at different speeds in different parts of the country so it's declining faster in the north of the country and the West than it was in the south and east.

Okay.

DEU06: So the.

DEU06: outputs, if you like.

DEU06: Is is a is a summar

DEU06: it's a statistical summary and you can draw it on a map or you can draw it as lines that are going.

DEU06: down.

DEU06: deeper in some pla

DEU06: Okay, that makes sense.

yeah.

DEU06: Other ways i've used the data would be.

DEU06: You know.

DEU06: Take quite a lot of steps to do with breaking it down by time and by space and saying, where is the species now where it hadn't been before and how quickly did it get there.

INT: Okay.

INT: And you produce these output using special software.

INT: yeah yeah.

DEU06: I would say, normally.

DEU06: sort of every.

DEU06: Every paper I do every step every study is slightly different.

DEU06: Sure it's.

DEU06: isn’t always the same

DEU06: pipeline or.

yeah.

DEU06: or cookie-cutter I’m using.

INT: Excellent.

INT: How do you deal with data gaps.

DEU06: and

DEU06: Mainly I would design the study in the first place, to get around data gaps that I know are going to be there.

INT: Okay, yes, are you prepared or ready.

DEU06: yeah so basically there's some studies that I don't ever do, because I know that they too.

INT: Okay yeah.

INT: that's interesting.

INT: I guess that makes makes your life easier.

DEU06: yeah all right, well, it does and it doesn't.

DEU06: It means that we rely a lot on the.

DEU06: This particular.

DEU06: Nice data sets of which the UK [species] monitoring scheme is one data sets that have been consistently done, year on year on year and in the same places and we're really well known places so even though that hasn't got.

DEU06: coverage you couldn't say tell me the data for.

DEU06: Any given square in the country like sprinkled over the country.

DEU06: And that that data set gets used an awful lot by by me and by people like me, because it is so.

DEU06: Because it has such a nice sampling.

DEU06: properties and the data gaps and not to worrying.

DEU06: And if they will, but those.

DEU06: Basically [species] and birds are the only taxa for which that exists.

DEU06: So we're basing a lot of science, at the moment on [species] and [species] where we could, if the data will better base it on many more taxonomic groups and.

DEU06: So I guess that's that's what I say about about dealing with data gaps it's.

DEU06: Basically, you have to either not do the study at all or do a study on a smaller taxonomic group or do a study on a smaller area, and what that means is that there may be a lot of.

DEU06: A lot of data out there that's incomplete that you basically end up throwing it away I.

DEU06: mean you don't literally take it, and then throw it away.

DEU06: I do literally take it, and sometimes I know that it's not going to be.

DEU06: good enough, so I don't ever request it in the first place.

INT: Okay yeah.

INT: What what kind of audience to you share your.

INT: Reports.

DEU06: results with.

DEU06: I hope to say quite a wide audience, so I.

DEU06: do work in partnership with quite a few the conservation organizations in the UK.

DEU06: publish it in things in the scientific literature.

DEU06: yeah i've got the [Project name]'s website so and I work with organizations like [environment public body], [environmental organisation], [wildlife charity].

DEU06: [wildlife charity].

DEU06: More sort of regional.

DEU06: charities as well, like the northern forest, which is doing a lot of tree planting and then.

DEU06: Okay Northwest region.

DEU06: Yes, so.

DEU06: My results have ended up being mentioned in in various review reviews.

DEU06: That like the.

DEU06: what's it called.

DEU06: it's called the living with environmental change.

DEU06: terrestrial impact reports card, so the impacts of climate change on terrestrial systems and in the UK and what what we can do about it.

DEU06: So it's like a big exercising reviewing all the evidence.

DEU06: To try to help policymakers.

INT: Is that quite a new thing or has that been around.

DEU06: been done twice and it's not that new, so the last time, so we did it.

DEU06: In I want to say about.

DEU06: 2014.

Okay.

DEU06: The last time we did, and it was done there was an earlier version that was like a version one, and this was version to.

DEU06: i'm not sure whether they're going to do another version.

Okay.

INT: do you get volunteer recorders asking for.

INT: data or advice um.

DEU06: No, I couldn't.

DEU06: I couldn't say that I do know.

INT: Okay.

DEU06: only students.

INT: yeah okay.

INT: But no, no record is that wants to know about specific.

INT: species.

INT: No.

No.

INT: So the data that you do collect, how could it be improved to help in your decision making.

DEU06: and

INT: Say would it be helpful to have a data a higher resolution or does that depend on the research.

DEU06: I think.

DEU06: If we're talking about.

DEU06: A record of a species at a particular place at a particular time.

DEU06: How we could be improved, is.

DEU06: That if if more of the observations were accompanied by not just I saw this species of this place at this time, but.

DEU06: What was kind of the method used to go on this search.

DEU06: And you'll probably hear other people saying that where did the person visit.

DEU06: And not see anything.

yeah.

DEU06: But.

DEU06: Even if you can't get them visiting and not seeing anything if that's too tricky then basically.

DEU06: You want to know.

DEU06: Or, I saw.

DEU06: A slow worm say, for example.

DEU06: But if there had been an out of there I would have seen that too.

DEU06: So I was looking for snake.

DEU06: Looking for reptiles.

DEU06: With a particular method if if you if you can name the method and and not just I saw a slow worm.

yeah.

INT: Is there any additional information that would help you to interpret the data.

DEU06: And so often.

DEU06: It would help I think.

DEU06: It would help to validate habitat data which you might get from elsewhere if there was something also written down about the specific habitat and locality, whether species was seen so it might have been seen in a hedgerow and hedgerows aren't.

DEU06: You know very detectable from space.

DEU06: Or if it was seen in a pond and the pond doesn't appear on any habitat maps that will be important thing to know.

DEU06: So so small features that that.

DEU06: Actually really determine the species.

DEU06: The species habitat.

DEU06: be useful to record as well as the presence of the species itself.

Right.

INT: So ponds, hedgerows.

DEU06: Maybe field margin uncultivated field margins, or you know if you're on a farm was it a cultivated at or an uncultivated area of the farm.

INT: So the final section looks at focusing in on model data, a bit more.

INT: So, how would you feel about using modelled data, instead of raw data though I know that obviously part, a lot of your work is.

DEU06: yeah yeah I might be going in and producing the models myself.

DEU06: and

DEU06: But and I if I was to you, but, but if someone else had done a model that I trusted, then I could.

DEU06: That could be a really nice resource for me or and particularly for my students, it could save them a lot of time.

yeah.

DEU06: So, how would I feel about I would feel that i'd like the opportunity to do that the i'd always want to look.

DEU06: At the methodology of how the model was done.

DEU06: and

DEU06: That for scientific purposes, I would want to make sure that whatever I do next with that.

DEU06: isn't circular So what we.

DEU06: What might end up happening is.

DEU06: For example, a bit of a circular argument, where the person producing the model had said species A is likely to be in this place because species A is associated with woodland, and here we have a woodland.

INT: mm hmm.

DEU06: And so you take that model product and then you don't want your you don't want.

DEU06: To do another stage where you'd say is this species oh look this species correlates with woodland because.

DEU06: that's already been used that factors, already been used to generate the data.

INT: yeah yeah.

DEU06: So, so when using modelled.

DEU06: Products that's the a slight pitfall I see that people if they don't understand where the data came from, they could end up kind of reinventing the wheel and and.

DEU06: Producing.

DEU06: Being falsely confident about.

DEU06: how likely the species is to occur, for example.

INT: yeah that's interesting that hasn't popped up before.

INT: Then.

INT: So modelled data that would affect the type of decisions that you might use.

yeah.

DEU06: And also, you know the the modeling it depends on what time period the modeling is supposed to apply to.

INT: Okay yeah.

DEU06: So was the model supposed to be a model of where the species.

DEU06: Could ideally occur, or is it supposed to be a model of where the species occurred in the 1990s, or is it supposed to be a model of where the species will occur in the future.

DEU06: yeah those time periods.

DEU06: For you do with the data later.

INT: So i'm now going to show you some examples of some modelled outputs, that part of the decide project has created and so i'll just share my screen with you.

INT: Are you able to see that.

DEU06: it's just warming up.

DEU06: Okay yeah no.

INT: Definitely, probably in a better position to understand this than me.

INT: But, are you able to interpret the one on the left.

DEU06: and

DEU06: i'm not sure probability distribution, what does that mean.

DEU06: Specifically.

INT: So it's to do with the.

INT: likeliness of the species being in that area.

DEU06: Okay yeah so like you said.

DEU06: it's more you can.

DEU06: you're looking at areas where it's likely to occur in areas where it's unlikely to occur.

yeah.

DEU06: But.

DEU06: The.

DEU06: The question would be.

DEU06: yeah when what time period does that apply to.

INT: sure yeah.

DEU06: I think and.

DEU06: Is it.

DEU06: Just climate is it sort of irrespective of of distance from any known record, so you can see that there's some, so this is.

DEU06: Does it matter, it probably doesn't matter you don't want me to start thinking about what species actually is, but I think it's.

DEU06: a moth isn't it.

INT: it's a actually a.

DEU06: burnett moth.

INT: Yes, it is yeah six spot burnett.

DEU06: So I don't actually know whether it occurs in Northern Ireland and in Scotland.

DEU06: In reality.

DEU06: hmm so it could be that that habitat looks suitable but it's so far away from the historical distribution of the species that.

DEU06: it's actually a bit unfeasible for it to get there.

DEU06: But maybe, but so that's to do with how you how you present how you interpret it if you say, well, if.

DEU06: If if the species were to get a foothold there, it could probably survive or if you're gonna say the species definitely is there.

yeah.

INT: Definitely.

INT: Okay, and so i'll just scroll down, so the one on the left is.

INT: similar to the one that.

INT: we’ve just seen.

INT: But focusing in, on a point around Wallingford in Oxfordshire.

yeah.

DEU06: yeah so.

DEU06: That looks like.

DEU06: It would be nice to have a scale an actual scale bar rather than big numbers like 460,000.

Okay.

DEU06: Because, so I guess that's we're looking at about 10 by 10 kilometers Oh, is this does it say five km.

INT: So this is yeah.

DEU06: We go from 58,000 up to say.

DEU06: 66,000 so that's about eight kilometers.

INT: probability at five kilometers around a point in [place].

DEU06: yeah So you can see that it's.

DEU06: got quite a lot of detail there which I assume is to do with the land covers it.

INT: yeah it’s got 21 cover variables and 19 climatic variables.

INT: But that's okay i'll just move on to the one on the right now.

INT: Are you able to interpret this one.

DEU06: I well if it can be clarified what the variation means is it.

DEU06: The uncertainty.

INT: Yes, yeah.

and

INT: So the modelers have recently combined the probability and variation data so they're able to show areas, whether it's both high probability of presence and high uncertainty.

DEU06: High uncertainty.

DEU06: yeah wouldn't you want to highlight there as well as low uncertainty.

DEU06: I mean, because you're more confident in those ones.

DEU06: um.

DEU06: But yeah I would want to know the units, the units of variation being probably very scientific thing to ask, but.

DEU06: What are the What are those units point one of 1.5 before.

INT: But yeah no definitely I completely understand I don't have an answer.

DEU06: and also the colors not great.

INT: Yes, we have had a few comments about.

INT: You not the first.

DEU06: Because you've obviously got.

DEU06: you've basically got a blur the the uncertainty.

DEU06: is very on a very fine scale.

DEU06: So it's almost like everything is salmon pink because it's.

DEU06: it's averaging it's all averaging out yeah.

DEU06: There must be small areas.

DEU06: Small areas that are green.

DEU06: At this zoomed out level you just can't see them.

INT: yeah no I definitely understand that.

INT: that's great Thank you.

INT: Oh, I think.

INT: Is there information that is not shown in the images that would be useful to include.

DEU06: well like I said the time periods.

DEU06: that it applies to and.

DEU06: and

DEU06: I think it will be useful to not on the map, because that's impossible to show this on a map but and to show which of the variables are the.

DEU06: Important.

DEU06: The most the most discriminating ones.

INT: So i'll stop sharing my screen now.

INT: So you've covered all the questions that I wanted to ask which is great and was there anything else that you'd like to tell me so.

DEU06: I guess i'd like to know what the.

DEU06: and

DEU06: More about.

DEU06: What this project what those maps are going to be useful.

DEU06: If that's if you're able to say that.

INT: And so I know that we're focusing on.

INT: data end users and recorders.

INT: and trying to get their perspective on co designing these model data outputs and in terms of.

INT: What they're going to be used for, I don't i'm not 100% sure on myself and just because I haven't had much communication from.

INT: The top people.

DEU06: So you're you're working for three months so.

DEU06: But is there, another stage after that.

and

INT: Again yeah I don't know unfortunately.

INT: Because my yeah because my contract is so short.

INT: I know that i'm in the process.

INT: At the moment, creating this report.

INT: Hopefully it goes beyond.

INT: I know that we're seeking people to help with this.

INT: project like yourself and so would that be something that you would be interested in at all.

DEU06: yeah yeah i'd like to b

DEU06: brilliant doing definitely.

INT: sorry I can’t provide you with better answers.

DEU06: that's right, what if you find out something that's going to be.

DEU06: let's say that.

DEU06: defra are going to use.

DEU06: Very soon.

DEU06: I would be interested in in knowing about that.

INT: yeah absolutely.

DEU06: Decision making like decision making about.

DEU06: Conservation or decis

DEU06: So that's.

DEU06: Basically, just to be kept in the loop, because I think it's.

INT: yeah, of course, definitely.

INT: I wasn't much use for your first question.

INT: Was there anything else at all.

DEU06: and

DEU06: Well, I guess that this going through a similar question are they using the nbn atlas.

INT: data.

DEU06: these maps.

467

INT: I believe so.

DEU06: And are they doing it for.

DEU06: Like how many taxonomic groups are they doing it for.

INT: hmm.

INT: OK, I can find these questions down, and I will find them out, and I can send you an email with the responses to these if you'd like.

DEU06: sure if it's if it's not too much hassle.

INT: No, of course, not not so.

INT: I will, I will compose an email with all these answers and send it to you soon as I can.

DEU06: well.

DEU06: Thank you.

INT: No Thank you.

INT: And thanks for participating in this interview.