UNIVERSITY OF CAMBRIDGE

UNEP WCMC

Careers Service

Cambridge Biodiversity Internship Scheme

Reports 2016

Alice Millington - UNEP-WCMC

As a participant of the Cambridge Biodiversity Internship Scheme, I spent six weeks at UNEP-WCMC, (4th July – 12th August) in the Protected Areas Programme (PAP). Although PAP is responsible for overseeing many different types of Protected Areas, during my internship I focused exclusively on Natural and Mixed World Heritage sites with my supervisor Yichuan Shi.

One of the best assets that I felt the internship provided was the opportunity to develop my GIS skills. This is a vital tool for Geographers, but it is often difficult to develop a real proficiency in the software during the undergraduate course. In my first week, I was given the task of digitizing boundaries for new nominations to the World Heritage List on ArcMap. This involved turning paper maps submitted in State Parties' nomination files – which sometimes contained very little spatial information – into data that could be universally understood, with a real-world location, and utilised by IUCN and UNESCO when considering sites for inscription, or put to use in spatial analysis. Although this task felt difficult at first, I was allowed time to complete online GIS tutorials, to brush up on my limited GIS skills, and was provided time to complete background reading on GIS. This was not only useful to aid me in completing the tasks at hand, but also gave me the chance to develop a much broader understanding of GIS and its possibilities than I would have otherwise have gained.

The 40th annual World Heritage Committee meeting took place in Istanbul during the course of my internship; due to its close relevance to my placement, I was allowed time to tune into the live broadcast of the meeting. This gave me an insight into the structure of UNESCO and its decision-making process, but was also valuable to my next task: editing and digitising boundaries for the new World Heritage Sites that were inscribed during this meeting. It also felt satisfying to gain perspective of the utility the work I was completing at UNEP-WCMC. This task built on, and reinforced, the GIS skills I had learnt earlier in the internship.

My third major task was to improve the quality of the Tentative List data for natural and mixed World Heritage sites – which, despite its importance, was quite a neglected dataset in terms of both completeness and quality. This involved creating point data for the 2015 additions to the Tentative List, and running checks on the existent data, which turned out to be a highly necessary exercise: to name just one example, I came across a site that was listed in its attributes as being in Afghanistan, but its GIS polygon was located in the Banda Islands of Indonesia. This task opened my eyes to the many different functionalities of ArcMap in managing data, and I gained important experience in dealing with a large, complex dataset.

To consolidate my experience, I was given the chance to create a presentation on Esri's 'Story Map' application, which I decided to complete on the new inscriptions for natural World Heritage Sites in 2016. I found the application, which I had been unaware of, an exciting new way to present visual and spatial information, and am confident I will consider it in the future for any presentations I may one day be tasked with. In the process, I also learnt in depth about the sites and their reasons for inscription, which I found fascinating; in all, I thoroughly enjoyed the task and the creative freedom it gave me. It was also incredibly rewarding to hear positive feedback about the presentation from IUCN, who had been sent my work, and iterated their wish for it to be broadcast to the general public.

My time at UNEP-WCMC was highly enjoyable, and I feel so lucky to have been given the chance to complete an internship here after only one year of university study. During my placement, I developed a new passion for GIS, gained invaluable insight into the world of conservation, and spent the duration of my summer in such an interesting and rewarding way. This placement has not only been complementary to my studies in Geography, but I believe it will also be an incredible asset to carving a career path in conservation, should I decide to pursue this upon the completion of my degree. I would like to wholeheartedly thank UNEP-WCMC for taking me on, and the Cambridge Careers Service for devising the Cambridge Biodiversity Internship Scheme and providing the financial assistance – in the form of the Not-For-Profit Bursary scheme – that enabled me to fulfil this brilliant opportunity.

_____

Emma Jillings - TRAFFIC

Over the summer I spent 7 weeks with TRAFFIC, the wildlife monitoring network, in their communications department.

I was fortunate in that my internship coincided with the run up to the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) CoP17 meeting, which meant a lot of my tasks revolved around this. Predominantly this meant working with TRAFFIC's recommendations on the Proposals to amend the CITES Appendices, which were considered at that meeting. For the English, French and Spanish versions, brochures needed to be made, which meant formatting, sourcing images for and laying out content in InDesign. This is really TRAFFIC's area of expertise: supplying scientifically-based, politically impartial advice on what are appropriate levels of wildlife trade, whilst bearing biodiversity and human interests in mind, so it made for an interesting task!

The communications department are responsible for TRAFFIC's website, so I was able to help out here too, doing jobs which varied week to week. These included: uploading content to their website in html form for the CITES Recommendations, updating the TRAFFIC Programme webpage using information from a recent TRAFFIC report, creating a different version of their website adapted for mobile devices . Another job I had was to sort out their online archives to make publications more searchable for on their website.

Other tasks included proofreading, redrafting press releases which came in from other offices around the world, creating a banner, editing photographs, putting together reports for publishing using specific templates, and creating a timetable for use at the World Conservation Congress showing the events which TRAFFIC was contributing to. What I particularly enjoyed about the internship is that the range of tasks allowed me to gain a good overview of how TRAFFIC operates and what it does exactly. The internship also proved a baptism of fire in terms of learning how to use various office programmes, specifically InDesign, Photoshop and Adobe pdfing, which were used for all the above mentioned tasks.

Being in the communications department meant I was able to see in action how TRAFFIC collaborates with other conservation organisations (namely WWF and IUCN), how it functions as a global organisation, and how it manages its reputation amongst the public and broader audiences. Sitting in on meetings TRAFFIC held with WWF on their Wildlife Crime Initiative, for example, was really interesting, as was seeing how TRAFFIC is relied upon by the media for clear explanations of wildlife trade issues, particularly ivory related.

I also became familiar with and responsible for TRAFFIC's presence on social media ie Twitter. This entailed surveying daily news items from around the world on seizures, arrests and other law enforcement activities relating to wildlife crime, and selecting the significant and informative articles to share. This also forms part of the work TRAFFIC does in gathering information to map trade routes and markets.

This was the first office based experience I've had, and it was a lovely office to be in, as the team at TRAFFIC were all very willing to answer any questions I had, and it was a useful insight into how work is divided up in such an organisation. Coming from a background in the social sciences, I was also keen to see how TRAFFIC's work is carried out by people from various disciplines with different skills and experiences.

I came to the internship with a broad interest in sustainability and environmental matters, and have been left staggered by the sheer volume and variety of wildlife products traded and used around the world. In terms of my future career, I shall remain sensitised to this certainly, as well as the interrelationship between human well-being and sustainable use of natural resources.

_____

"I feel so lucky to have been given the chance to complete an internship here after only one year of university study."

Esha Marwaha - UNEP-WCMC

During the summer of 2016, I completed a 7 week internship at UNEP WCMC. Working in the Ecosystem Assessment Programme, I undertook a wide variety of tasks, greatly broadening my skillset. It was an invaluable experience in which I was able to understand the internal workings of a non-profit organisation and really discover what my specific interests and strengths, as well as weaknesses are. In addition, the culture at WCMC was extremely friendly and open and my supervisors were exceptional in supporting me to learn as much as possible.

At first, I was involved in redoing the Biodiversity Indicators Partnership (BIP) website. The BIP aims to promote and coordinate the development and delivery of biodiversity indicators used for Multilateral Environmental Agreements, the Aichi Targets and SDGs, amongst others. The website is thus an important platform for advising national governments in producing indicators in addition to attracting indicator producers. This involved undertaking a content audit, generating user profiles, evaluating the present and other websites and developing a survey to send to partners. After a number of meetings with the team, the survey was then sent off and I was able to draft content for a new site. These tasks improved my analytical and critical skills and highlighted the behind the scenes considerations that one must take to create a website. In particular, I found producing user profiles was an interesting task where I was had to think about what each user including national governments, partners etc. would want from the site. As an addition to the site, the team had hoped to create a video for its launch to describe the BP. As a result, I liaised with video developers for costing and wrote a script.

As the process of creating a website was longer that anticipated given that it required a number of meetings with other members of the team, I got the chance to get involved with other tasks. Due to my background in communications, I revamped an old communications strategy for the BIP secretariat and created a new twitter strategy. This involved investigating targets for the secretariat and tangible communicative objectives to help reach the goal. Again by identifying stakeholders, I had to consider what they needed to know and how best to communicate with them. Undoubtedly this aided my communication skills.

One of my favourite parts of the internship was writing a report. In 2015, a revised indicator suite was proposed to monitor the Aichi Biodiversity Targets. However, critical gaps still endure in the suite for some of the Strategic Goals. As a consequence, the BIP undertook an online consultation calling for new indicators. In order to analyse the responses, I organised the qualitative and quantitative data into a spreadsheet. I then summarised this into tables and finally into a complete report which was to be sent to partners. Writing the report involved analysis of whether these proposed indicators could truly work practically and evaluating them by a set criteria including scale, disaggregation, peer review and funding. Furthermore, I produced another report on existing BIP indicators and their synergies with Multilateral Environmental Agreements.

Another important aspect of my internship was my involvement with e-learnings. Working at an advisory role, the BIP secretariat produce e-learnings to be sent to ministers in order that they understand environmental policy, processes and change. I was given e-learnings on themes such as mapping biodiversity and modelling land use change to evaluate. This involved critically analysing the content, grammar and presentation amongst others. I then summarised these in a spreadsheet and, in addition to comments from other evaluators, looked into ways in which these could be amended, eventually producing a list of amendments to be sent to the publisher. Once sent, I had to re-review them to ensure the amendments had been implemented. This definitely again improved my analytical skills in addition to my editing, writing and presentation competences. Moreover, I was involved in producing indicator fact sheets. This included synthesising information in existing sheets but also searching for updated data. Finally, I was even given the chance to try some GIS, where I had to map partners based on their size and number.

Overall, I had an extremely positive experience at UNEP WCMC. I thoroughly enjoyed my time there and the team were so welcoming and friendly. My supervisors were willing to let me try a variety of tasks and were patient throughout, teaching me as much as they could and advising me about other careers, internships etc. The centre as a whole also tried to integrate interns well, by hosting a networking tea and inviting us to all events. The variety of the tasks I was involved in has

broadened my skillset and enabled me to think more carefully about my own strengths and weaknesses. I greatly enjoyed my time here and forged some valuable links.

―――――――――――――――――――――――

Jack McMinn - Tropical Biology Association

Between the 21st June-8th July and 18th July-5th August 2016, I acted as an intern at the Tropical Biology Association UK headquarters in the David Attenborough building, New Museums Site, Cambridge – as part of Cambridge University Careers' Biodiversity Internship Scheme. I aided the charity with various IT endeavours over the six weeks, from file organisation to data analysis to research, and found the entire affair interesting, useful and enjoyable.

The Tropical Biology Association is a somewhat small organisation led by Dr Rosie Trevelyan, a member of Cambridge University's Zoology Department, which aims to provide training, teaching and resources to people from less economically developed countries (mainly in Africa), thus allowing them to study the vast biodiversity often found in said countries. The Cambridge offices had a counterpart in Kenya and employees moving between them depending on working requirements. The internship required someone who could 'help design and produce publicity materials for TBA' with a 'flair for design' – having worked in such a thing in previous work experience, I leapt to the opportunity.

The offices during my first two weeks were relatively quiet, manned only by Debbie Macklin, Communications Officer, and Monica Frisch, Officer Manager – Cheryl-Samantha Owen, Corporate Programme Manager, was away on her honeymoon and Dr Trevelyan was working in Kenya. Nonetheless, I began working on the first of my assigned tasks – suggesting improvements for the Tropical Biology Association Twitter. The Twitter was being operated by the Kenyan offices and was not getting as much traffic as hoped, especially when compared to other conservation charities such as IUCN. I constructed a Microsoft PowerPoint presentation on the subject, presenting two proposed new priorities for this form of social media – to make tweets with links more eye-catching, and to increase online interaction with other Twitter feeds and followers. At the same time, I in my free time began producing some test

animations on PowerPoint (with each slide acting as a frame of animation) for TBA promotion videos – one of these (an animated version of the TBA logo) was used in a Vimeo video of Jason Ngwava speaking at the opening of the David Attenborough Building, which I had edited for utilisation on the website.

Throughout the following few weeks, Cheryl-Samantha Owen and Dr Rosie Trevelyan returned to the offices and aided me in my next task – to reorganise the association's Dropbox. The files on said Dropbox consisted of various photographs of TBA students and alumni on the field and in the laboratory, but they were at the time distributed and duplicated randomly throughout many folders on different people's accounts. Over a week and a half, I collected up all the photographs, deleted any copies and filed them under a new filing system of my creation, which should allow for easier photo browsing for utilisation in promotional material. All the photographs were also renamed by me with a system devised by Dr Trevelyan, so as to credit photographers, give locations etc. It was a tedious task at times, especially on the occasions when alterations to the filing system were suggested by Rosie or Debbie and I had to start from scratch, but ultimately it was rewarding to see all the pictures properly managed in the end (I still get email updates when new photos get added to the Dropbox, and sometimes feel the need to shuffle some of them about, should they be incorrectly placed!).

After this, I was given access to the Google Analytics of the TBA website, allowing me to see how people were visiting and moving between web pages. I extracted website data from this, and presented in graph form to Rosie and Debbie, suggesting changes to the website design to improve viewership and to better redirect people to important parts of the site (this includes me creating images simulating the TBA website front page with optimised layout). This factored into the aforementioned social media critique, as with these graphs, one could clearly see how many people were redirected to the site from Facebook and Twitter links. During this time, I also noticed some odd peaks in webpage traffic which, as it turned out, were from ghost spam, which can render analytical data useless. I, as a result, researched a method to remove said spam online, acted upon such a method and removed the spam, allowing for more accurate statistics. Dr Trevelyan had then

compiled a list of possible sources of funding (mainly consisting of conservation foundations) - it was my final task to research the ethoi and financial histories of these candidates - almost some kind of enjoyable espionage - and then write up a short report rating them in order of how appropriate each was for being approached.

This internship gave me primarily essential experience in doing office work with a strict schedule and set tasks. I had previously only worked in the offices of Yellow Banana (an advertising company in Oslo), which was a far more relaxed affair with far shorter hours– this occasion was a lot more professional and with a greater sense of discipline which I think will benefit me in the long run. It also provided with a truly unique insight into an aspect of biology I was previously unfamiliar with – that of charity and conservation. Naturally I had been aware of such institutes, but to see one operating first hand was a novel experience. The complexity of each operation for even such a relatively small association was surprising to me.

Overall, my TBA Biodiversity Internship with the Tropical Biology Association was an exceptionally worthwhile experience. Dr Trevelyan and the other employees were very helpful, friendly and appreciative of my efforts and I would like to thank them for that. I would also like the Cambridge University Careers Service for providing me with this invaluable opportunity.

"I really enjoyed my time here... [I've] broadened my skillset and it's enabled me to think more carefully about my own strengths and weaknesses."

Jinxi Chen – UNEP-WCMC

This summer I spent eight great weeks at the United Nations Environment Programme World Conservation Monitoring Centre (WCMC) based in Cambridge, as part of the Cambridge Biodiversity Internship Scheme and was funded in part by the Career Service Bursary. The UNEP/WCMC is an executive agency of the UNEP, responsible for conducting biodiversity assessment and providing support to policy development and implementation.

The department that I was working at is the Convention and Policy Support Programme (CPS), which aims to develop, facilitate and support the Centre's engagement with intergovernmental processes and their development at all levels from local and national to regional and global. As a CPS intern, I worked on the BioBridge Initiative project with my supervisor, Daniela Guaras. The BBI was launched by the Korean government at the margins of the 12th Conference of the Parties to the Convention on Biological Diversity (CBD) in 2014. The initiative aims to enable more systematic and sustainable technical and scientific cooperation among countries and organisations in implementing the Convention at the national level. The major objective of my work task is to identify good practices in international cooperation programmes developed by various international and national development cooperation agencies. This exercise was conducted with the intention to inform the development of the guidelines on good practices in technical and scientific cooperation within the framework of the BBI.

In my first week, I had a general understanding of the CBD and the BBI though exploring the CBD websites and reading the BBI inception report. In addition, I read a variety of CBD documents in the area of technical and scientific cooperation. During the next five weeks, I was working on identifying good practices in technical and scientific cooperation, including capacity building programmes, which could underpin the the functioning of BBI project. The national development cooperation agencies that I have explored including Japan International Cooperation Agency (JICA), Norwegian Agency for Development Cooperation (NORAD), Department for International Development (DFID), etc. Furthermore, international organisations which are focused on facilitating development cooperation were also studied, including the Organisation for

Economic Cooperation and Development (OECD), the United Nations Environment Programme (UNEP) and so on. Information was collected by keyword research and all the identified good practices were collected in a template. Categorisation is the major method used when doing data analysis and selecting the most relevant good practices for the BBI project. In the last two weeks at WCMC, I was mainly working on producing a final report which would be used to inform the production of guidelines on good practices in technical and scientific cooperation in BBI. In addition, I also examined the methods or framework used for the identification of good practices in the searched literature and drafted another methodology report including those I thought would be more appropriate for the identification of good practices within BBi framework. My final work has been presented to the partner organisation the Quebec Centre for Biodiversity Science (QCBS) and will be presented to the Executive Secretary of the CBD.

This internship has provided me with a valuable chance to understand the operating procedures, systems and cultures of a conservation organisation. It was also my first time to work in a project led environment and I'm happy to find that I really enjoy working in such environment. Furthermore, I have greatly improved my research and data analysis skills and enhanced my time management skills. I would like to give a big thanks to my supervisor for all her support and help. It was also great to have such an opportunity to meet so many professionals in the conservation area and I really enjoyed talking to colleagues here.

Mark Titley – UNEP-WCMC

My nine-week internship at UNEP-WCMC was a project in collaboration with the Protected Areas and Science Programmes, and aimed to investigate the impact of protected areas on biodiversity. Protected areas underpin important conservation efforts around the world and are integral to international environmental policy, for example the 2020 Aichi Biodiversity Targets; it was a privilege to work on such a relevant and important topic at such a well-respected organisation.

Specifically, I used the temporal WDPA (World Database on Protected Areas) to identify recently established protected areas, and then searched for biodiversity data in these PAs within the PREDICTS framework (Projecting Responses of Ecological Diversity in Changing Terrestrial Systems). The project took a similar meta-analytic approach to other PREDICTS work, but was novel in that I was looking for temporal data to directly study changes over time in newly established protected areas, rather than the previously used 'space-for-time' approach.

The first part of my internship involved working on the temporal WDPA using GIS software (Geographical Information Systems) to identify and remove certain types of PA from the database, such as sites whose status is 'Proposed' or 'Not Reported'. This gave me chance to practice my GIS skills and learn various geoprocessing tools. I particularly enjoyed the problem-solving aspect of this work, regularly having to identify any issues with the database and devise ways around them. Subsequently, I moved on to a literature search using the search platform Web of Science. Despite initially struggling to find much appropriate data, which delayed the project, I settled on the method of searching country-by-country using the names of all recently established PAs. This began to return useful long-term biodiversity data from around the world.

In the meantime I also worked on a couple of side-projects. One of these was a new way of calculating global protected area coverage; there is currently a discrepancy between actual coverage and that recorded in the database due to a time lag in updating the database. I worked on generating more accurate year-by-year coverage statistics by 'backtracking' sites from more recent versions of the database into earlier versions from which they were missing.

Another side-project was a scoping exercise to see how the temporal WDPA could be used to identify Protected Area Downgrading, Downsizing & Degazettement (PADDD) events – an emerging phenomenon of conservation importance.

UNEP-WCMC was a great place to work, with a friendly, supportive and collaborative atmosphere. Particularly useful was the opportunity to see how conservation works at the science-policy interface. For example, whilst I was there, several members of the Protected Areas Programme visited Hawaii to launch the 2016 Protected Planet Report at the IUCN World Conservation Congress. This work

directly relates to the Convention on Biological Diversity's Aichi Target 11, amongst others. 'Afternoon tea' was held every Wednesday afternoon and was a fantastic opportunity to hear about what others at the centre were working on, and understand more about the context of that work. In addition, there were informative lunchtime seminars on recent and upcoming projects at the centre. Once a week I was invited to spend the day working at the David Attenborough Building in the centre of town, which enabled me to meet people from other conservation organisations and experience being a part of the Cambridge Conservation Initiative (CCI).

My main project is ongoing and will hopefully lead to a publication in the future. But equally importantly, I have taken away highly valuable skills such as using GIS, databases and literature searches. This, combined with the knowledge of how conservation organisations operate, and an insight into how science influences policy decisions, will all be extremely valuable for me during my upcoming master's course and beyond.

Miranda Leaf - UNEP-WCMC

I spent my summer working as an intern at United Nations Environment Programme – World Conservation Monitoring Centre (UNEP-WCMC). As a recent Natural Sciences graduate the internship gave me the perfect leg up in the transition between university and the working world. It gave me invaluable experience not only in the field of conservation but also I transferable skills that are applicable cross sector.

UNEP-WCMC is an agency of the United Nations Environment Programme concerned with bringing together information about global biodiversity and the threats facing it in order to support and inform policy-making. Within this I was a member of the Species Programme. This programme looks at threats to endangered species, primarily from trade. This involves documenting existing trade, researching the effects of trade on endangered species, and facilitating work to bring about restrictions on international trade of species. During my time in the programme I gained a great insight into the science-policy interface, working not on a single project but getting involved in all aspects of the programme's work.

One aspect of the work of the Species Programme is to handle international trade data of species protected by the Convention on International Trade in Endangered Species (CITES). I organised large datasets sent in from different countries into a standardised format in excel so that it could be uploaded to a global database and be readily analysed.

My internship gave me excellent experience of performing desk-based research, using skills I had developed during my degree. For example, I carried out literature searches to obtain information about the conservation status and threats facing diverse species in different countries. The literature I found was then used to write reports for the Scientific Review Group for the European Commission. I also performed a broad scale literature search for the effect of climate change mitigation strategies on migratory species, in order to assess the scale of research out there in preparation for an upcoming workshop for the Convention on Migratory Species, with a focus on this subject.

A large aspect of the work of the Species programme is to work with conventions to present where they believe restrictions on trade should or shouldn't be in place. I was working at UNEP-WCMC in the lead up to the 17th Conference of Parties for CITES. This is an international conference, being held in Johannesburg at the end of September 2016. During the conference, proposals are put forward to change or create global restrictions on trade in species. Proposals are long and dense and include details of the current and historic population status of a species, the threats facing it and existing legal instruments to protect it. I created short and readable summaries of these proposals for my colleagues to be able to become quickly informed on the proposals in preparation for attending the conference. This proved very interesting work as it enabled me to develop my written communication skills whilst discovering the most recent areas of progress and debate in species trade. I was excited to see species I had written about such as pangolins featuring on the BBC news when they became up-listed at the Conference of Parties.

My favourite task during my time at UNEP-WCMC was writing "specimen stories" to accompany animal specimens in the new Cambridge University Zoology Museum. I wrote pieces aimed at visitors to the museum, summarising the population trends

and conservation threats to a number of species including lions and potto gibbons.

Being a part of UNEP-WCMC gave me great opportunities to learn more about conservation. It gave me the chance to meet likeminded people and find out what their roles involved and the career paths they had taken to get to them. UNEP-WCMC holds tea and cakes every Wednesday where people from across the programmes in the organisation announce recent conferences they have been to and papers they have published. This meant I gained a sense of the broader scale of work that goes on and could hear from people in different aspects of conservation monitoring. In addition people in the company as well as guest speakers often present their work at lunchtime talks. As a member of the Cambridge Conservation Initiative, UNEP-WCMC is also affiliated with many other conservation organisations who also put on regular talks that are open to UNEP-WCMC staff and sinterns. For example, I am very interested in birds and so I attended a talk by the RSPB on protection of endemic birds in overseas territories against invasive species.

The internship gave me a great insight into the reality of a job in desk-based conservation work. Overall I was taken aback by the friendliness of the staff and the welcoming culture of the UNEP-WCMC and I would recommend it to others as a place to work.

"My team was very welcoming, and everyone was friendly and globally minded."

Satowa Kinoshita - UNEP-WCMC

This summer, I had the opportunity to work at UNEP-WCMC for 6 weeks in their Business and Biodiversity Programme (BBP). The team works with companies to provide information and guidance on biodiversity issues that affect business operations, in order to reduce their impact on biodiversity and the environment. Their work includes engaging with corporates and developing resources and tools, including those for the Proteus partnership, a collaboration between WCMC and several major oil and gas and extractives companies to provide them with biodiversity information.

My project focused on opportunities for resilience in corporate biodiversity management by climate change adaptation, particularly in the oil and gas sector. About half of my project focused on researching the business case of resilient biodiversity management and climate change risks, the extent of consideration of climate change in biodiversity management, and proposing some mechanisms for adaptation. This involved reading academic and grey literature, from scientific journals to reports by sector initiatives or UN bodies. After concluding that climate change was in fact little considered in corporate biodiversity management, I went on to review the availability of spatial data on the impacts of climate change on biodiversity. The eventual aim was that a spatial map of climate change vulnerability could be added as an additional layer in the Integrated Biodiversity Assessment Tool (IBAT), an online tool for Proteus members which allows them to see Protected Areas, Key Biodiversity Areas, and other conservation areas and understand their overlap with contract blocks, to better inform environmental assessment and biodiversity management in their operations. This was perhaps one of the most challenging aspects, partially due to the variation in scale of data, modelling language, and even lack of scientific consensus, which also meant that there was a lot of data points existing, but much less that were directly relevant or applicable. In addition to collating the data sources I found, I also worked with the Climate Change and Biodiversity (CCB) team to come up with a framework to identify available datasets and gaps. With the help of my team's GIS officer, I also conducted an overlap analysis of Proteus member contract blocks with a climate stability map to see which contract blocks were least "climate stable", ie. in regions that would

be most exposed to climate change. This led to the final component of my project, which was to look at case studies of biodiversity management in oil and gas operations in areas vulnerable to climate change to understand adaptation mechanisms, if any were in place, and identify opportunities to incorporate such measures. While Environmental Impact Assessments are not the most glamourous documents to read, it was also interesting reading firsthand what companies assessed and perception of environmental impacts and mitigation measures. At the end, I wrote a report compiling all of my findings and presented them to the BBP and CCB team and other members of the Centre.

I also had the opportunity to attend the Proteus Annual Meeting that happened to fall in my second week. This was not only extremely relevant for my project at WCMC, but also a great chance to become exposed to industry members and their thoughts and priorities, and even participate in and present during a break-out session.

What surprised me most, or at least brought to the forefront of my mind, was perhaps the vast amount of unknowns – whether in data, scientific knowledge on species, or a company's specific policy – and the challenges in advising entities like companies in the face of such uncertainties, and balancing high-level outputs with implementable solutions. However, I believe that this is not a problem unique to WCMC, or even the conservation sector. I learned much from this internship, not only about biodiversity and conservation, but also more about working at the interface of science, policy, and even business on a multi or international scale, and the rewards and potential frustrations of doing so. I was also able to gain experience report writing and presenting, and dipped my toes into GIS and the world of data and mapping. My team was very welcoming, and everyone in the centre was friendly and globally minded, which made them approachable whether it was for input into my project or just to talk. I also enjoyed attending some of the lunchtime talks, from litter clean-up efforts in the fjords Norway to WCMC activities in China. Whether or not I remain in the conservation sector specifically, the experience strengthened my background and interest in environmental sustainability and pursuing the field, perhaps at an international organisation in the future, and I'm extremely thankful to the Cambridge Careers Service and WCMC for this opportunity.

Shilpita Mathews - UNEP-WCMC

Over summer 2016, I spent five weeks as an intern at the Climate Change and Biodiversity Programme of UNEP-WCMC (United Nations Environmental Programme – World Conservation Monitoring Centre). As someone who is interested in working in the environmental sector, this was a great learning opportunity to work in a conservation organization. I also got to learn more about climate change adaptation, an area that I am very interested in. During my internship I worked on two projects relating to Ecosystem – based Adaptation (EbA), or climate change adaptation that focuses on how ecosystems can benefit people.

For the first two weeks, I helped create and populate an inventory with EbA tools that are used by various policy makers. The purpose of this inventory is to inform policymakers of the tools currently available. As an ongoing inventory, it gives the chance to policy-makers to comment on their application of different EbA tools and overall experience in diverse contexts. Working on such an inventory gave insight into the learning resources and databases used in the environment sector to streamline and adopt best practices. The project involved collaborating with different people in my Programme, brainstorming and working on ideas together. It also gave me a taster of the various cross-organizational partnerships on projects, and the way in which environmental agencies complement each other. Further to this, I helped research and synthesize information documents for a capacity development questionnaire which aims to gauge and establish a capacity baseline of policy makers implementing EbA multiple countries and projects. This exercise gave an insight into the opportunities and challenges of implementing EbA policies at local and national levels.

The next few weeks were spent conducting a scoping exercise on urban EbA in particular, identifying gaps in the literature and what areas of urban EbA the Programme can be focusing on. This involved consulting and synthesizing various work done by diverse organisations and drawing on key lessons that can be applied. This exercise has honed my research, analysis and synthesis skills, as I have learnt how to search, contextualize and apply relevant knowledge to a policy-based setting.

Overall, I greatly benefitted from the knowledge base of the diverse people in the Programme and the organization as a whole. The work culture

meant that there were many opportunities to learn, such as lunch-time talks on latest projects or research work as well as informal discussions of ongoing work in the conservation field. An example of this was Bo Eide's presentation on marine litter in Norway. I also got to attend talks out of the Centre related to urban EbA, such as a talk by Professor Jack Ahern on 'Novel Urban Ecosystems', at the Department of Land Economy at the University of Cambridge.

The highlight of the internship would be drawing on this knowledge base. Moreover, it was a great opportunity to learn more about the application of EbA in the policy realm, which one often does not encounter in a solely academic setting. This environment was particularly helpful for me in brainstorming and bouncing off ideas for further research and study, which I hope to do on urban climate change adaptation. Socially, there were many opportunities to meet staff informally such as Friday socials and the annual summer barbeque.

All in all, the internship was a great exposure to conservation work in the climate change and biodiversity area. It has provided me a new lens of approaching various policy issues, from a more pragmatic and application-based angle. It also gave insight into working on long-term projects with multiple stakeholders which can be a challenging but rewarding process. Such subject-specific and transferable skills will greatly benefit me in future roles and opportunities. I am grateful for this opportunity and would strongly recommend it to anyone interested in the environmental sector.

"…the experience strengthened my background and interest in environmental sustainability and pursuing the field."

Tamsin Woodman - UNEP-WCMC

In the summer of 2016, I completed an eight-week internship with the United Nations Environment Monitoring Programme World Conservation Monitoring Centre (UNEP-WCMC), a conservation-focused charity based in Cambridge. My internship was with the Science Programme in UNEP-WCMC, working on the Madingley Model, supervised by Dr Michael Harfoot. The Madingley Model is a General Ecosystem Model, which attempts to model life in ecosystems. In the future, the Madingley Model could be an extremely useful tool in conservation, to simulate changes in biodiversity under different scenarios.

The aim of my internship, which was decided on through discussion with my supervisor, was to use the Madingley Model to investigate the impacts of animals on vegetation dynamics. Having studied Ecology and Plant and Microbial Sciences in the second year of my degree, I am really interested in the interactions between animals and plants, and so this internship gave me the opportunity to conduct a research project in one of my areas of interest.

I began my internship by researching the impacts of animals on vegetation, and developing my understanding of the workings of the Madingley Model. I then focused my research on the impacts of large animals, known as megafauna, on plants, which led me on to investigating trophic levels and cascades. Trophic levels are the groups of organisms that make up food webs, such as herbivores and plants. Trophic cascades are the indirect impacts of trophic levels on trophic levels that are lower down and not adjacent to them in the food chain, such as the effects of carnivores on plants through the consumption of herbivores by carnivores. My research into megafauna and trophic cascades led us to decide to use the Madingley Model to look at the impact of the presence and absence of different animal trophic levels on plant biomass.

Along with using the model to investigate the impacts of animals on plant biomass, I was also involved in testing the model outputs against empirical data, to examine the accuracy of the Madingley Model in simulating ecosystems. To find data to test the model+ I conducted a literature search for animal censuses in African National Parks. I extracted the data from each relevant paper, and from the Living Planet Index which

contains data on animal populations around the world. I compiled the results of my literature search into a database in Excel, which meant I had to consider what information I needed from each paper and how best to present it. I then used Excel to convert the animal census data into the herbivore, omnivore and carnivore biomass per square kilometre in each location. The biomass of a trophic level per square kilometre is directly comparable to the outputs from the Madingley Model. I also conducted a literature search for vegetation biomass in studies in Africa where herbivores had and had not been excluded from a study area, to compare to the Madingley Model. The literature searches often involved going to the University Library to find relevant books, which was a new experience for me.

To research the impact of different trophic levels on plant biomass, my supervisor ran three different simulations of the Madingley Model. The first was with plants only, the second with plants and herbivores only, and the third with plants, herbivores, omnivores and carnivores. We decided to run the model over Africa only, as Africa still has a mostly intact complement of megafauna, whereas other areas of the world have seen the extinction of many large animal species since the last glacial maximum. Using the Madingley Model to model Africa also ties in with work currently being done by other people with the model. My work involved analysing the output from each model simulation. I firstly used R, a statistical program, to map the biomass of every trophic level for each model. Although I had some experience with R before I began my internship, I had never used R to produce maps, or to analyse spatial data. I spent a lot of time improving my R coding kills, which I found very rewarding. I then used R to conduct statistical tests to compare the animal and vegetation biomass I had gathered from the literature to the model outputs, and to compare vegetation biomass between the different model simulations.

I compiled the results of my research into the beginnings of a scientific paper as I completed my internship. My supervisor and I are hoping to use the results from my internship to collaborate on a scientific paper, which may be published in the future. Writing the report has made me consider how I present graphs and maps in scientific papers, and has helped me to develop my writing skills.

Overall, during my internship I have significantly improved my coding skills in R, which I have thoroughly enjoyed. My Part II project will involve a lot of work in R as well, and so the skills I have developed through my internship should be very useful to me in the future. I have developed my research and scientific writing skills, and have learned how to develop databases through my literature searches. Talking to people who work at WCMC, and attending lunchtime talks, has given me a good overview of the work they carry out in the centre, and what it is like to work in conservation.

I have really enjoyed meeting like-minded people during my internship, and everyone at UNEP-WCMC was very friendly and welcoming. I attended the summer BBQ and a few Friday night socials during my time at UNEP-WCMC, which were great opportunities to meet people. I spent one day a week working in the UNEP-WCMC office in the David Attenborough Building in the centre of Cambridge, which gave me the chance to meet people from other conservation organisations as well. I would like to thank Dr Michael Harfoot and everyone in the Science Programme for helping me during my time there. I would also like to thank the Cambridge Biodiversity Internship Scheme for organising the internship, and the Not-For-Profit Bursary Scheme and Churchill College for supporting me whilst I was completing it. I would thoroughly recommend the Cambridge Biodiversity Internship Scheme to students who are interested in ecology and conservation, as the scheme gives you an amazing opportunity to experience work in conservation, and to meet people from the sector.

_____