**CLIMATE CHANGE IN THE FALKLAND ISLANDS**

by

Jim McAdam & Rebecca Upson

A recently EU funded project will provide us with important insights into the direction of climate change in the Falklands and, given a range of emissions scenarios, will assess what the impacts on land and farming in the Islands are likely to be. The project is called ‘**TEFRA – Terrestrial Ecosystems of the Falklands – a Climate Change Risk Assessment’** andis fundedby EU BEST- (Voluntary Scheme for Biodiversity and Ecosystem Services in Territories of the EU...and Overseas Territories). The fundingwas won by the Royal Botanic Gardens Kew (“Kew”) in association with the United Kingdom Falkland Islands Trust (UKFIT) and Falklands Conservation (FC) against very strong competition; only 7 bids were successful out of 42 applicants. The project manager is Rebecca Upson who previously worked as the plant conservation officer at FC (2007-2012) and is very familiar with the terrestrial environment of the Islands. Jim McAdam (UKFIT) will assist on key aspects of the project, reflecting his long history in farming and ecological research in the Islands. Rebecca will also liaise closely with FC and the Department of Agriculture in the Islands. The project will be able to make use of the considerable bank of expertise available in Kew, in mapping and data analysis and will be overseen by Colin Clubbe who is also very familiar with the Falklands.

**The Background to the project**

There is no doubt that the climate of the Falklands is changing. Over 130 years of rainfall records show that we are in a period of summer rainfall decline (and other seasonal changes) and over 50 years of sunshine records show significant increases in mean summer sunshine and temperature. Longer drought periods will decrease soil water content, impair plant growth and place increased stress on the shallow peat soils of the Islands already prone to drying out and erosion. This in turn will have an impact on plant community diversity, pasture growth, water availability and ultimately the potential of soils to accumulate and store carbon – the key to climate change mitigation worldwide. Of course it might also increase opportunities within the farming sector to grow a different range of crops or grasses to support a wider based, more sustainable agriculture with positive implication for food security.

**Ecosystem Services Delivery?**

This is a term currently being bandied around widely in the UK and the EU and one which is increasingly the basis of all environmental and agricultural policy. As it is also the basis of our project it is worth clarifying ***what it means for the Falklands!***

At its simplest, ecosystem services delivery simply means **“what the countryside or “camp” does for us**”. These “services” camp provides for us all can be grouped into four categories:-

Provisioning – i.e. the products we get from the countryside e.g. food, wool, meat, crops, water

Regulating – the benefit we get from natural processes such as climate and water

Supporting – natural functions that are necessary for the delivery of all the other things we get from the land e.g. soil formation, natural cycling of minerals, plants and animals (wildlife), water

Cultural – all the things we get from the countryside that you can’t really put a monetary value on – e.g. the pleasure we get from watching wildlife, how our countryside attracts people (and visitors), the health benefits of fresh air, walking and the feel-good factor of being closer to nature and our heritage in whatever way.

As you can see, all of these things could be vulnerable to any significant directional changes in climate. Our project will concentrate particularly on using the 2020 – 80 climate change predictions.

**What will we be doing within the project**

The first stage will be to get the best possible analysis of how the climate of the Falklands is likely to change over the next 70 years or so. Predicting climate change is not as simple as taking the weather records we have at the moment and simply stretching the “lines on the graph” forward 70 years! There are a multitude of external factors which impact on our weather patterns and the direction of its change – ocean currents, wind direction, sea temperature, the Antarctic ice shelves and peninsula, Southern Patagonia etc. Fortunately we have been able to commission the world-renowned Tyndall Centre for Climate Change Research at the University of East Anglia to put their combined skills and knowledge into giving us what will be the most accurate predictions we can have of climate change in the Falklands. They have been given all the records that UKFIT has been able to gather up over the past year or so (with considerable help from Manfred Keenleyside, PWD) and will soon come up with predictions ahead in 20 year intervals till 2080.

We will then use the huge plant database (c. 36,000 records for the Falkland Islands) FC and Kew have, our knowledge and information on vegetation distribution, grazing and cropping patterns, and soil properties and depth to predict:-

- *How climate change might affect native and invasive plant diversity*

- *The likely impact on future soil carbon storage potential and water availability*.

From the point of view of the farming community, this will be hugely important as we can make an assessment of the impact on grazing potential of camps and the range of crops and forages that might be most suitable for the future. We will also consider the impact on related activities such as shelter provision (how might wind strength, variability and direction change?) and self sufficiency in horticultural crop production.

**The wider picture**

The implications for climate change on some of the other benefits we get from the countryside such as rural tourism, for example access to wildlife, while not to be specifically researched, will be self-evident from the project analysis and embraced by stakeholder workshops (see below).

**What happens next?**

Rebecca has just started work (in January) at Kew on the project and Jim has delivered all the weather records (including those from stations in Southern Patagonia) to the Tyndall Institute. We will work with the experts at Kew on integrating the climate predictions we get to the various aspects of the project – soils, plants, cropping patterns etc. and in late March 2014 we will hold a workshop in the islands where we will present our initial findings and take suggestions from yourselves as “stakeholders” (i.e. those who this will most affect) on what **you** see as the likely impacts of such predictions and the “risk” associated with them. We will then go back and start to refine the whole risk process, put together recommendations to FIG for their consideration to adopt in Government policy and to the wider UK Overseas Territories to learn from the approach we have taken and what we have found to date. This part of the project will greatly involve Nick Rendell in Environmental Planning and we are very grateful for the support he has given us in many ways.

We plan to hold a second workshop near the end of the project (probably April 2015) so that you will have the maximum possible opportunity to engage with the process and input to the findings as well as exploring in more depth the risks and opportunities we face in the future. Exciting times!

Dr Rebecca Upson (R.Upson@kew.org) is the Falkland Islands Climate Change Project Manager at RBG Kew.

Dr Jim McAdam, (jim.mcadam@afbini.gov.uk) UKFIT, is Head of the Crops, Grassland and Ecology Branch, at the Agri Food and Biosciences Institute, N. Ireland and Professor in the School of Biological Sciences at Queen’s University Belfast.