Interview Dr. Sandra Brown

Mary Grady of Winrock International's American Carbon Registry (ACR) interviews Dr. Sandra Brown, Winrock Chief Scientist and Director of the Ecosystem Services Unit on the importance of and challenges for terrestrial carbon sequestration projects for climate change mitigation.

Mary: How did you decide to become a scientist and study system ecology and how did that lead you to carbon work?

Sandra: Well it wasn't really a conscious decision. I was teaching high school physics and a course on environment, and a chaperone was needed to take students to a science fair at University of Florida. I volunteered and while there had the opportunity to look at various departments, including the Department of Environmental Engineering Sciences. It seemed very interesting and I thought I'd like to learn more about this. So I applied to the graduate program and was accepted.

That first summer session I took all these interesting classes on the ecology of aquatic plants and thought WOW! Aren't plants fascinating! The following summer I decided to pursue the PhD program. I applied and Howard Odum, the recognized scientist and *father of systems ecology*, agreed to take me on as a student. He had several projects at the time, and the one with an opening on the team was to study Cyprus swamps. So I did my PhD work on swamp forests and the carbon cycle. I measured biomass, I measured photosynthesis, I measured respiration. It was a very field oriented dissertation. I saw a lot of spiders, and I really dislike spiders.

After I graduated, the Director for the Center for Wetlands, Dr. Ariel Lugo, asked me if I wanted to be involved in a U.S. Department of Energy-funded project to address the role of tropical forests in the global carbon cycle. We started the work in 1978 estimating greenhouse gas emissions in tropical forests and continued until 1996. This project shaped my career.

Dr. Brown with her Nobel Prize (shared with Al Gore) 2008

Mary: What led you to join Winrock?

Sandra: I was working as a professor at University of Illinois, on loan to the EPA in Oregon, when I learned of the opportunity to join Winrock to work on forests and carbon. I was looking for a different and new opportunity beyond academia to put all of my years of study into practice, so I submitted my CV.

New and exciting it was indeed! My first project was the Noel Kempff project in Bolivia (*Noel Kempff Mercado Climate Action Project*), the first tropical forest avoided deforestation project designed to measure and monitor emissions reductions.

I traveled to Bolivia to meet with involved parties, including the timber concessions and the project implementers. This was my chance to apply my field expertise and my scientific knowledge to a first-of-a-kind project. My contributions on the carbon measurement and monitoring protocols and the co-development of an economic model to calculate leakage, referred to as a "landmark achievement in quantifying leakage at a national scale" were very important to the ultimate credibility of the project.

I've now worked on numerous groundbreaking projects, and it has been very rewarding to move onto the more practical application of the science and see how this work is making a difference. Winrock has provided me that opportunity.

Mary: How would you describe the role of science in the carbon markets?

Sandra: Well, even though it is a market, you couldn't have the market without the science. The carbon cycle is grounded in science, so it takes science to understand how to measure and quantify carbon stocks and emissions. Staying true to science and ensuring integrity in the science are fundamental to the credibility of the market.

Mary: What are the most common misconceptions regarding Agriculture, Forestry and Other Land Use (AFOLU) projects?

Sandra: One that is still repeated is that it's complicated and complex and we don't know how to measure. This is simply not true. We know exactly how to measure and, with adequate resources, can give the right answers with the right degree of confidence.

Another misconception is the issue of permanence. No one should be looking at forest carbon as a permanent fix. It's a stop gap measure - a bridge strategy for the transition to a cleaner energy mix. The global emissions problem must be solved in the fossil fuel arena, and since that will require time, we can borrow that time from forests.

Mary: What do you see as the challenges to getting AFOLU projects developed?

Sandra: Well there are a few, and they are intertwined. First, we need to build global capacity to do projects. We also need good methodologies, but even with the methodologies, the projects still require capacity to implement. And of course we need the market.

Even with capacity and methodologies, projects take time and require funding. If the market is there, the projects will come, but the market has been slow to develop. Who will be the buyers? There is uncertainty surrounding the next round of national commitments and slowness in the policy process of incorporating REDD at a global scale. The U.S., which could have a leadership role in this arena, is punting on decisions. This all makes for a very challenging environment for forestry projects.

Mary: How can we help to accelerate the development and use of new high quality AFOLU methodologies?

Sandra: The most important way to stimulate methodology development is for all methodological work to be open source and in the public domain. This will allow parties to build on and improve

the science over time, modify methodologies as needed for specific situations and even apply them to new project types. The CDM has the right model for this – all methodologies are freely available to the public, which is the only way to stimulate market growth.

Recently we've encountered situations of project developers wanting to own the intellectual property associated with a certain methodology, copyright the methodology and restrict its use. This goes against my grain as a scientist and also as an individual that wants to see the markets flourish.

Creating a monopoly for methodologies is not the best way to get the market to work. We need to encourage innovation and open markets if we want to build the level of participation that is needed to make a difference.

Mary: What would you say you are most proud of in your career?

Sandra: I'm proud of getting my pilot's license! That was an adrenaline buzz higher than getting my PhD!

But in career terms, I have a large accumulated knowledge about forests and carbon. I've been in the field, I've spent loads of time in the tropics, I've measured, and I have a really good feel for the gamut. I also have learned how to present this knowledge and get across key ideas and complex issues in an understandable way. This is critical to be able to have the policymakers understand the issues.

For this knowledge to stay alive, I've worked hard to identify good staff, bring them along to teach them things and pass on my experience. I currently have ten staff members, all with different skills. They are really terrific, and I have to say that's what I'm most proud of – my team.

Mary: What is the most interesting project you've worked on?

Sandra: There's a lot to be said for Noel Kempff. It was really the first forest carbon project, and we had to bring so much knowledge about how to measure biomass, how to analyze and predict emissions and how to estimate emissions from logging. We had to incorporate tools like remote sensing and develop economic models to calculate leakage at a national level, which had never been done before. We had to find ways of doing this that were practical, credible and verifiable. And we did.

Also, for different reasons I really enjoyed my first visit to Central Africa. I felt like the intrepid explorer heading down the river in a dugout canoe with Cameroon on one side and the Republic of Congo on the other. Seeing the huge logging operations was really phenomenal. Also on that trip an elephant came into our camp at lunch, and while out in the field we saw lowland gorilla tracks. All of that was really incredible.

Mary: Do you have any specific fond memories from the field?

Sandra: I'll never forget the trip to Venezuela when I was the only female staying at a remote logging camp in the middle of the jungle with a bunch of men. We all slept in one room in hammocks with mosquito nets. I would go to bed hot and wake up freezing. Thank goodness I had brought earplugs to protect my ears from the chainsaws because I needed them at night to drown out all the snoring! I enjoyed the peaceful evenings just sitting around talking and listening to the noises of nature – frogs and birds.

Mary: What advice would you give to young professionals or students embarking on a career in this market?

Sandra: You have to be good at quantitative sciences like physics and chemistry and be able to think analytically. Since math is the language of science, you have to be good at math too. And since we don't text and twitter to policymakers, solid writing skills are critical to transmit our ideas.

But more than being good at all of these things, you have to enjoy them. The important thing is to enjoy what you do.

Mary: What does Dr. Sandra Brown hope to achieve next?

Sandra: I'd like to see a country do a REDD implementation larger than project scale and get someone to buy the offsets. This would demonstrate how to get a project and transaction done. I'd like to see that happen as evidence that we agree on the science, that the policy is in place and that the market accepts that the offsets are good and real. And I'd like to see the country use the money from the offset sale to improve livelihoods for the rural poor.

About Dr. Sandra Brown

Dr. Brown is the chief scientist and Director of the Ecosystem Services Unit of Winrock International. She is a specialist in the role of land use/land cover change in the global carbon cycle and climate change and the present and potential future role of terrestrial ecosystems for mitigation of climate change. Dr. Brown provides leadership and expertise to many national and international organizations in the field of land use/land cover change and its relation to climate change and mitigation and in this capacity has successfully led over 50 projects for a variety of US governmental, multilateral, and non-profit donors, including the US Department of Energy, US Environmental Protection Agency, US Agency for International Development (USAID), the World Bank, The Nature Conservancy, Conservation International, and several non-US governments such as Ghana, Indonesia, Kenya, and Norway. Her 30 years of project experience includes increasing understanding about the role of tropical forests in the global carbon cycle; development of methods and data bases for key forest carbon pools and the impact of human disturbance; conducting feasibility studies for climate change mitigation programs; projecting carbon benefits and economic costs for reforestation programs that improve rural livelihoods; developing methodologies and standards for voluntary forest carbon projects, including those designed to reduce emissions from deforestation and degradation (REDD); training developing country NGOs to conduct environmental assessments and data analysis, and apprising policy-makers of the technical and scientific issues, challenges, and capabilities related to the newly developing REDD mechanism. Dr. Brown has served on many international and national panels and reports related to climate change mitigation, land use and forestry. She has published more than 200 peer-reviewed publications in scientific journals and books. She served as a co-convening lead author for chapters in five IPCC Reports for which she co-led a team of experts representing many countries, sub-disciplines, and points of view and for which she received recognition from the Nobel Prize winning IPCC (shared with Al Gore in 2008).