

Proposal presented to the
ORGANIZATION OF AMERICAN STATES
EXECUTIVE SECRETARIAT FOR INTEGRAL DEVELOPMENT (SEDI)

Under the REQUEST FOR PROPOSALS (RFPs) entitled
“Capacity Building for the Cooperation in Conservation: Western Hemisphere Migratory Species
Initiative (WHMSI)”

Proposal prepared and presented by World Wildlife Fund (WWF)
and the Western Hemisphere Shorebird Reserve Network (WHSRN)

Date: 15 June, 2009

A. Title of Proposed Project

“Capacity strengthening in the Western Hemisphere for adaptation of coastal habitats for
marine turtles and shorebirds to the impacts of climate change”

B. Cover letter signed by the authorized representative of the firm.



for a living planet®

WWF Central America Tel: +506 22248434
Fax: +506 22534927
crimes@wwfca.org

P.O. Box 175-2350 San Francisco
de los Rios San José, Costa Rica www.panda.org/posicelac
info@wwfca.org

San José, 15 June, 2009

Luisa Fernanda Neira S.
Department of Sustainable Development
Organization of American States
1889 F. St., N.W., Suite 792
Washington, D.C. 20006 Tel: 202-458-6097 F+202-458-3560 Lneira@oas.org

Dear Luisa Fernanda Neira,

I hereby submit the proposal entitled "Capacity strengthening in the Western Hemisphere for adaptation of coastal habitats for marine turtles and shorebirds to the impacts of climate change" for consideration under the OAS RFP "Capacity Building for the Cooperation in Conservation: Western Hemisphere Migratory Species Initiative (WHMSI)". This proposal is a joint endeavour by WWF and WHSRN. It addresses the need for training in techniques for adaptation of coastal habitats to the impacts of climate change, with a focus on marine turtles and shorebirds. The project will have an impact in South- and Central America, and the Caribbean (including Florida).

Yours truly,

Carlos Drews
WWF - LAC Marine & Species Program Coordinator

cc. Richard M. Huber, Department of Sustainable Development, OAS rhuber@oas.org
Xico Vega, Deputy Director of WHSRN

President: S. Jefe Emilio Araya
Vice-President: H. Ana Soto Morisson
Director General: Dr. James Colwell
President Emerita: S.
HR: The Queen Edinburg



Registered as:
WWF-WORLD WIDE FUND FOR NATURE
WWF-FONDO MUNDIAL PARA LA NATURALEZA
WWF-FONDO MUNDIAL PARA LA NATURALEZA
WWF-FONDO MUNDIAL PARA LA NATURALEZA
WWF-FUND FOR NATURE
Also known as World Wildlife Fund

WWF - Fondo Mundial para la Naturaleza



WHSRN Executive Office, 76 Emery Street, Portland, Maine 04102
June 10, 2009

Luisa Fernanda Neira S.
Department of Sustainable Development
Organization of American States
1889 F. St., N.W. Suite 792
Washington, D.C. 20006

Dear Luisa Fernanda:

On behalf of the WHSRN I am pleased to submit a joint proposal with our partner WWF--Central America entitled "Capacity strengthening in the Western Hemisphere for adaptation of coastal habitats for marine turtles and shorebirds to the impacts of climate change" for consideration under the OAS RfP "Capacity Building for the Cooperation in Conservation: Western Hemisphere Migratory Species Initiative (WHMSI)". This proposal will foster joint ventures among partners across the hemisphere thus protecting migratory species and their ecosystems. The proposal fulfills the requirements of training and capacity building in coastal ecosystems threatened by climate change impacts.

If you need further information, please do not hesitate to contact me.

Yours truly,

Dr. Charles D. Duncan
Director, WHSRN Executive Office

cc. Richard M. Huber, Department of Sustainable Development, OAS rhuber@oas.org
Carlos Drews, WWF – LAC Marine & Species Program Coordinator

C. Contact Information of the Firm

- Name of Firm: **World Wildlife Fund**
- Name of Contact Person(s): Dr. Carlos Drews
- Address: Apartado 629, San Francisco de Dos Ríos, San José
- Country: Costa Rica
- Telephone: +506-22348434
- Fax: +506-22534927
- Email: cdrews@wwfca.org
- Website: <http://www.panda.org/species/lac-marineturtles> and <http://www.panda.org/lac/marineturtles/act> specific to climate adaptation

D. (In case of association) Contact information of Associated Firm(s)

- Name of Firm: **Manomet Center for Conservation Sciences (Western Hemisphere Shorebird Reserve Network, WHSRN)**
- Name of Contact Person(s): Dr. Charles D. Duncan
- Address: 76 Emery St., Portland, Maine, 04102
- Country: United States of America
- Telephone: (207) 871-9295
- Fax: (207) 842-6496
- Email: cduncan@manomet.org
- Website: www.manomet.org

E. Project Summary:

“Capacity strengthening in the Western Hemisphere for adaptation of coastal habitats for marine turtles and shorebirds to the impacts of climate change” unites the technical expertise of WWF and WHSRN into a certified training initiative to the benefit of conservation NGO personnel, natural resource managers and decision makers of the Wider Caribbean, Central- and South America. It addresses a profound regional gap in awareness about climate change impacts, capacity and application of potential responses. The objective is to build capacity for climate change adaptation of coastal areas used by migratory sea turtles and shorebirds. The project prepares institutions for the implementation of hands-on adaptation using state-of-the-art, interactive tools and an innovative knowledge base. Trainees are selected on the basis of their potential to act as multipliers. Activities include collaborative finalizing of the tool kit of adaptation measures, training workshop in Costa Rica for turtle conservationists, training workshop in Argentina for shorebird specialists, training workshop in the Caribbean for decision-makers of the Western Hemisphere, and digital dissemination of tools. Tools include manuals and software to assess vulnerability of coastal sites to climate change and design, implement and monitor adaptation measures.

“Fortalecimiento de capacidad en el Hemisferio Occidental para la adaptación de habitats costeros de tortugas marinas y aves playeras contra los impactos del cambio climático” es una iniciativa que junta la capacidad técnica de WWF y WHSRN en un programa de entrenamiento certificado para beneficio de personal de organizaciones conservacionistas, manejadores de recursos naturales y tomadores de decision del Gran Caribe, Centro- y Suramérica. Aborda un vacío regional profundo de conciencia sobre los impactos del cambio climático, de capacidad y de la aplicación de medidas de respuesta potenciales. El objetivo es crear capacidad para la adaptación de zonas costeras utilizadas por tortugas

marinas y aves playeras migratorias. El proyecto prepara las instituciones para la implementación de medidas de adaptación concretas, utilizando una base de conocimiento innovadora y herramientas interactivas de punta de lanza. La audiencia es seleccionada con base en su potencial multiplicador. Las actividades incluyen finalizar conjuntamente la caja de herramientas de adaptación, talleres en Costa Rica para conservacionistas de tortugas, en Argentina para especialistas en aves playeras, y en el Caribe para tomadores de decisión del Hemisferio Occidental, así como la distribución digital de las herramientas. Estas consisten de manuales y programas para evaluar vulnerabilidad de sitios costeros al cambio climático y diseñar, implementar y monitorear medidas de adaptación.

F. Project description (Maximum sixteen pages)

1. Rationale:

1. Climate change as a major driving force of changes to societies and marine ecosystems

Climate change is a major force driving ongoing and future changes in ecosystems. Nations of the Western Hemisphere will be affected by rising sea level, rising sea and ambient temperatures, declining rainfall and stronger tropical storms and hurricanes. Some of the ecological consequences include loss of beaches and island area, coral bleaching, deterioration of sea grasses, changes in abundance and distribution of fish and marine invertebrates, increased prevalence of diseases and extinction of some endemic species that depend on moist forest cover. The implications of such processes for community livelihoods and national economies depending on natural resources for consumption or as tourist attractions are profound. Some migratory species, such as marine turtles and shorebirds, depend on the available area and quality of beach habitat for reproduction, resting and/or feeding. The recovery of endangered species of turtles and shorebirds, and their prosperity, may be compromised by climate change¹. Their distribution and migration ranges span most of the Western Hemisphere. Migratory species and their habitats are valuable to the societies of the Western Hemisphere from a biological, cultural and economic perspective². Decades of investment in their conservation may be wasted in the light of habitat changes resulting from climate change, unless adaptation measures are put into place and CO2 emissions drastically limited. Adaptation to climate change is vital in order to reduce the impacts of climate change that are happening now and increase resilience to future impacts³. This proposal seeks to mainstream adaptation measures into coastal resource management targeting beaches, by training pertinent NGOs and protected area personnel and sensitizing decision-makers in the Western Hemisphere.

2. The need for a regional adaptation agenda in the Western Hemisphere

A drastic, global reduction in the emissions of greenhouse gases is needed to slow down climate change and put a manageable ceiling to the degree of warming expected. There is in addition, urgent need for a regional adaptation agenda to mitigate the local, inevitable ecological and social impacts of climate change. Nations in the Wider Caribbean, Central- and South America are seeking to better understand the impacts of climate change, design and test adaptation measures that increase the resistance and resilience of ecosystems and societies, and rollout the most promising responses. In order to move such an agenda forward in a timely and resource-efficient manner, there is a need for coordinated, international collaboration to consolidate the

¹ See Hawkes et al. 2009 for a review of climate change impacts on marine turtles, and Wormworth J. & K. Mallon 2006 for impacts on birds. Both are publications produced under WWF programs.

² WHMSI, USFWS, and WWF (2008)

³ UNFCCC, see Article 2 and Article 4 for guidance to Parties.

knowledge base, exchange lessons learnt and expertise, facilitate technology transfer and support. Important progress in this regard has been made in the region through the Caribbean Community Climate Change Centre (CCCCC), World Bank, TNC (e.g. climatewizard.org) and other initiatives related to the field of ecosystem vulnerability and adaptation to climate change, however there are still vast knowledge gaps, particularly in the marine & coastal realm, and few measures have been tested and applied widely. The urgency of responding locally and regionally to climate change sets a collective challenge to be creative, innovative and efficient as we learn by doing under time pressure.

3. WHMSI as a vehicle to mainstream climate adaptation of coastal habitats

The networking power of WHMSI is exemplified by this project. Two WHMSI members, WWF and WSHSRN, learned about their shared climate adaptation agendas through WHMSI meetings, and decided to join efforts to socialize adaptation measures and tools among the WHMSI marine turtle and shorebird community. An opportunity for synergy with a CMS effort resulted from another WHMSI meeting, and was incorporated into this project to reach out to decision-makers of the whole Western Hemisphere at an upcoming CMS regional meeting. The WHMSI community has already been exposed to climate adaptation during a WWF workshop at WHMSI III, which was well received. The next step is to target a selected group for specific training on concrete adaptation measures, which have been already tested and are ready for roll-out. The choice of a focus on beaches in this proposal, as habitat for marine turtles and shorebirds, brings together terrestrial and marine conservation groups and agencies from the Caribbean, Central- and South America under one overarching challenge: mitigating the impacts of climate change. This is in line with the spirit of WHMSI.

4. Capitalizing on complementarities with existing tools and regional efforts

The World Wildlife Fund, through a grant from the MacArthur Foundation is developing since 2007 an adaptation strategy for sea turtles. Sea turtles are excellent indicator species for examining adaptation in coastal areas because of their dependence on multiple, interlinked terrestrial and marine habitats. The nesting grounds used by sea turtles (beaches) also provide essential resources to other migratory species, such as shorebirds, and to coastal communities. Maintaining beaches for shorebirds and sea turtles may, therefore, have additional social and economic benefits, particularly in nations relying on beaches as tourist attractions.

The [ACT](#) (Adaptation to Climate change for marine Turtles) network was formed in December 2007. It is a regional initiative (Wider Caribbean and Northern Latin America) coordinated by Dr. Marianne Fish (WWF - LAC Marine Turtle & Climate Change Leader), with an open door policy, operating as a network of interested specialists. ACT is addressing how marine turtles are affected by climate change and the best ways to reduce their vulnerability to changing environmental conditions. One of the ACT products is an adaptation tool-kit for beach habitats. It includes manuals and GIS interactive tools that enable responding to sea level rise and rising temperatures by (1) assessing local vulnerability, (2) introducing setbacks free of infrastructure that allow beaches to shift inland, and (3) restoring the coastal vegetation with native species that cast shade on the beach and cool the incubation chambers by 2-3 °C. The adaptation tool-kit will be finalized as part of this project and presented to the target audiences in a format useful to adaptation of beaches of importance to turtles and shorebirds alike. The tool-kit is amenable to digital distribution through the WHMSI website, but is best-taken advantage of by managers participating in a training course, as proposed in this project. This project launches the outreach phase of the preparation of the adaptation tool-kit, thereby complementing in a timely fashion a two-year investment in the development of the tools. WWF is committed to continue training key audiences (multipliers) in the Western Hemisphere beyond the duration of the project outlined in this proposal.

MANOMET/WHSRN has appointed Dr. Hector Galbraith (Director of Climate Change Initiative, Manomet Center for Conservation Sciences) as climate adaptation expert to design and develop models to predict changes in shorebird habitat. This is one of the most important issues being raised in the Shorebird Recovery Project (SRP). The Shorebird Recovery Project (SRP) in Patagonia is part of a hemispheric conservation strategy developed by Manomet Center for Conservation Sciences (Manomet) to achieve the shorebird population targets of the U.S. Shorebird Conservation Plan⁴.

The Southern Cone has been recognized at national and international levels for its critical role in the survival of several endangered migratory shorebirds. The area hosts hemispherically important numbers of Red Knots (*Calidris canutus rufa*), Hudsonian Godwits (*Limosa haemastica*), and White-rumped Sandpipers (*Calidris fuscicollis*). Poorly known South American species such as Two-banded Plover, *Charadrius falklandicu*, Magellanic Plover, (*Pluvianelis socialis*) and Magellanic Oystercatcher (*Haematopus leucopodus*) also occur here. Because of their high concentrations of wintering shorebirds, the Patagonian sites play a key role in these species's conservation. Four sites in the region have been recognized by the Western Hemisphere Shorebird Reserve Network (WHSRN), a voluntary network of 76 key shorebird sites in 12 countries of the Hemisphere. Three of the Patagonian sites are of International Importance and one of Hemispheric Importance. Together they comprise an area for shorebird conservation of approximately 110,000 ha (272,000 acres). These sites include a great diversity of ecosystems for shorebirds and other migratory, endemic, and resident bird species, several of which are under federal conservation status.

In order to develop an integrated vision of how climate change may affect these WHSRN sites, and how the sites may most efficiently adapt to minimize adverse effects, we propose to build understanding and capacity among in-country partners for a framework to evaluate, understand, and adapt to climate-change-induced threats to shorebird habitats. Our approach will be an expert-workshop and capacity-building training that will be integrated with a larger systematic (Miradi) evaluation of conservation targets, threats, contributing factors and strategies that will be undertaken immediately following the climate change workshop. We expect that together the workshops will yield a series of strategically and collaboratively designed shorebird conservation mechanisms for this important region, inform them with best-available climate change information and technological tools, and allow partners to collect, analyze and act on data relevant to making climate-change related decisions. We expect that the outcomes will serve as a learning laboratory and example to other sites in the Network. Having coordinated conservation actions and mechanisms among sites will better facilitate linking actions, and foster the cooperation, exchange of experiences, and resources among personnel and organizations. The present proposal is part of a complementary, ongoing strategy to understand the causes of shorebird declines across the Americas.

2. Project Goals and Objectives:

Project goal:

Adaptation measures are in place to reduce the negative impacts of climate change on coastal habitats for migratory species and people, in key locations in Latin America and the Caribbean by 2011.

Objective by February 2010:

To build capacity for climate change adaptation in the region, focusing on coastal areas used by migratory

⁴ Brown, S., Hickey, C., Harrington, B., and Gill, R. (eds.) 2001. The U. S. Shorebird Conservation Plan, 2nd ed. Manomet Center for Conservation Sciences, Manomet, MA.

sea turtles and shorebirds, through training in the use of an Adaptation Toolkit.

Expected outcomes by February 2010:

Adaptation of coastal habitat approaches that have been developed and tested during the project are widely distributed in the region, and there is heightened awareness of climate change adaptation issues in communities, NGO's and governments and enhanced capacity to implement climate change adaptation measures. Capacity is built among shorebird scientists and marine turtle conservationists, and an understanding among decision-makers is strengthened, about the impacts of climate change to migratory turtles and shorebirds, and about approaches to mitigating and adapting to the resulting changes. In addition, the collaborative relationship among partners in the Southern Cone is expected to be strengthened as a result of this project.

Specific Objectives:

1. By November 2009, build a training package for hands-on, coastal adaptation to climate change, that incorporates the adaptation knowledge base of the WWF-LAC Marine Turtle and Climate Change Program, MANOMET/WHSRN and other organizations, as pertinent. (Activities 1.+2.)
2. By February 2010, train at least 40 managers of coastal habitats in the Wider Caribbean, Central- and South America in adaptation measures for coastal habitats essential to marine turtles or shorebirds. (Activities 3.+4.)
3. By December 2009, determine the feasibility of implementing a climate change modeling study at one of the WHSRN sites (Activity 4.).
4. By February 2010, train at least 40 decision-makers of relevant government agencies from at least 20 nations from the Wider Caribbean, Central- and South America in the value and use of an adaptation tool-kit for beaches essential to marine turtles or shorebirds. (Activity 5.)
5. By February 2010, disseminate the Adaptation Tool-kit in digital format through at least five portals of climate adaptation resources, including the WHMSI website, and reach at least 100 downloading hits for some of its resources. (Activity 6.)

3. Project Activities and Methodologies:

1. **Finalization of the WWF Adaptation Tool-Kit** for coastal habitats, to be used as training materials (hard copies and digital version) and for wide distribution in digital format.
2. **Meeting (virtual) between WWF and WHSRN** climate adaptation staff to confirm synergies, share tools (e.g. SLAMM 4 model and Adaptation Toolkit) and finalize details for training packages and workshops for turtle, shorebird and decision-maker audiences.
3. **Adaptation training workshop in Costa Rica, Junquillal Beach.** *Target audience:* Costa Rican and regional marine turtle conservation NGOs (WIDECASD coordinator for Central and South-America, Caribbean Conservation Corporation (work in US (Florida), Costa Rica, Panama, Nevis), national marine turtle conservation organizations, natural resource managers (SINAC, Protected Area System of the Ministry of the Environment)⁵, Costa Rican focal points of IAC, SPAW, CMS and Ramsar,

⁵ The Costa Rican Ministry of the Environment, Energy and Telecommunications (MINAE) has endorsed the WWF adaptation project in Junquillal Beach as a matter of national interest. A copy of the endorsement letter can be provided upon request.

Secretary of IAC⁶. The choice of invitees favors people who can effectively act as multipliers (“training trainers”). Estimated number of direct beneficiaries: 15.

4. **Climate change adaptation workshop for shorebird conservation in the Southern Cone**, held in Rio Gallegos (Argentina). The workshop uses new technologies and methodologies (see below) to facilitate participation in conservation, research, and monitoring activities in the four WHSRN sites of southern Argentina and Chile. *Target audience*: field conservationists working with shorebirds, as part of the yearly WHSRN meeting of Patagonian partners. Estimated number of direct beneficiaries: At least 25 participants from two countries (Argentina and Chile), representing government and non-government organizations, and universities.
5. **Adaptation training workshop for decision makers (half-a-day)**, as part of the hemispheric meeting organized by CMS in the Caribbean later in the year (approval and time slot allocation has already been secured from CMS). *Target audience*: decision-makers from government agencies relevant to migratory species conservation in the Western Hemisphere. Estimated number of direct beneficiaries: 40.
6. **Dissemination of Adaptation Tool-kit and other adaptation resources** generated by this project through the following web portals: WHMSI website and WHMSI Pathway, WWF, WHSRN, the Community Based Adaptation Exchange (CBA-X), The Linking Climate Adaptation (LCA) Network, Conserveonline (TNC), WorldBank, CCCCC, WIDECAS, Coastal Climate Adaptation Web Site (NOAA), Local Coping Strategies Data Base (UNFCCC), among others.

It is expected that one staff member from WWF (climate adaptation specialist) will attend and support technically the shorebird meeting (4.), and that one staff member from WHSRN (climate adaptation specialist) will attend the marine turtle meeting in Costa Rica (3.). Climate adaptation experts from both organizations will attend the CMS meeting and hold jointly the half-a-day workshop for decision-makers (5.).

The workshops under this proposal and making the tools available on-line on the WHMSI website and other pertinent portals, are part of the wide dissemination commitment of WWF and WHSRN. These workshops provide the opportunity to train representatives from regional organizations in how to use the tools themselves and ways of presenting these tools to others within and beyond their organizations.

Activities 3., 4. and 5. are certified training sessions. Activities 3. and 5. address the use of the Climate Change Adaptation Toolkit, a collection of resources developed over the past two years to aid implementation of coastal climate change adaptation measures in the region. Based on the results of Activity 4., the WHSRN workshop, it is expected that Activity 5, the regional decision-makers workshop, will see a blend of the Manomet methodologies and WWF’s toolkit.

The WWF Toolkit addresses a number of the priority areas and will include:

- A review of our current state of knowledge regarding sea turtles and climate change, based on existing data.
- An assessment of future climate conditions (temperature and precipitation) in the region and the implications for climate refugia and vulnerability of marine turtle habitats. This includes an **interactive, online tool** for visualizing climate projections for places of interest and a report on

⁶ The Secretary of IAC is currently based at the Office of International Affairs of the USFWS and is expected to cover her own travel expenses to Costa Rica.

projections for coastal areas in Central America and the Wider-Caribbean, focusing on sea turtle nesting locations.

- A report on coastal adaptation measures that could be carried out at a local, or in some cases, national scale.
- **Monitoring manuals**, with the aim of coordinating regional monitoring activities (such as of rising temperature and changes in coastline) in order to have large-scale, comparable data sets that can be used to (1) address some of the key gaps in our knowledge of how climate change will affect sea turtle populations and their habitats, (2) estimate the effectiveness of adaptation measures, and (3) visualize early warning signals that feed-back into local, adaptive management.
- Key references and resource materials
- **Outreach materials**: all reports and tools will also be presented in a 'light' version consisting of one-pagers summarizing findings and providing links to additional information sources.

The Toolkit will be produced in both **English and Spanish** and will be distributed widely throughout Latin America and the Caribbean (Activity 6.). Support for the Toolkit and workshop **follow-up will be made available and monitored** by:

- Establishing a Regional Marine Turtle Adaptation Network for partners and workshop attendees
- Creating a forum for collation of experiences and successes/lessons learned for those implementing monitoring activities or adaptation measures
- Links to project website and pertinent document up-dates uploaded onto the WHMSI web portal and other portals (see Activity 6. for list of candidate portals).

Methodology: the workshops include four main steps:

- a) Distribution of an Adaptation Toolkit. Copies of an interactive CD will be distributed to all workshop attendees
- b) Training in use of Toolkit elements and discussion of useful next steps from the perspective of practitioners
- c) Training for attendees in presentation of the Toolkit within their respective organizations, including a final test to earn certification that will take the form of a short final presentation on how adaptation might be integrated into their work, designed to check understanding of the issues and motivate thinking of how the workshop results can be incorporated into ongoing conservation efforts.
- d) Certification of attendees in proficiency to use and disseminate the Toolkit.

Activity 4. Is designed to build capacity among WHSRN partners about the impact of climate change for migratory shorebirds, and approaches to mitigating and adapting to the resulting changes. WHSRN and its partners will hold a regional workshop, thanks to an approved grant by the USFS-IP, using **the novel, interactive methodology** of "Planning for Conservation Areas (PCA) or Miradi". The PCA is not a product but a framework to ensure long-term biodiversity conservation and its viability in a particular site through a series of positive impacts in the area. The process begins with the identification and selection of the *conservation objectives*; then follow different analyses such as *viability, threats, actors and situations*; and finally the *development of strategies* which include defining objectives, strategic actions, and the first steps to ensure the **implementation, monitoring and evaluation** of the Plan. The Miradi is an evolutionary process, so there will also be a need to establish a monitoring program to measure its success and enable adaptive management.

Manomet has developed **the SLAMM 4 model** to analyze different biological and environmental variables resulting in a series of **predictions and indicators of Climate Change impacts in wetlands** or any other type of ecosystem; in this case the main objective is to develop a model in our Patagonian WHSRN sites. The

SLAMM 4 model and the implications of Climate Change to migratory shorebirds is the main subject of this workshop. The workshop's agenda consists of a two-days sessions addressing Climate Change issues and to explain the SLAMM 4 methodology in order to implement it in the future. Technical and scientific knowledge about climate change issues will be enhance by our Southern Cone partners and will allow us to engage in the design and prevention of conservation activities.

Activity 4. will strengthen the relationship among partners in the Southern Cone. Since its conception the strength of WHSRN activities has been the ability to work and engage in shorebird conservation thanks to a wide arrangement with more than 300 partners across the hemisphere, including private, public and social entities. The workshop will enable us to strengthen our current relationship with our Patagonian partners but also it will foster interaction and collaboration among them. Thus, conservation activities at the regional level will be facilitated. We feel that a strong partnership with and within partners is a paved way to strengthen the network but also to achieve conservation of migratory species.

Activity 4. Includes determining the feasibility of implementing a climate change modeling study at one of the WHSRN sites. Researchers in the Southern Cone have focused on shorebird migration trends and population estimation of critical endangered species. However, there are key gaps to generate information pertaining to the need of developing Climate Change models in order to asses conservation opportunities.

The main WHSRN product is a document in Spanish and English with all the requirements to undertake a **SLAMM 4 modeling** analysis in Latin America. This document will enable partners to visualize their opportunities and research needs in order to implement an analysis in their WHSRN sites or any other coastal area. It will be uploaded to various portals (see Activity 6. above).

Outcomes of all activities (WWF and WHSRN):

- a) Tools for the implementation of adaptation measures for coastal and marine habitats is available in at least 25 countries in Latin America and the Caribbean, in the appropriate language for each country, and made available digitally to the wider regional community.
- b) At least 40 workshop attendees are trained in use of the adaptation tools and prepared to train others in and outside of their organizations
- c) Network of partners interested in monitoring and/or implementation of adaptation measures established
- d) Elements of the adaptation tools are being used to plan monitoring activities and/or implementation of adaptation measures

4. Time frame / work plan:

Activity	Responsible person	Monitoring mechanism	Deadline
1. Finalize production of Toolkit, in Spanish and English	Marianne Fish	Toolkit copies, printed and ready for distribution by end of August in both languages	August 31st 2009
2. WWF-WHSRN meeting August	Marianne Fish (WWF) + Xico Vega (WHSRN)	Details of workshop finalized	August 31th 2009
3. Costa Rica Workshop	Marianne Fish, Carlos	Workshop attended	September 30th 2009

	Drews and Ana Fonseca	by representatives from WIDECAS, CCC, national sea turtle conservation organizations, resource managers from the Ministry of Environment, IAC focal point, IAC secretary	
4. WHSRN-WWF workshop in Rio Gallegos, Argentina	Xico Vega (WHSRN)	Workshop attended by representatives from Patagonian WHSRN sites	November 1 st , 2009
5. CMS workshop	Marianne Fish(WWF) + Hector Galbraith (WHSRN)	Workshop attended by 25 decision-makers from government agencies, universities and non governmental organizations	TbD (tentatively November 09)
6. Dissemination of tool-kit through the internet	Marianne Fish(WWF) + Hector Galbraith (WHSRN)	Toolkit content downloadable from WHMSI website and WHMSI Pathway, WWF and WHSRN, among others.	December 31 st 2009
Outputs			
1. Adaptation Toolkit in Spanish and English	Marianne Fish (WWF)	Toolkit ready for distribution	August 31st 2009
2. Training package for coastal adaptation to climate change	Marianne Fish (WWF) + Hector Galbraith (WHSRN)	Training package ready for distribution	November 30th 2009
3. Final report from Costa Rica workshop	Marianne Fish (WWF)	Report finalized	November 30th 2009
4.a. Final report from Argentina workshop	Xico Vega (WHSRN)	Report finalized	December 15 th , 2009
4.b. Document in Spanish and English with all the requirements to undertake a SLAMM 4 modeling analysis	Hector Galbraith + Xico Vega (WHSRN)	Document finalized	December 15 th , 2009
5. Final report from Caribbean workshop	Marianne Fish(WWF) + Hector Galbraith (WHSRN)	Report finalized	December 31 st 2009
6. Final project report to OAS	Marianne Fish(WWF) + Xico Vega (WHSRN)	Report finalized	February 15 th , 2010

5. Team Composition and Task Assignment:

This project is presented to OAS by WWF and WHSRN as partner organizations, which participate in the design and implementation of the project. The organizations request that separate contracts be issued by OAS, with their respective deliverables, as indicated under section 4. Some outputs will be produced jointly by both organizations, and should be included as deliverables in each contract. The roles of team members are outlined below:

Name of staff	Organization	Area of expertise	Position assigned	Task/s assigned
Dr. Carlos Drews	WWF	Marine conservation	Project coordinator	Coordinates project development and oversees its implementation with reference to contractual commitments.
Dr. Marianne Fish	WWF	Climate change and adaptation of marine turtle habitats	Implementation lead for WWF	Finalizes adaptation tool-kit production, technical advisory and WWF point person role to maximize synergies with partners, coordinates logistics of meetings and workshops (except Rio Gallegos), acts as trainer (English speaker).
M.Sc. Ana Fonseca	WWF	Marine conservation	Focal point person for Costa Rica workshop	Coordinates invitations to the workshop, prepares materials, oversees workshop logistics and acts as support trainer Spanish (speaker). Reviews Spanish version of Adaptation Toolkit.
M.Sc. Gabriel Francia	WWF	Marine turtle conservation	Focal point person for logistical on-site support in Junquillal Beach	Coordinates all logistical aspects of the workshop in Junquillal, support trainer for on-site demonstration of adaptation measures.
Jeffrey Muñoz	WWF	Graphics design	Graphic designer	Mounts and adjusts the Spanish version of the toolkit into templates from the English version.
Dr. Charles Duncan	MANO MET/W HSRN	Bird conservation	Legal representative	Reviews and signs off contractual matters for WHSRN / Manomet
Dr. Xico Vega	WHSRN	Shorebird conservation	Project coordinator, focal point person for logistical on site support in Río Gallegos	WHSRN point person role to WWF (C. Drews) for project design, contractual arrangements and reporting, oversees implementation of WHSRN components

Dr. Hector Galbraith	WHSRN/ Manomet	Climate change and adaptation	WHSRN workshops leader	Technical advisor and WHSRN point person role to maximize synergies with partners. Conducts workshop in Rio Gallegos, attends CMS meeting and prepares products and reports.
----------------------	----------------	-------------------------------	------------------------	--

6. CVs of Proposed Staff:

(pls see CVs of main project staff in Annex 1.)

Short bios of relevant expertise, in reference to tasks under section 5.:

- 1. Dr. Carlos Drews (WWF):** seven years of experience coordinating regional conservation programs for WWF in Latin America and the Caribbean, institutional representative of numerous contracts with donors (e.g. USFWS, Sea World & Bush Gardens, Sustainable Forestry Management, and various internal contracts with WWF-Canada, WWF-US, WWF-Germany and WWF-Netherlands). Activities have included project design, overseeing implementation, coordinating partners, as well as technical and financial reporting. C. Drews created the WWF Marine Turtle and Climate Change Program for Latin America and the Caribbean and hired Dr. Marianne Fish to lead its implementation. He recently co-authored a report on climate adaptation for marine biodiversity.
- 2. Dr. Marianne Fish (WWF):** 7 years of experience in research and designing adaptation measures to climate change in the Wider Caribbean region, with seminal publications in the field of coastal retreats to mitigate the impacts of sea level rise. In 2008, M. Fish joined WWF as Marine Turtle & Climate Change leader. She implements currently all aspects of a MacArthur grant to strengthen the knowledge base about climate change impacts on turtle habitats and design adaptation measures for a wide uptake. She is finalizing the production of the adaptation tool-kit for coastal habitats, the technical platform for this proposal. M. Fish is fluent in English and has a working knowledge of Spanish. She has 2 years of experience in field-based training of environmental education curricula.
- 3. MSc. Ana Fonseca (WWF):** coral reef specialist A. Fonseca joined WWF in 2008 as the LAC Marine & Species Program Officer, with ample experience in university teaching, research and environmental assessment consultancies from her days at the Universidad Nacional de Costa Rica. She is familiar with the marine conservation community and pertinent government agencies in Costa Rica, and coordinates various aspects of our adaptation work in Junquillal, including the generation of a state-of-the-art flooding model to design setback responses. A. Fonseca is fluent in Spanish and English.
- 4. MSc. Gabriel Francia (WWF):** marine biologist, G. Francia, graduated from the Regional Masters Program in Wildlife Management and Conservation in Costa Rica. He has dedicated the last nine years to the conservation of marine turtles and has crafted and led the Junquillal Beach project since 2005, as a permanent resident of the Junquillal community. G. Francia brings to the project his hands-on experience with community-based implementation of climate adaptation measures.
- 5. Jeffrey Muñoz (WWF):** graphics designer, expert lay-out person for all WWF materials produced under the LAC Marine & Species Program.
- 6. Dr. Hector Galbraith (MANOMET/WHSRN):** is an ecologist with particular expertise in terrestrial ecosystems and the impact of human disturbance, particularly climate change, on animal and plant populations and communities. The results of this research have been published in over 60 papers in books and peer-reviewed journals including *Climate Research, International Journal of Biometeorology, Climatic Change, The Journal of Applied Ecology, The Journal of Avian Biology, Ornis Scandinavica, The Journal of Zoology, Environmental Management, Environmental Toxicology and*

Chemistry, Waterbirds, Ecotoxicology, and Ibis. Dr. Galbraith has carried out a number of research projects for U.S. federal and other agencies into the likely impacts of global climate change on ecosystems. These have included: evaluating the potential impacts of sea level rise on coastal ecosystems and how the installation of coastline defenses might affect these impacts; researching (in collaboration with NCAR and the Stockholm Environment Institute) how dams in California’s Central Valley may help mitigate the effects of climate change on cold-water salmonids; evaluating how climate change might affect services provided by ecosystems in California and Arizona; developing an analytical framework for assessing the vulnerabilities of species to climate change; and predicting the potential impacts of climate change on alpine tundra habitats and animals in the U.S. In the last 12 months, he has written a major report for the PEW Charitable Trust on the observed effects of climate change in U.S. ecological resources.

7. **Dr. Xico Vega (WHSRN):** has been the WHSRN Deputy Director for the last two years. Prior to joining WHSRN he was the Conservation Director of Pronatura Noroeste in the state of Sinaloa. He received numerous awards for its conservation activities regarding bird conservation. He has two master degrees in conservation and ecological planning and received a *Cum laude* honor for his Ph D dissertation.
8. **Dr. Charles Duncan (WHSRN):** Dr. Charles Duncan is Director of Shorebird Recovery Project, an ambitious hemispheric scale program of the Manomet Center for Conservation Sciences. He also serves, as he has since 2003 as Director of the Executive Office of the Western Hemisphere Shorebird Reserve Network, a coalition of 70 sites in ten nations committed to the conservation of shorebird species and their habitats across the Americas. Prior to joining Manomet in 2003, Charles worked for The Nature Conservancy’s Migratory Bird Program. He previously had a long career in academia at the University of Maine at Machias, where he founded and ran the Institute for Field Ornithology, now operated by the American Birding Association. From 1998-2000, he was President of the Association of Field Ornithologists. In 2002, the American Birding Association honored him with their “Chandler Robbins Award for Education and Conservation.”

7. Staffing Schedule: (part-time dedication indicated in percentage)

Staff	TOTAL staff months	MONTH							
		Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Dr. Carlos Drews (15%)	1.2								
Dr. Marianne Fish (75%)	5								
MSc. Ana Fonseca (15%)	0.45								
MSc. Gabriel Francia (25%)	0.5								
Jeffrey Muñoz (10%)	0.7								
Dr. Charles Duncan (3%)	0.2								
Dr. Xico Vega (15%)	1.2								
Dr. Hector Galbraith (75%)	5								

8. Work Schedule:

Activity	Months							
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
1. Finalize production of Toolkit, in Spanish and English	■	■						
2. WWF-WHSRN meeting August		■						
3. Costa Rica Workshop			■					
4. WHSRN-WWF workshop in Rio Gallegos, Argentina				■				
5. CMS workshop					■			
6. Dissemination of tool-kit through the internet			■	■	■	■		
Outputs								
1. Adaptation Toolkit (WWF), and a document with all the requirements to undertake a SLAMM 4 modeling analysis in Latin America (WHSRHN). Both in Spanish and English.	■	■						
2. Training package for coastal adaptation to climate change (WWF+WHSRN)		■	■	■	■			
3. Final report from Costa Rica workshop (WWF)				■	■			
4. Final report from Argentina workshop (WHSRN)					■	■		
5. Final report from Caribbean workshop (WWF+WHSRN)					■	■		
Final project report to OAS (WWF+WHSRN)							■	■

9. Relevant literature cited as footnotes

- Brown, S., Hickey, C., Harrington, B., and Gill, R. (eds.) 2001. The U. S. Shorebird Conservation Plan, 2nd ed. Manomet Center for Conservation Sciences, Manomet, MA.
- Hawkes, L., A.C. Broderick, M.H. Godfrey and B.J. Godley 2009. Climate change and turtles. Endangered Species Research Vol. 7: 137-154.
- WHMSI, USFWS, and WWF (2008). Migratory Species: biological, cultural and economic assets of the Americas. Murillo K., Prado S., Pesquero M. y C. Drews (authors). WHMSI, USFWS and WWF, San José, Costa

Rica (in English, Spanish and French).

- Wormworth J. & K. Mallon 2006. Bird Species and Climate Change: The Global Status Report Version 1.1. A report to WWF.

G. Summary of Costs

We kindly request US\$26,000 towards the costs of this project. A match contribution worth US\$ 83,681 is provided by the partners. The total project costs are US\$ 111,696.

(pls see separate Excel file attached with details and unit costs)

Funding period: 10 July 2009 - 15 February 2010 (7 months)

Color code:

WWF in blue

WHSRN in yellow

	Total Budget Requested to USFWS		Contribution from other sources (match)	Total Project Budget
Staff Salaries:				
		\$-	\$-	\$-
Subtotal Salaries	\$2.375	\$-	\$31.301	\$34.843
		\$-		\$-
Contractual:		\$-		\$-
Subtotal Contractual	\$9.315		\$11.610	\$20.925
		\$-		\$-
Staff Travel		\$-		\$-
Subtotal Staff Travel	\$7.625		\$14.785	\$22.410
Workshops and Training				
Subtotal Workshops and Training	6.285		22.650	28.935
Equipment:		\$-		\$-
Subtotal Equipment		\$-	\$-	\$-
Other Direct Costs		\$-		\$-
Subtotal Other Direct Costs	\$400		\$3.335	\$3.735
Total Direct Costs	\$26.000		\$83.681	\$110.848
Indirect costs		\$-		\$-
WWF Overhead (15.5%)		\$-	\$2.015	\$2.015
WHSRN Overhead (15.5%)		\$-	2.015	2.015
TOTAL	\$26.000		\$85.696	\$111.696
TOTAL WWF request and contribution -direct costs (w/o Overhead)	\$13.000		\$22.945	\$35.945
TOTAL WHSRN request and contribution -direct costs (w/o Overhead)	\$13.000		\$38.591	\$51.591

Annex 1. CVs of project staff

CURRICULUM VITAE

Carlos Drews, Ph.D.
WWF Latin America & the Caribbean Program
Apartado Postal 629-2350
San Francisco de Dos Ríos
San José, Costa Rica
Tel. +506-22348434 Fax +506-22534927 cdrews@wwfca.org



CURRENT POSITION: WWF Regional Marine Program and Species Coordinator for Latin America and the Caribbean

1. EDUCATION AND FURTHER TRAINING

- *Doctor of Philosophy* (Ph.D.) in zoology, University of Cambridge, Cambridge, U.K. – 1994. Dissertation about the social ecology of an African primate.
- *Master of Philosophy* in applied biology, University of Cambridge, Cambridge, U.K. – 1987. Dissertation about the social behavior of the endangered Scimitar-horned oryx antelope, a species to be reintroduced in Tunisia.
- *Master of Science* in biology (in German *Biologie Diplom*), Ludwig-Maximilians- University, Munich, Germany – 1986. Dissertation about the ecology and behavior of spectacled caiman (*Crocodylia*).

Additional, certified professional training:

- *Marine Protected Areas* – UNAM and International Florida University, Pto. Morelos, Quintana Roo, Mexico, July 2004.
- *Biology, conservation and management of cetaceans*, by M.Sc. Miguel Iñíguez (Fundación Cethus – Argentina) – PRMVS-UNA Costa Rica, November 1998.
- *First international seminar about handling of dolphins and other cetaceans in rescue activities, rehabilitation and tourism in Costa Rica*, by various invited speakers, hosted by PROMAR, Costa Rica, November 1998.
- *Distance sampling for the monitoring of wild populations*, by Dr. Frank Rivera (USFWS) – UNA Costa Rica, November 2000.
- *IUCN Red list criteria*, training by IUCN personnel, Panama, September 2000.
- *Model design and dynamic systems in conservation and management of wildlife*, by Dr. Francisco López (Universidad Complutense de Madrid) – UNA Costa Rica, July 1998.
- *Conservation techniques for endangered species*, by M.Sc. Ignacio Jiménez (Universidad Nacional de Costa Rica) – November 1998.
- *Statistics for biologists*, by Dr. Richard Alldredge (Washington State University) – UNA Costa Rica, September 1996.
- *Veterinary techniques for wildlife*, by staff of the Humane Society U.S. – UNA Costa Rica 9.-12. June 1998.

2. PROFESSIONAL CREDENTIALS, AWARDS AND OTHER SKILLS

- Postdoctoral fellow of the Max-Planck Institute in Seewiesen, Germany (1994)

- John Napier 1995 Medal of the British Primatological Society, award for my Ph.D. research project about the social behavior of baboons.
- Dissertation fellowship by the Harry Frank Guggenheim Foundation for my doctorate (1992-1993)
- Three-year Ph.D. studentship by Kings College, Cambridge University, U.K. (1989-1991)
- Award for my contribution "Wildlife as pets in Costa Rican households: causes and consequences of a misdirected biophilia" in the field Environment and Sustainable Development, at the *Primer Congreso de Investigación: Costa Rica en el 2000*, 14.-16. March 2000, San José, Costa Rica.

Scuba Diving and snorkeling: NAUI Openwater I, diving and snorkeling experience in the Caribbean (Costa Rica, Cuba, Honduras, Colombia), East Africa (Kenya and Tanzania), South-East Asia (Malaysia, Bali), Australia (Great Barrier Reef) and Polynesia (Western Samoa).

Languages: Spanish (mother tongue), English (fluent written and verbally), German (fluent written and verbally), French (working knowledge), Swahili and Portuguese (minimal working knowledge).

3. CHRONOLOGY OF PROFESSIONAL EXPERIENCE

- WWF Regional Marine Program and Species Coordinator for Latin America and the Caribbean, November 2006 – present.
- WWF Regional Marine Turtle Coordinator for Latin America and the Caribbean, 2003-2006
- 1995-2003 Academic staff of the Regional Wildlife Management Program for Mesoamerica and the Caribbean, at the National University of Costa Rica.
- Consultant to the United Nations Development Program for the preparation of a report on the environmental performance of Costa Rica in its efforts toward a sustainable human development (*Estado de La Nación 2000, 2001 and 2002, chapter Harmony with Nature*).
- Guest assistant professor at University of Erlangen and University of Hannover (Germany) to teach the course Conservation of Tropical Biodiversity. December 2001-March 2002, January-March 2003.
- Academic expert sent by the German Academic Exchange Service (DAAD), an international agency, to the Regional Wildlife Management Program for Mesoamerica and the Caribbean, 1995 to 2001.
- Director a.i. of the Regional Wildlife Management Program for Mesoamerica and the Caribbean from January to March 1997, and Subdirector of the RWMP for one year (1997/1998).
- Invited professor to teach courses at Universidad de San Carlos, Guatemala (August 1998) and Universidad Autónoma de Chiapas, México (September 1999).
- CITES Scientific Authority of Costa Rica. *Ad honorem* position 1999-2003.
- Postdoctoral research fellow at the Max-Planck Institute in Seewiesen, Germany. 1994.
- Doctorate research project funded by Kings College (Cambridge, U.K.), Leakey Foundation (U.S.), Harry Frank Guggenheim Foundation (U.S.), Sigma Xi (U.S.), Bedford Fund (U.K.) y Durham Fund (U.K.). October 1989 – March 1994.
- Supervisions of undergraduate students and short courses for graduate students at Gonville & Caius College and the Department of Zoology, University of Cambridge, U.K. 1992-1994.
- Field assistant at ecological research projects in Kenya, Ecuador (Galápagos Islands) and Mexico - 1984 and 1988.
- Teaching assistant and seminar coordinator at Ludwig-Maximilians-University, Munich, Germany - 1984 - 1986.

4. SELECTED PUBLICATIONS AND OTHER OUTREACH

Books:

- Hoffman, JR, Fonseca, A, and C Drews (eds). 2009. Cetaceans and Other Marine Biodiversity of the Eastern Tropical Pacific: Options for Adapting to Climate Change. Report from a workshop held February 9-11, 2009. MINAET/WWF/EcoAdapt/CI/IFAW/TNC/WDCS/IAI/ PROMAR, San Jose, Costa Rica.
- Murillo K., Prado S., Pesquero M. y C. Drews 2008. Migratory Species: biological, cultural and economic assets of the Americas. WHMSI, USFWS and WWF, San José, Costa Rica (in English, Spanish and French).
- Montoya F. & C. Drews 2006. Livelihoods, Community Well-Being, and Species Conservation. A Guide for Understanding, Evaluating and Improving the Links in the Context of Marine Turtle Programs. WWF - Marine and Species Program for Latin America and the Caribbean, San Jose, Costa Rica. (in Spanish and English)
- Troëng S. & C. Drews 2004. Money talks: Economic aspects of marine turtle use and conservation. WWF International Species Program, www.panda.org (in Spanish and English)
- Drews C. (editor). 1999. Rescate de fauna en el neotrópico. Editorial Universidad Nacional EUNA, Heredia, Costa Rica. 524 pp.

Technical Publications in Journals:

- Drews, C. 2003. The state of wild animals in the minds and households of a Neotropical society: the Costa Rican case study. En: Deborah Salem & Andrew N. Rowan (editores), *The State of The Animals II 2003*, pp. 193-205. Humane Society Press, Washington D.C.
- Drews, C. 2002. Opinión pública sobre la cacería en Costa Rica. *Revista de Ciencias Ambientales – Diciembre*: 55-60.
- Drews, C. 2002. Attitudes, knowledge and wild animals as pets in Costa Rica. *Anthrozoös*. 15(2): 119-138.
- Drews C. 2002. Convivencia con murciélagos en Costa Rica. *Ambientico* 103: 12-13.
<http://www.ambientico.una.ac.cr/drewsmurc.htm>
- Drews C. 2002. Mascotas silvestres en hogares ticos: percepciones, actitudes y conocimientos. *Ambientico* 103: 12-13. <http://www.ambientico.una.ac.cr/drewsmasc.htm>
- Altrichter, M. C. Drews, J. C. Saenz y E. Carrillo. 2002. Presupuesto de tiempo del chancho cariblanco (*Tayassu pecari*) en un bosque húmedo de Costa Rica. *Biotropica* 34(1): 136-143.
- Drews, C. 2001. Wild animals and other pets kept in Costa Rican households: incidence, species and numbers. *Society & Animals* 9(2): 107-126.
- Altrichter M., Drews C., Carrillo E. & J. Sáenz 2001. Sex ratio and breeding of white-lipped peccaries *Tayassu pecari* (Artiodactyla, Tayassuidae) in a Costa Rican rain forest. *Revista de Biología Tropical* 49: 383-389.
- Drews C. 2000. Caracterización general de la tenencia de animales silvestres como mascotas en Costa Rica. In: F. Nassar & R. Crane (editors). *Actitudes hacia la Fauna en Latinoamérica*, pp. 45-55. Humane Society Press, Washington, D.C.
- Drews C. 2000. Aspectos del mercado en torno a la tenencia de animales silvestres como mascotas en Costa Rica. In: F. Nassar & R. Crane (editors). *Actitudes hacia la Fauna en Latinoamérica*, pp. 147-160. Humane Society Press, Washington, D.C.
- Drews C. 1999. Introducción: preámbulo del rescate de fauna en el neotrópico. In C. Drews (editor). *Rescate de fauna en el neotrópico*, pp. 15-28. Editorial Universidad Nacional EUNA, Heredia, Costa Rica.
- Drews C. 1999. Simpatía y empatía hacia la fauna: raíces de la tenencia de mascotas silvestres. In C. Drews (editor). *Rescate de fauna en el neotrópico*, pp. 31-52. Editorial Universidad Nacional EUNA, Heredia, Costa Rica.
- Drews C. 1999. Recomendaciones para el diseño y la operación de centros de rescate en el neotrópico. In C. Drews (editor). *Rescate de fauna en el neotrópico*, pp. 467-494. Editorial Universidad Nacional EUNA, Heredia, Costa Rica.

- Drews C. 1999. Rescate de fauna en el neotrópico: cerrando el milenio. In C. Drews (editor). Rescate de fauna en el neotrópico, pp. 495-520. Editorial Universidad Nacional EUNA, Heredia, Costa Rica.
- Traunspurger W. & C. Drews, 1996. Toxicity analysis of freshwater sediments with meio- and macrobenthic organisms: a review. *Hydrobiologia* 328: 215-261.
- Traunspurger W. & C. Drews, 1996. Vertical distribution of benthic nematodes in an oligotrophic lake: seasonality, species and age segregation. *Hydrobiologia* 331:33-42.
- Drews C., 1996. Contribución intelectual como criterio único de autoría en publicaciones científicas. *Vida Silvestre Neotropical* 5: 2-3.
- Drews C. 1996. Contexts and patterns of injuries in free-ranging male baboons (*Papio cynocephalus*). *Behaviour* 133: 443-474.
- Drews C., 1995. Road kills of animals by public traffic in Mikumi National Park, Tanzania, with notes on baboon mortality. *African Journal of Ecology* 33: 89-100.
- Drews C., 1993. The concept and definition of dominance in animal behaviour. *Behaviour* 125: 283-313.
- Drews C., 1991. Simultaneous suckling and suckling bout length in *Oryx dammah*. *Journal of Zoology Lond.* 225: 662-665.
- Drews C., 1990. Dominance or territoriality? The colonization of temporary lagoons by *Caiman crocodilus* L. (Crocodylia). *Herpetological Journal* 1: 514-521.

Selected technical reports in the field of biodiversity conservation:

- Drews C. 2004. WWF – Regional Marine Turtle Action Plan for Latin America and the Caribbean.
- Drews C. 2003 (coordinator). Capítulo *Armonía con la Naturaleza* para el 9º Informe sobre el Estado de la Nación en Desarrollo Humano Sostenible, Proyecto Estado de la Nación, San José, Costa Rica.
- Drews C. 2002 (coordinator). Capítulo *Armonía con la Naturaleza* para el 8º Informe sobre el Estado de la Nación en Desarrollo Humano Sostenible, Proyecto Estado de la Nación, San José, Costa Rica.
- Zegarra, R.E. & C. Drews 2002. Wildlife in Nicaraguan households - a nationwide survey. Technical report, Humane Society International, Washington, D.C. pp. 69.
- Drews C. 2002. Compilation of information and drafting of the Costa Rican proposal for uplisting the yellow-naped Amazon (*A. auropalliata*) to CITES Appendix 1 to be presented by the Costa Rican government at COP12.
- Drews C. 2001. *Gestión del patrimonio: Avances en la gestión nacional de la biodiversidad*. For the United Nations' project Proyecto Estado de La Nación: Informe 7 – Año 2000, San José, Costa Rica.
- Cedeño Y. & C. Drews 2000. Comercio internacional de fauna silvestre en Centroamérica entre 1992 y 1996. Unpublished technical report. Programa Regional en Manejo de Vida Silvestre, Universidad Nacional, Heredia, Costa Rica.
- Gómez J.R. & C. Drews 2000. Movimientos internacionales de flora y fauna de los apéndices CITES en Costa Rica entre 1992 y 1998. Unpublished technical report. Programa Regional en Manejo de Vida Silvestre, Universidad Nacional, Heredia, Costa Rica.

Dissemination of research in popular media, press and scientific fora:

- Technical updating comments to the 1994 National Geographic article "Sea Turtles: In a Race for Survival" published in volume 10 - 2006 - of the National Geographic Library (2007), pp. 266-293 (in German).
- Various publications in popular magazines, books and newspapers, as well as production of printed materials about WWF's LAC Marine Turtle Program.
- Many interviews for printed press, radio and television.
- Technical advisor and participation in documentary film about WWF's marine turtle conservation in Costa Rica for ITV Television (Britain) in 2006.

- Technical advisor and participation in documentary film about WWF's marine turtle conservation in Panama for an Animal Planet series in 2005.
- Starring figure and narrator in a documentary film featuring my bat research in Costa Rica. This film, produced in 1997 by Wild Things Television of Paramount Pictures is still being shown on Discovery Channel and Animal Planet.
- Production of a series of short videos portraying some of WWF's marine turtle projects in LAC for donors (2003).
- Concept, design and production of a website dedicated to hawksbill turtles in the Caribbean (www.hawksbillwwf.org) in 2004.
- Sixteen oral presentations at international conferences since 1993.
- Organization of six international meetings.

5. OTHER PERSONAL DATA

Date and place of birth: 28. January 1962, Bogotá, Colombia.

Nationality: Colombian and German

Marital status: married, two children

I CERTIFY THAT ALL INFORMATION STATED IN THIS RESUME IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Signed: 

Carlos Drews

Date: June 15th, 2009

MARIANNE R. FISH

2662 Eton Street, Vancouver, BC, Canada, V5K 1K1

marianne.fish@gmail.com

604-299-4235 or 778-238-6694

PERSONAL PROFILE

Highly motivated conservation scientist dedicated to developing understanding of sustainable resource use and conservation of ecosystems through research and education. Strong background in ecology, conservation, environmental education and social science, with a particular focus on adaptation to climate change. Interests include understanding human impacts on ecosystems, ways of integrating development and conservation, finding optimal resource management solutions while taking into account the needs of multiple stakeholders and increasing environmental awareness through education.

PROFESSIONAL APPOINTMENTS

Consultant, WWF Climate Change and Marine Turtles Program

Vancouver, Canada and San Jose, Costa Rica

Coordination of the Adaptation to Climate Change for marine Turtles (ACT) project in Latin America and the Caribbean. Responsible for development of an Adaptation Toolkit, a series of tools to aid implementation of climate change adaptation activities in coastal zones.

September 2008 - present

Program leader, LSCR Education and Stewardship Programs

Lower Seymour Conservation Reserve, North Vancouver, BC, Canada

Developed and delivered education programs and public tours with a focus on local forest ecology, history, and geology, led stewardship activities with volunteers and developed a long-term ecological monitoring program in the reserve to examine human impacts and advise management.

March 2007 - August 2008

Research assistant, The Aquatic Resource Conservation electronic Library (ARCeL), Fisheries Conservation Foundation

Simon Fraser University, Burnaby, BC, Canada

Developed an educational presentation for scientists, resource managers and the general public on the current status of coral reef research and conservation.

Dec. 2006 - March 2007

Research assistant, post-doctoral research project: genetic variation and extinction risk

Belize

Assisted with fish collection, habitat surveys, fish husbandry and international transportation of > 200 live fish

November 2006

Business English trainer

Düsseldorf, Germany

Planned, prepared and delivered English language programs to individuals and groups

Oct. 1999 - Dec. 2000

EDUCATION

PhD – Sea-level rise and coastal development: impacts on sandy beaches and sea turtles	2002 - 2006
University of East Anglia, UK and Caribbean	
MSc (Distinction) – Applied Ecology and Conservation	2001 - 2002
University of East Anglia, UK and Bonaire, N.A.	
BSc (Hons) Biology (International)	1995 - 1999
University of Leeds, UK and North Carolina State University, USA	

PUBLICATIONS

Fish, M.R., Côté, I.M., Gill, J.A, Jones, A.P., Renshoff, S., Watkinson, A. R. (2005)
Predicting the impact of sea level rise on Caribbean sea turtle nesting habitat. *Cons. Bio.* 19 (2), 482-491

Fish, M.R., Côté, I.M., Horrocks, J.A., Mulligan, B., Watkinson, A.R., Jones, A.P. (2008)
Construction setback regulations and sea-level rise: mitigating sea turtle nesting beach loss. *Ocean and Coastal Management* 51, 330-341

Fish, M.R., Jones, A.P., Côté, I.M., Horrocks, J.A., Watkinson, A.R. Vulnerability of sandy beach habitat to environmental change in the Caribbean region. In prep. Target journal: *Global Change Biology*

Fish, M.R., Jones, A.P., Côté, I.M., Horrocks, J.A., Watkinson, A.R. Tourist beach preferences: potential for avoiding development impacts on sea turtles? In prep. Target Journal: *Environmental Conservation*

Fish, M.R., Jones, A.P., Côté, I.M., Horrocks, J.A., Watkinson, A.R. Valuation of beach management options. In prep. Target journal: *Ecological Economics*

RELEVANT EXPERIENCE AND SKILLS

Project management: project planning and implementation, budgeting and logistics, work supervision, presentations, writing scientific manuscripts, technical and funding reports, funding proposals.

Fieldwork: Locations - temperate (terrestrial and aquatic) and tropical (marine, coastal and terrestrial); Techniques - socio-economic surveys, scientific SCUBA, behavioural observations, habitat mapping, sea turtle nesting surveys, fish collections.

Computer literacy: Microsoft Office, ESRI ArcGIS and ArcView, SPSS, Adobe Photoshop, various GPS software programs, MIRADI.

Academic teaching/supervision: Teaching assistant (Statistics for Environmental Sciences, MSc Applied Ecology and Conservation field trip to Ireland), undergraduate project supervision.

Manuscript review: *Journal of Animal Ecology*, *Global Change Biology*, *Animal Conservation*.

Languages: Native language English, basic Spanish and German.

References upon request

HECTOR GALBRAITH

Address/Phone: Manomet Center for Conservation Sciences
837 Camp Arden Rd.,
Dummerston, VT 05301
Phone: (802) 258-4836
email: hg2@hughes.net

AREAS OF QUALIFICATION

- Climate change and other anthropogenic impacts on ecosystems
- Ecology
- Ornithology

EMPLOYMENT HISTORY

- Ø Research Affiliate, Institute of Arctic Alpine Research, University of Colorado
- Ø CEO, Galbraith Environmental Sciences LLC, Boulder 2000 - present
- Ø Senior Ecologist, Stratus Consulting, Boulder, CO, 1998- 2000
- Ø Chief Scientist, Sanford Ecological Services, Southborough, MA, 1988-1989
- Ø Program Director, British Nature Conservancy Council, Edinburgh, Scotland, 1986-1989

EDUCATION

- Ø Glasgow University, PhD, Ecology, 1986
- Ø Glasgow University, BSc, Ecology/Zoology, 1983

PROFESSIONAL EXPERIENCE

Research

Dr. Galbraith is an ecologist with particular expertise in terrestrial ecosystems and the impact of human disturbance, particularly climate change, on animal and plant populations and communities. The results of this research have been published in over 60 papers in books and peer-reviewed journals including *Climate Research*, *International Journal of Biometeorology*, *Climatic Change*, *The Journal of Applied Ecology*, *The Journal of Avian Biology*, *Ornis Scandinavica*, *The Journal of Zoology*, *Environmental Management*, *Environmental Toxicology and Chemistry*, *Waterbirds*, *Ecotoxicology*, and *Ibis*. Dr. Galbraith has carried out a number of research projects for U.S. federal and other agencies into the likely impacts of global climate change on ecosystems. These have included: evaluating the potential impacts of sea level rise on coastal ecosystems and how the installation of coastline defenses might affect these impacts; researching (in collaboration with NCAR and the Stockholm Environment Institute) how dams in California's Central Valley may help mitigate the effects of climate change on cold-water salmonids; evaluating how climate change might affect services provided by ecosystems in California and Arizona; developing an analytical framework for assessing the vulnerabilities of species to climate change; and predicting the potential impacts of climate change on alpine tundra habitats and animals in the U.S. In the last 12 months, he has written a major report for the PEW Charitable Trust on the observed effects of climate change in U.S. ecological resources.

CLIMATE CHANGE PUBLICATIONS

Book chapters and peer-reviewed journals

In press. Potential effects of climate change on the Upper San Pedro riparian ecosystem. In *Ecology and Conservation of Desert Riparian Ecosystems: The San Pedro River Example*; Edited by Juliet Stromberg and Barbara Tellman

In press. Biodiversity Change and Adaptation in California. In: *Regional Assessment of Climate Change – California*. Edward Elgar Publications.

In press. Galbraith, H. Potential Effects of Climate Change and Water Storage on Chinook Salmon in California's Sacramento Valley. *Climatic Change*

In press. WEAP21: A demand, priority, and preference driven water planning model: Part 2, Aiding freshwater ecosystem service evaluation, Water International, In Press.

In press. A physically-based, water resource planning model of the Sacramento Basin, California USA. ASCE J. Water Research Management

In Press. Galbraith, H. Potential effects of climate change on alpine tundra habitat in the U.S. *Climatic Change*

2005. Global Climate Change and Sea Level Rise: potential losses of intertidal habitat for shorebirds. In: Bird Conservation Implementation and Integration in the Americas: Proceedings of the third International Partners in Flight Conference. USDA Forest Service Gen. Tech. Rep. PSW-GTR-191.

2004. Observed Impacts of Global Climate Change in the U.S. Report published by Pew Center on Global Climate Change, November, 2004.

2003 In: Ecological Forecasting: new tools for coastal and marine ecosystem management. (Valette-Silver and Scavia eds). NOAA Publication NOS NCCOS 1.

2003. Sea Level Rise and Shorebird Case Study. In: *Coastal: The Potential Consequences of Climate Variability and Change* (Eds D.F. Boesch, J.C. Field, and D. Scavia). 2003. NOAA's Coastal Ocean Program. Decision Analysis Series Number 21.

2002. Relationships between climate and population dynamics of white-tailed ptarmigan *Lagopus leucurus* in Rocky Mountain National Park, Colorado, USA. *Climate Research*, 23(1):81-87.

2002. Signatures of large-scale and local climates on the demography of white-tailed ptarmigan in Rocky Mountain National Park, Colorado, USA. *Journal of Biometeorology*

2002. Global climate change and sea level rise: potential losses of intertidal habitat for shorebirds. *Waterbirds* 25:173-183.

2001. Potential sea level rise effects on shorebird populations. In: J. Corven (ed). *Proceedings of the Neotropical Ornithological Congress International Shorebird Symposium*. Monterrey, Mexico. Published by Manomet Center for Conservation Sciences, Manomet, Massachusetts.

Editor and/or Author of Reports to U.S. EPA and other Agencies

2005. Projecting the Effects of Environmental Change on Riparian Ecosystems in the Southwest: the Upper San Pedro as a case study. Report to the American Bird Conservancy. Project funded by USGCRP.

2004. Future Impacts of Global Climate Change on Rocky Mountain National Park: its ecosystems, visitors, and the economy of its gateway community – Estes Park. Report to USGCRP, STAR Grant.

Predicting the Potential Risks of Climate Change to Animals Listed Under the Endangered Species Act. Report to USGCRP.

CURRICULUM VITAE

Xicotécatl Vega Picos

Calle Estado de Chihuahua 1636
Col. Las Quintas, Culiacán, Sinaloa, México, CP 80060
(667) 716-64-56
xicovega@manomet.org

OBJETIVO PROFESIONAL:

Gestionar, planificar, implementar y evaluar proyectos de conservación y manejo de los recursos naturales en el Noroeste de México partiendo de inventarios ornitofaunísticos y manejo de las mismas.

FORMACIÓN ACADÉMICA

Doctor en Gestión Ambiental, 2008

Universidad de Extremadura, España.

Concentración: Uso y Gestión Ambiental de proyectos de conservación de recursos naturales

Disertación: Análisis de los problemas de conservación de las especies de aves acuáticas en ecosistemas costeros de Sinaloa, México

Asesor: Dr. Antonio Muñoz del Viejo

M.C. en Desarrollo Internacional y Tecnología Apropriada, 1995

University of Pennsylvania, Philadelphia, PA. U.S.A.

Concentración: planificación, protección y desarrollo ambiental en áreas urbanas y rurales en países en vías de desarrollo.

Asesor: Dr. Howard Pack

M.C. en Biología, Mayo, 1993

East Stroudsburg University, East Stroudsburg, PA. U.S.A.

Concentración: Manejo de áreas protegidas y protección ambiental, ornitología.

Tesis: *A proposal and Management Plan for a New National Park in México*

Asesor: Dr. Larry Rymon

Licenciatura en Ingeniería Agronómica, 1985

Escuela Superior de Agricultura “Hermanos Escobar”, Cd. Juárez, Chihuahua, México.

Concentración: Zootecnia.

LENGUAJE:

Español e inglés

EXPERIENCIA PROFESIONAL:

Sub Director, 2007 a la fecha

Red Hemisférica de Reservas para las Aves Playeras del Manomet Center for Conservation Sciences. Encargado de la coordinación, gestión y manejo de proyectos de conservación desde Alaska hasta Argentina.

Director de Conservación en Sinaloa, 2001- a 2007

PRONATURA Noroeste A. C.

Elaboración de propuestas, ejecución, administración y supervisión de proyectos de conservación en Sinaloa, coordinación y representación de la organización en México y el extranjero, relaciones públicas y capacitación de personal.

Profesor de planta interna, 1995- a 2003

Instituto Tecnológico y de Estudios Superiores de Monterrey, Campus Sinaloa, Culiacán.

Cursos: “Ecología y Desarrollo Sostenible” y “La ciencia en el siglo XX”

Coordinador de proyectos, 2000-2001

Fundación Sinaloense para la Conservación de la Biodiversidad (FUSBIO), Culiacán

Coordinación general de proyectos de conservación y elaboración de propuestas para organizaciones internacionales.

Profesor auxiliar, 1999-2001:

Universidad Autónoma de Sinaloa, Culiacán

Curso de maestría: “Ecología y sustentabilidad”, Facultad de Arquitectura

Cursos: “Manejo de áreas naturales protegidas”, “Ecología y desarrollo urbano” y “Ecología Humana”, Escuela de Biología

Director General, 1998-1999

Plásticos Reciclados del Noroeste, SA de CV, Culiacán

Socio y encargado de supervisión de operación, manejo de material reciclado

Jefe de Departamento de Proyectos Específicos, 1995-1998

Ayuntamiento de Culiacán, Culiacán

Elaboración de los proyectos de conservación para el municipio, implementación del programa de manejo de residuos sólidos municipales, autor del programa “Sistema Ecológico Para el Reciclado” (SEPARE).

Investigador, 1995

Centro de Ciencias de Sinaloa, Culiacán

Elaboración de programa para la conservación de las aves en Sinaloa

PUBLICACIONES:

Vega, X., Cruz, N. M. A. y Morales, L. M. 2008. Conservación de tierras privadas: un nuevo y práctico mecanismo para la protección de las aves playeras en México. *Ornitología Neotropical* 19 (suplemento).

- Muñoz del Viejo, A., Vega, X., González, M. A. and Sánchez, J. M. 2004. Disturbance sources, human predation and reproductive success of seabirds in tropical coastal ecosystems of Sinaloa State (Mexico). *Bird Conservation International* 14: 191-202.
- González-Bernal, M. A., Vega, X. and Mellink, E. 2003. Nesting of Western Gulls in Bahía de Santa María-La Reforma, Sinaloa, México. *Western Birds* 34: 175-177.
- Muñoz del Viejo, A. y Vega, X. 2002. Efectos de disturbios en la reproducción del charrancito americano (*Sterna antillarum*) en ecosistemas costeros de Sinaloa, noroeste de México. *Ornitología Neotropical* 13: 235-245.

TRABAJOS Y PÓSTERS PRESENTADOS EN CONGRESOS

- Vega, X. y Muñoz del Viejo. 2002. La importancia de las zonas costeras de Sinaloa, México para la reproducción de las aves acuáticas coloniales. Congreso de la Asociación Española de Ornitología. Salamanca, España. Póster.
- Vega-Picos, X., González, M. A. and Muñoz del Viejo, A. 2002. El Rancho Island, Angostura, Sinaloa: an important site for colonial waterbird reproduction. Colonial Waterbird Society, New Orland, U.S.A. Póster
- A. Muñoz del Viejo, X. Vega, M.A. González and J.M. Sánchez. 2001. Aves acuáticas reproductoras en ecosistemas acuáticos de Sinaloa (México). El efecto de los disturbios y actividad humana. Congreso Internacional de ornitología. España.
- Vega, X., M. A. González y A. Muñoz del Viejo. 2001. Aves Reproductoras de Sinaloa. Primer Foro Estatal de Ciencia y Tecnología, Centro de Ciencias de Sinaloa.
- Vega, X., A. Muñoz del Viejo and M.A. González. 2000. Reproductive success of waterbirds in coastal ecosystems of Sinaloa, México: the effects of disturbance by human activities and natural events. Colonial Waterbird Society. Niagara, Canadá. Póster.
- Vega, X. 2002. Santa María Bay: an international bird linking connection. Partners in Flight Meeting. Asilomar, California, U.S.A. Presentación Oral.
- Vega, X. 2000. Sinaloa as an important wintering site for migratory shorebird in México. Cordova Shorebird Festival, Cordova, Alaska. Presentación Oral.
- Vega, X. 2000. Making the right connection for shorebird conservation across the Americas. Katchmake Bay Shorebird Festival, Katchmake, Alaska. Presentación Oral.

CURSOS COORDINADOS E IMPARTIDOS

- Taller para la elaboración de las estrategias de conservación en Marismas Nacionales, bajo la perspectiva de conservación de NABCI. Coordinación general y presentación de ponencia. 2003, Ceuta, Sinaloa.
- Taller de conservación y manejo de aves playeras. Coordinación General y presentación de ponencia. 2002, Guerrero Negro, Baja California.

Taller de estrategias de educación ambiental y la conservación de las aves playeras. Coordinación General y presentación de ponencia. 2002, Guerrero Negro, Baja California.

Segundo Taller Internacional sobre manejo y conservación de aves playeras. Coordinación General y presentación de ponencia. 2002, Ceuta, Sinaloa.

Primer Taller Internacional sobre manejo y conservación de aves playeras. Coordinación General y presentación de ponencia. 2001, Ceuta, Sinaloa.

DISTINCIONES:

Ganador del Premio “**Wings across the americas 2005**” del Ministerio de Agricultura de los Estados Unidos de Norte América, en el área del Servicio Forestal de los Estados Unidos de Norte América

Ganador del Premio “**Pablo Canevari 2004**” entregado por Manomet Center for Conservation Sciences.

Ganador del Premio “**Taking Wing 2002**” del Ministerio de Agricultura de los Estados Unidos de Norte América en el 2002

Becario del Consejo Nacional de Ciencia y Tecnología, 1994–1995

Miembro de la Sociedad Científica *Sigma Xi*, 1993

Premio Estatal de Anteproyectos Industriales, 1993



CHARLES D. DUNCAN, PH.D. **Brief Biography** **15 November 2008**

Dr. Charles Duncan is Director of Shorebird Recovery Project, an ambitious hemispheric scale program of the Manomet Center for Conservation Sciences. He also serves, as he has since 2003 as Director of the Executive Office of the Western Hemisphere Shorebird Reserve Network, a coalition of 70 sites in ten nations committed to the conservation of shorebird species and their habitats across the Americas.

Prior to joining Manomet in 2003, Charles worked for The Nature Conservancy’s Migratory Bird Program. He previously had a long career in academia at the University of Maine at Machias, where he founded and ran the Institute for Field Ornithology, now operated by the American Birding Association. From 1998-2000, he was President of the Association of

Field Ornithologists. In 2002, the American Birding Association honored him with their “Chandler Robbins Award for Education and Conservation.”

Charles is an avid birder, with interests across the Americas. He is fluent in Spanish, and is fond of many kinds of dance, most especially Argentine tango. Charles has a B. A. from Rice University (chemistry), a Ph. D. (organic chemistry) from Yale University, and held a postdoctoral fellowship in theoretical organic chemistry at the University of Virginia. He lives in Portland, Maine, with his wife, Laura Blutstein, a physician specializing in family medicine.