



Eagle-Condor Aquaculture Exchange Project

MEXICO



USAID
FROM THE AMERICAN PEOPLE



**INDIGENOUS
ENVIRONMENTAL
NETWORK**



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I. EXECUTIVE SUMMARY

Recent interest in indigenous aquaculture has given rise to a number of bold new initiatives resulting in the Indigenous Aquaculture Network (IAN) and the “Eagle of the North and Condor of the South Aquaculture Exchange Project,” supported by Heifer International and the Oregon State University Aquaculture Collaborative Research Support Program (ACRSP). This report discusses the background and rationale behind the project, participants, and activities conducted during the second exchange visit in Mexico from March 7-14th, 2007. Highlights concerning water issues and feedback from both Eagles and Condors are incorporated with the objective of defining the “next steps” for developing innovative projects of this kind.

II. INTRODUCTION

At the 2002 Native Food Summit, organized by the First Nations Development Institute, a landmark fisheries and aquaculture workshop brought together diverse Indigenous practitioners of fish culture. At this workshop three key findings emerged: (1) For some indigenous communities, nations and bioregions fish and other aquatic resources are frequently overlooked in terms of contributing to community food sovereignty and sustainability, (2) Fish culture and harvest is integrated and embedded in rich cultural and traditional practices, knowledge and spirituality that underscore community well-being and life-ways. At the same time, many of these traditional aquatic practices are threatened by a number of Western developmental factors, and (3) Many fisheries, aquatic and cultural resource specialists are often isolated and have little opportunity to share their extensive knowledge of fish-cultural practices with others from different bioregions.

Building on these findings, the “Indigenous Aquaculture Network” (IAN) was launched through two small grants from the Homeland-Marisla Foundation over the period 2003-2005. The IAN provided American Indian fish-cultural practitioners a vehicle to exchange and share information through web-based technologies such as a list-serve, conference calls, a web page, and information gathering on Tribal fish cultural practices (<http://www.ienearth.org/ienaqu/>). Highlights were annual convenings held in Minneapolis, Minnesota in 2004 and at Camp Indianola, Washington in 2005. A total of 40 American Indian fish-cultural specialists attended these two sessions. Wavering funding commitments by foundations and organizational realignment by non-profit organizations that hosted the IAN resulted in a period of inactivity despite strong continuing interest by network members.

Parallel to these early efforts of the IAN, the Indian Nations Initiative of Heifer International and the USAID-supported Aquaculture Collaborative Research Support Program (ACRSP) initiated a joint “Eagle of the North and Condor of the South Aquaculture Exchange Project” in 2004. The project planned for two groups of American Indian fish-cultural practitioners (“Eagles”) to exchange and share information with

Indigenous South and North American counterparts (“Condors”), in Peru and Mexico respectively. Heifer International supported the North American component while ACRSP supported in-country activities for Eagles and Condors. Subsequently, Heifer International (through the Indian Nations Initiative) sub-contracted the Bemidji, Minnesota based Indigenous Environmental Network (IEN) to arrange all logistics of Eagle travel (<http://www.ienearth.org>). The first exchange took place when an Eagle delegation spent April 22-28, 2006 in the Pucallpa region of Peru. The Mexican trip occurred from March 7-14, 2007 and is the major focus of this report.

III. THE EAGLE-CONDOR PROJECT

a. Concept and Purpose

The concept behind the Eagle-Condor Exchange Project begins with the realization that indigenous cultures are present throughout every major bioregion of the world. As they have for millennia, many indigenous communities are situated near and dependent on water-based resources for livelihoods, health and well-being. Traditional aquaculture practices covering many geographical locations have been reviewed by Beveridge and Little (2002), Costa-Pierce (1987; 2002), Fitzsimmons (2000), Hickling (1962) and Ling (1977). More recently over fishing has depleted many wild fish stocks and in some cases the expansion of modern industrial aquaculture (especially salmon farming in some areas of the Pacific Northwest) threatens indigenous life-ways due to environmental externalities that affect already stressed wild capture fisheries. At present, there is much speculation regarding aquaculture’s fit with indigenous communities. On one hand, aquaculture is viewed as a form of economic development. In this regard, aquaculture projects have had decidedly mixed results. On the other hand, the IAN attempts to view the potential of aquaculture from more of a balance between culture and technology that emphasizes traditional knowledge in anchoring and operating fish facilities regardless of the species or system deployed.

The Eagle-Condor Project is a collaboration that serves as a link to other Indigenous Peoples and organizations that work with fisheries and aquaculture. As a collaborative effort, the Eagle-Condor Project works to create opportunities for Indigenous Peoples in regards to aquaculture and aquatic resources. Because this exchange takes place in the western hemisphere between the north and south this project was designated as “The Eagle of the North and the Condor of the South Aquaculture Exchange Project.” It is being carried out with the hope that this exchange will reinforce Indigenous Knowledge, Culture and the cosmovision of Indigenous Peoples.

Objectives: The exchange program builds the initial foundation to further explore appropriate Indigenous aquaculture models and technology linked to:

1. Appropriate indigenous economic and community development pathways;
2. Aquaculture’s role and contribution to biodiversity, sustainability, food security, and community wellness;
3. Aquaculture and traditional ecological knowledge;

4. Aquaculture information transfer and network building between the North and the South;
5. Organization of aquaculture in communities;
6. Aquaculture in the context of aquatic resources management;
7. Planning for aquaculture and fisheries development; and
8. Expanding educational and training opportunities

Why an Exchange Program is Important: The Eagle of the North and the Condor of the South Aquaculture Exchange Project is important for a number of reasons. The Project:

1. Creates an initial organizational framework to evaluate aquaculture in terms of indigenous culture;
2. Allows for balance between more economically-oriented and more community-based projects;
3. Brings together Indigenous People from the North and South to learn from and share with each other in a comprehensive manner; and
4. Provides in-depth learning experiences and an opportunity to help envision aquaculture practices in a manner that can benefit Indigenous People and the water world.

As the above indicates, the Eagle-Condor Project begins with initial country visits and workshops to begin the process of exchanging information and establishing linkages. It is envisioned that these initial communications will evolve into more complex cultural exchanges with an aim to create concrete project activities in the longer term. We found that to bring Eagles and Condors together, a number of daunting cultural, logistical, and experiential barriers required concerted efforts by the contracting and sponsoring agencies. As a result of the Peruvian and Mexican experiences we feel we have a much better grasp on what this kind of effort entails for future activities.

b. Sponsoring Agencies

“The Eagle of the North and the Condor of the South Aquaculture Exchange Project” is jointly sponsored by Heifer International (<http://www.heifer.org>) and the Aquaculture Collaborative Research Support Program (<http://pdacrsp.oregonstate.edu/>).

c. Collaborating Institutions in Mexico

In Mexico, the Eagles were hosted by the Universidad Juarez Autonoma de Tabasco (UJAT) (<http://www.ujat.mx/>). Biological Sciences Division, (<http://www.dacbiol.ujat.mx>) in Villahermosa, Tabasco. There are approximately 1,300 students who undertake studies in Biology, Ecology and Environmental Engineering in the Biological Sciences Division. The Division also undertakes a noteworthy effort pertaining to aquaculture research and outreach in the region. Dr. Wilfrido Contreras Sanchez directs this division and was primarily responsible for logistics and hosting the Eagles throughout the visit. On site visits, Mr. Ulises Hernandez Vidal, a biological

sciences faculty member, was responsible for the daily itinerary and other accommodations. In Chiapas we also met up with Mr. Alejandro Musalem, Heifer International's Country Director for Mexico. Mr. Musalem provided a very valuable contribution to this exchange as he interfaced with both Eagles and Condors. A quick study, he was intent on exploring the possibilities of developing Heifer-funded aquaculture projects in some of the Condor villages. Before departing, he met with the Condors to discuss on-site follow up and Heifer requirements and information needs for project development.

d. Justification and Significance

While Indigenous Peoples have long-standing cultural relationships with the water world, they often do not have much say or input into how these resources are managed, developed or incorporated into wider society. External pressures from western development forces have threatened traditional aquatic resource use and cultural survival throughout much of the world. The Eagle-Condor Aquaculture Exchange Project seeks to improve upon Indigenous Peoples' standing in relation to the water world. Using aquaculture as a point of departure, participants are able to revitalize traditional knowledge on the interlinked water world. In particular, Eagles and Condors view the water world from cultural and technical dimensions that address educational, community and empowerment concerns. The significance of such an effort lies in the fact that there is nothing like the Eagle-Condor Aquaculture Exchange Project in the aquatic resources field. Indeed, the international activities and dimensions of such a collaborative effort promise to bring forth a new and perhaps better understanding of the water world for a broad array of practitioners.

IV. THE INDIGENOUS PEOPLE OF MEXICO

a. Overview

As of 2005, Mexico's population was over 100 million people, with an indigenous population of about 8 to 10 million, where language is designated as the primary criterion (http://www.travelyucatan.com/maya/mayan_demography.php). Throughout Mexico's history as a modern nation-state, indigenous populations have been negatively impacted by colonialism, war, discrimination and continuing hardships. More recently, the impacts of NAFTA and a legacy of poverty and neglect by the Mexican Government have sparked widely publicized conflicts in Chiapas and also lesser known areas of Tabasco (Collier and Quaratiello 1999; Vinding 2003; <http://warresisters.org/nva0597-2.htm>). Currently 62 groups (http://en.allexperts.com/e/i/in/indigenous_peoples_of_mexico.htm) speak distinct indigenous languages (<http://www.indians.org/welker/mexnat1.htm>). It should be noted further that official census figures of indigenous populations often vary because of the recent resurgence of indigenous identity movements across Mexico. These movements have been closely tied to improving social and economic conditions in the communities (http://www.travelyucatan.com/maya/mayan_demography.php). As a result there was a blend of both Indian and *campesino* elements in each community visited by the Eagles during this workshop. All Condors spoke Spanish with only one able to speak Chontal.

The Chontal Mayans

The Condors all identified themselves as Chontal. There are two distinct indigenous-ethnic groups of Chontal, one consisting of those who live in the coastal lowland area of Tabasco (the *Chontal de Tabasco*) and the other consisting of those who live in the mountainous parts of Oaxaca (the *Chontal de Oaxaca*). Although exact reasons for the origins of these two distinct groups are uncertain, some speculation exists which attributes the cultural differences to warfare, colonialization and physical terrain (<http://www.houstonculture.org/mexico/oaxaca2.html>). The coastal lowland Chontal reside in approximately twenty one towns in the low lying areas of Tabasco.

The Chontal de Tabasco are predominantly engaged in crop agriculture of corn, beans, yucca, and rice, the raising of livestock and handicrafts. To a lesser degree they fish many of the lakes, rivers, lagoons and wetlands. They also hunt on occasion.

Despite being in the oil producing region of Tabasco, we did not encounter any direct evidence of overt conflict between villagers and the state-owned oil monopoly Pemex. There were however, news reports of a farmer-led blockade at the entrance of one of the oil facilities in Tabasco. Nonetheless, the Chontal of Tabasco have been at the forefront of a struggle with this corporate giant for a number of years. Chontal and *campesino* activists have charged Pemex with gross neglect, human rights violations and severe environmental degradation of communal and small holder property. In 1992 the National Commission on Human Rights reported that:

“Nearly 800 hectares, property of communal and smallholders, have been totally destroyed with hydrocarbon residues. The damage has affected subterranean waterways, and domestic wells in the affected zone that only produce salt water and are contaminated with hydrocarbons. Diverse species of fish have been extinguished or are in danger of disappearing gastrointestinal illnesses have severely affected the young population of the region and have caused the death of some children, predominantly due to the consumption of contaminated water.”

<http://warresisters.org/nva0597-2.htm>

The Commission charged Pemex and the Mexican Government to repair and compensate communities and small land holders whose land has been negatively impacted by pipelines, wells and spills. At present thousands of reclamation demands have been met by Pemex. There are still tens of thousands of pending claims from Chontal, *mestizo* fishermen and campesinos that are largely unrecognized by Pemex. In Simon Sarlat, a small town visited by the Eagles, an oil spill led to a blockade that shut down the oil wells for one week. At the edge of the United Nations-recognized La Centla Biosphere Reserve, Pemex continues to operate wells and dredge canals, leading to widespread environmental degradation, local discontent, and a resurgence of Chontal indigenous identity (<http://warresisters.org/nva0597-2.htm>; <http://www.nationsencyclopedia.com/mexico/Michoac-n-Zacatecas/Tabasco.html>).

The Chol

More than two thousand years ago, the Chol lived in what is now known as Guatemala and Honduras. Subsequently they split into two main groups, with one group migrating to present day Chiapas. The Chol are closely related to both the Chontal in Tabasco and the Chortí of eastern Guatemala. The primary economic activity of the Chol is agriculture, with corn, sugar cane, rice, coffee, and some fruits cultivated in small plots.

The Chol inhabit parts of Northern Chiapas and Southern Tabasco. They are one of the larger indigenous groups in the southern part of the Country. Much like the Chontal of Tabasco, the Chol have experienced economic and social hardships. On our trip to the village of Guerrero we observed absentee ownership of tourist resorts along the Balsas River and a number of large cattle ranches. These ranches started from the partially paved road and went into the surrounding hills, despoiling the area. Students at the Universidad Intercultural del Estado de Tabasco performed Chol songs and greeted the Eagles in their language.

Chol is spoken by 140,000 speakers, accounting for 17% of Chiapas' total indigenous population. The Chol identify themselves as "the miliperos," the people whose livelihoods have revolved around the cultivation of maize, a sacred food. (<http://www.houstonculture.org/mexico/chiapas.html>).

The Lacandon Maya

The Lacandon Maya are well known throughout the world. They are a small indigenous group consisting of 700 people living in three villages amidst the Lacandon rainforest of Chiapas (<http://www.geocities.com/RainForest/3134/>). Historically they have been a relatively secluded group that in part resisted the inroads made by western missionaries and others. In 1970 they were relocated by the Mexican Government to the villages of Lacanja, Metzabok and Naha. Eagles and Condors visited the latter two villages. Metzabok consisted of 64 residents, with some Lacandon wearing traditional clothing while others villagers were dressed in more conventional ways. The Lacandon sustain their communities through elaborate farming methods, hunting and fishing. They also act as guides in the nearby rainforest and have great knowledge of the forest, which is used for a variety of purposes, including medicinal plants (Kashanipour and McGee 2004).

Since the 1950s, the Lacandon have been under pressure from outside forces that threaten their traditional way of life. Yet they are highly adaptable. The small communities we visited had cars, trucks, televisions, and other modern commodities. The area has witnessed a steady stream of immigrants who undertake deforestation and other destructive practices, including cattle ranching. Over the past few decades, the population in this rainforest area increased from a few thousand to well over 200,000 today, consisting mostly of impoverished *campesinos* who make a swidden agriculture

subsistence living from the recently cut rain forest. We were told by one member of the NaHa community that poaching of animals and plants is also a serious issue. Christian missionaries have been somewhat successful in converting some Lacandon to Protestant evangelical denominations. As a result, traditional belief systems have been forgotten in some of the communities. In NaHa, the Eagles and Condors were allowed to take part in a traditional Mayan ceremony where a spiritual elder vividly explained his opposition to Christianity and his resolve to carry on indigenous cosmologies and ways of thinking. This testimonial had a profound impact on all participants. Importantly, in 1971 the Lacandon were given land rights by the Mexican government to over 615,000 hectares of the Chiapas rain forest. As a result, a number of younger Lacandon act as “forest rangers” and are responsible for keeping the area under Lacandon oversight.

Water Issues Faced by the Chontal of Tabasco

Water issues faced by the Chontal of Tabasco range from immediate to long-term. In Tucta, Simon Sarlat, and Buena Vista, water quality affects productivity for fish culture. At Tucta, the main water issue was cleaning the large lagoon system of noxious water lettuce in order to access and improve the productivity of the system. It was clear to the Eagles that more detailed and reliable information was needed when proposed pond culture and hatchery development projects were discussed by respective members of Simon Sarlat and Buena Vista. Water quality parameters are also important at Boca Chilapa, but these are of a longer-term duration. Because it is situated on the banks of the Grijalva River, downstream from the capitol of Villahermosa, concerns for a clean water source to run the hatchery and cage culture projects are paramount. Given that all of these communities are situated in the major oil producing region of Mexico and that environmental degradation of water resources occurred in the area during massive flooding in the area in 1997, careful monitoring of water quality remains a critical factor.

In the related water issues area, it seems that aquaculture of gar (*Atractosteus tropicus*) and native cichlids such as Tenhuayaca (*Petenia splendida*), Castarrica (*Cichlasoma urophalmus*), and Paletas (*Cichlasoma spp.*) offers much growth potential. An Eagle observation that was seconded by the Condors pertains to the beginnings of an aquaculture network in the Tabasco region. As the activity grows among the smallholder communities will enough seed be available? Will proper rearing techniques be practiced? Will adequate and cost-effective feed be sourced? We were surprised to see no composting in cichlid ponds and were not able to obtain a reason why this low cost practice was not undertaken. The genetic integrity of broodstock would be another long-term consideration, given what appears to be the formation and organization of burgeoning aquaculture activities in the region. We also noted that there is no current research on fish diseases, as the aquaculture program at UJAT is relatively recent.

V. PROFILES OF WORKSHOP PARTICIPANTS

Eagles

David Vanderhoop

David Vanderhoop, Wampanoag, resides on Martha's Vineyard in the town of Aquinnah, Massachusetts. He holds a B.Sc. in Fisheries Biology from the University of Alaska and has had extensive experience with both capture fisheries and aquaculture. Mr. Vanderhoop currently directs the Wampanoag Aquinnah Shellfish Hatchery and is responsible for the hatchery and a related oyster grow-out operation. Currently the Wampanoag grow oysters for profit and are experimenting with scallops, hard-shelled clams, and soft-shelled clams. They also undertake natural enhancement of shellfish stocks and monitor water quality in the tidal areas.

Wampanoag Aquinnah Shellfish Hatchery
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Thomas Edwards

Tom Edwards, Jr. is a Lummi tribal member with the Lummi Indian Business Council from 1981-2002, the Lummi Natural Resources Department since 2002 and with the Lummi Schelangen (Our Ways of Life) Department. He works in a number of areas including fisheries, forests and the preservation of sacred sites. Mr. Edwards' work entails the application of cultural teachings to natural resources and the protection and restoration of these resources.

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Brenda Jo McManama

Brenda Jo McManama is Seneca from New York State and has been involved in indigenous issues for the past 15 years. She first worked with committees fighting mountaintop removal in the coalfields of West Virginia. She also worked closely with state and local government in instituting truthful and comprehensive history of American Indian culture with the West Virginia History and Culture Department, Secretary of State Ken Heckler, and the governor's office with various Native American Graves Protection

and Repatriation Act (NAGPRA) issues. Ms. McManama was also an assistant editor at Aquaculture Magazine for four years (2001-2005), helping to educate industry participants on growing problems of indigenous issues surrounding fisheries resources and emerging native owned/operated aquaculture efforts. She was a participant at the 2005 Pacific Northwest Convening of the Indigenous Aquaculture Network in Seattle, Washington, and assisted in the compiling of reports, creation of media/press releases, and distribution of reports/electronic media/materials after the conference. Ms. McManama is currently working as a writer and web designer in Western North Carolina as well as continuing administrative and editorial duties for IAN activities.

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William Simmons

William Simmons is Choctaw and currently resides in San Francisco where he works for the International Indian Treaty Council (<http://www.treatycouncil.org/>), one of the oldest IPO's (Indigenous Peoples Organizations). For the Eagle-Condor Exchange project, Mr. Simmons represented the Indigenous Environmental Network, whose work in the international arena coincides with that of the Council. Mr. Simmons has had a long involvement with issues pertaining to indigenous rights, sovereignty and the environment.

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Heifer International

Alejandro Musalem

Mr. Musalem directs Heifer International's Mexico country program. Trained as an agronomist, Mr. Musalem has been Heifer's Country Director for the past three years. Mr. Musalem attended the Second Native Food Summit held in Milwaukee, Wisconsin in September 2004. From that meeting he identified aquaculture as a potential future Heifer Project activity. The Eagle-Condor exchange provided Mr. Musalem an opportunity to undertake a closer examination of potential Heifer sites, projects and activities.

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Aquaculture CRSP

Dr. Michael Skladany

Dr. Skladany holds degrees in biology, resource economics and graduated with a PhD in Sociology from Michigan State University in 2000. Prior to entering graduate school, Mike worked in fisheries and aquaculture development in rural and coastal Thailand (1977-1985) as well as a brief stint in Rwanda, Africa in 1994.

Dr. Skladany assisted with the organizing of the Indigenous Aquaculture Network. He has written extensively about aquaculture/fisheries in a number of academic and popular publications. Currently he teaches Sociology at the University of Tennessee.

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Dr. Wilfrido Contreras-Sanchez

Dr. Contreras acted as the in-country coordinator and planner for the exchange project. Currently he directs the Biological Sciences Division at the Universidad Juarez Autonoma de Tabasco. Dr. Contreras also runs the aquaculture research and outreach efforts at the university.

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Universidad Juarez Autonoma de Tabasco

Mr. Ulises Hernandez Vidal

Mr. Vidal was responsible for our daily activities and accommodations throughout the trip. He is a professor of Biology at the Universidad Juarez Autonoma de Tabasco.

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Condors

Feliciano Lazaro and Melesio Perez

Both Mr. Lazaro and Mr. Perez are Camellones Chontales who live in Nacajuca. Both are members of a 20 member farmer group that works a large lagoon-dyke system on the outskirts of the village. This area is estimated at 150 hectares with 75 hectares of lagoons. The group also operates a restaurant at the site.

Victor Manuel Jermanez Velazquez and Ricardo Valascez

Both Mr. Velazquez and Mr. Valascez reside in Rancheria Boca Chilapa/Centla. This Chontales river community exists in a line system with households located on the banks of the Rio Grojalva, approximately 60 kilometers upstream from the Gulf of Mexico. This community ran a two year old cooperative based fish hatchery for stocking of local ponds and net pens. A number of native cichlids and gar were produced. From all of the Eagle impressions, Boca Chilapa was a solid running egalitarian community with strong leadership and full participation from other community members. In some respects it could be seen as a model community that is successfully adopting aquaculture to create more employment and food.

Thomas Jermanez and Pepe May Cano

Mr. Jermanez and Mr. Cano live in Buena Vista, a Chontal community situated on the shore of Santa Anita Lake. The villagers make their living by fishing and agriculture. In particular these two participants are part of a 20-family cooperative that is seeking to build a fish hatchery on the shores of Santa Anita Lake.

Birolio May

Mr. May was the senior person on this trip and resides in the Chontal community of Simon Sarlat. He discussed a failed effort to raise tilapia and a small group of farmers who were seeking to build large roadside ponds a few kilometers outside of the village on the road to Buena Vista.

Mexican (Non-Condor) Contacts

M.A. Candita Victoria Gil Jimenez

Ms. Jimenez is the rector of the Universidad Juarez Autonoma de Tabasco. She is also the first woman rector of the university. The Eagles paid a formal courtesy call to her office. She expressed her delight in having such a delegation and encouraged the Eagles to seek out further collaborations and exchanges with the University.

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Project Leaders

Indigenous Environmental Network

Tom Goldtooth

Tom Goldtooth, Dine'/Dakota, is the executive director of the Bemidji, Minnesota based Indigenous Environmental Network. For the past twenty years he has been involved at the international level on a number of Indigenous treaty, environmental and cultural survival issues. The IEN acted as a coordinating entity sub-contracted by Heifer International to plan, arrange logistics and execute the Eagles trip to Peru and Mexico.

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Aquaculture CRSP

Dr. Hillary Egna

Hillary Egna is Director of the Aquaculture CRSP and senior research faculty for the College of Agricultural Sciences at Oregon State University. Dr. Egna is one of two main originators of this exchange project, along with Kathy Knott, formerly of Heifer International. Dr. Egna has over 25 years of experience in international research and development, and has worked in 19 countries. Hillary first became involved in international aquaculture in 1982 while working in Central America. Her academic background is in resource geography, natural resources, fisheries and aquaculture. Professionally, Hillary has been engaged in projects that focus on poverty reduction and means to improve people's livelihoods through the careful use of water resources.

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Dr. James Bowman

Jim Bowman is senior research faculty in the Department of Fisheries and Wildlife at Oregon State University. He has been involved in aquaculture since joining International Voluntary Services as a Fisheries Extension Worker in Laos in 1969. Jim completed his MS in aquaculture at Auburn University (1979) and his PhD at OSU in 1992. He has been associated with the ACRSP in various capacities since coming to OSU in 1984. His current involvement is Coordinator for the Kenya Project and as Outreach Coordinator for the ACRSP. As Outreach Coordinator he has helped coordinate logistics for this innovative information exchange project.

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VI. THE WORKSHOP AND SITE VISITS MARCH 7-14th

a. Itinerary

Wednesday March 7th

The Eagles arrive in Villahermosa, Mexico where they are greeted at the airport by Dr. Wilfrido Contreras-Sanchez, Director of the Biological Sciences Division of the Universidad Juarez Autonoma de Tabasco.

Thursday March 8th

Unlike the workshop in Peru, the Eagles previously requested that more time be spent visiting Condor villages and so no formal presentations were made. As a result, the trip provided a number of opportunities for more interactive experience as a total of eight diverse villages were visited.

Prior to departing to the Universidad Juarez Autonoma de Tabasco, Biological Sciences campus, the Eagles met their student translators: Jesus Michael, Valentina Vazquez, and Angel Morales. Throughout this trip they did a stellar job in providing fluid translations. Upon arriving at the university the Eagles and Condors briefly introduced themselves:

Eagle Introductions:

William Simmons (Choctaw) acted as a representative for the Indigenous Environmental Network (<http://ienearth.org>). He summarized the history and efforts of Indigenous Peoples at the international level. Mr. Simmons emphasized that early

struggles over fishing rights sparked a revitalization of Indigenous identity in North America. Mr. Simmons was followed by **Dr. Michael Skladany** who briefly discussed the history of the Eagle-Condor Aquaculture Exchange Project. **Tom Edwards (Lummi)** gave a broad overview of Lummi efforts in land-use and environmental planning based on traditional law. Tribal cultural preservation is also a prominent feature of Lummi initiatives. **David Vanderhoop (Wampanoag)** introduced himself as coming from the “People of the First Light” – the Wampanoag. He touched on the operation of the Wampanoag Shellfish Hatchery at Martha’s Vineyard, Massachusetts. **Brenda Jo McManama (Seneca)** concluded with a few remarks regarding indigenous relationships, perspective and vision for this exchange, a brief overview of her background and involvement in the Indigenous Aquaculture Network.

Condor Introductions:

Feliciano Lazaro and Melesio Perez, (Chontal) introduced themselves as residents from Tucta (Nacajuca). They stated that they were members of a farmers group who operated agricultural and aquacultural activities on a large 150 hectare lagoon-dyke site located near the village. **Victor Manuel Jeramanez Valazquez and Ricardo Valascez (Chontal)** introduced themselves as part of a large farmers group from Rancheria Boca Chilapa/Centala. This area borders the Grojalva River and is laid out as a line system along the river bank. The farmers group here runs a gar-cichlid hatchery as well as a net pen grow out operation. **Pepe May Cano and Thomas Jermanez (Chontal)** introduced themselves as members of Rancheria Buena Vista. This village sits on the shore of Santa Anita Lake. Their goal is to build a hatchery on lakeshore property. The farmers group here has 20 member families. Finally, **Birolio May (Chontal)** from Simon Sarlat/Centala discussed a failed Tilapia grow out effort and his group plans to build a large pond in the vicinity of the village.

Dr. Wilfrido Contreras- Sanchez, Director of the Biological Sciences Division, Universidad Juarez Autonoma de Tabasco, gave an overview of the Division’s aquaculture research and outreach program. Dr. Contreras began by discussing early A/CRSP involvements upon his return from Oregon State University where he received a PhD in fisheries. From 1998-2006, the Biological Sciences Division has worked with six species. They are gar, tilapia, three native cichlid species, and more recently, snook. The program emphasizes native species for aquaculture. Dr. Contreras remarked on the Division’s personnel, basic and applied research, and extension efforts involving native cichlid and gar culture. He noted that there is no on-going work on fish diseases and that they are beginning to evaluate and source locally based feeds for cultured species.

The Eagles and Condors took a tour of the University grounds that included a visit to a medicinal plant arboretum. **Dr. Alejandro Magana** explained to the group what each plant was and how it was used for medicinal purposes. **Salamone Paramo and Alfonso Alvarez** took the Eagles and Condors on a tour of the aquaculture facilities. Here we saw broodstock and fingerling production for both gar and native cichlids. Mr. Paramo discussed the introduction of an invasive species of Amazonian catfish through the aquarium trade. The fish has no natural predators in this part of Mexico and has

proliferated to the point where it comprises upwards of 50% of the total biomass of various lakes and lagoons. Fishermen complain that the fish gets caught in nets due to a pectoral spine, thereby forcing them to cut their nets. The aquaculture program is looking into the possibility of turning this invasive species into a source of local fish meal for gar and other cultured species.

Friday March 9th

The Eagles and Condors departed from Villahermosa for Camellones Chontales de Tucta, Nacajuca. This village has a population of roughly 1,800 people. Until 1977, this village was surrounded by swamps that were a breeding ground for swarms of malaria carrying mosquitoes. Families lived in thatched huts with no electricity and were virtually isolated with no road systems. The area we visited was outside the village and a large thatch-roofed restaurant served as our point of departure for a walking tour of the lagoon-dyke system that was initiated by Andres Manuel Lopez Obrador, a shopkeeper's son from a nearby village (and 2006 Mexican presidential candidate). The project took two years with the involvement of the Mexican Government and the National Indigenous Institute. This was major effort involving heavy equipment and thousands of man-hours to drain the swamp, dig canals and create dykes/islands. However, the project was not initially successful, since the soil under the swamps was of poor quality. Over the years, with simple farming techniques of fertilization, composting and cultivation of native plants and cichlids, the people of the area have been able to modestly improve land efficacy.

We estimated the size of the area at 150 hectares, evenly divided between land and water. Native cichlids are spawned and raised to juvenile size until they are released into the lagoon ponds for eventual capture by fishermen. On the walking tour we observed plants used for thatch and local crafts, small corn fields, sour orange and banana orchards, medicinal plants, a pumping station and chicken feed machine. We were further informed that farmers worked these plots on a private basis.

Upon our return to the restaurant, the ensuing discussion with the Condors centered around a number of issues. We could clearly see that the complex was underperforming because more than half the canals in the lagoons were choked with a very prolific invasive, and noxious water lettuce. Condors remarked that a large and almost constant effort was needed to remove this plant. The cost to remove this plant with professional services and equipment was prohibitive so farmer group members used nets to collect the plants and deposit them on shore. The dyke soil was still considered poor quality for growing of some crops and fruit trees. These comments were elaborated upon by the Condors.

The majority of the discussion was focused on land tenure issues. Tucta farmers stated that since this land was still owned by the Mexican Government, they must pay both land and water concessions. The fee for this right acted as a disincentive to create a more productive area. In fact, one member stated that "our rights are limited" and that we want to be "owners of the land and water and be able to leave it to our children." The discussion then turned to how one can obtain better land and water rights, with some of

the other Condors offering suggestions and even assistance. The residents of Tucta agreed that they would invite the Governor of the Province to visit the complex. Resident Condors envisioned a fully functioning restaurant, ecotourism and handicrafts to complement fish and crop production. It was mentioned that a number of manatees lived in the lagoon, which along with other rare birds and animals, would attract tourists. Some discussion also took place on using iguanas for clothing and food purposes. Overall, Condor residents of Tucta have received training and assistance from the university, stocked fingerlings in the lagoons, and envision the lagoon-dyke complex as a means to improve their livelihoods. While the Eagles mainly listened to this exchange, they collectively offered words of encouragement to the Condors.

On our way back to Villahermosa we stopped in the larger populated area of Camellones Chontales de Tucta, Nacajuca, to visit with a traditional medicine man, **Mr. Alejandro Castro Isidara**. He pointed out a number of plants, including marigolds, used for treating specific maladies. Mr Isidara remarked that he counsels many residents and provides several of his remedies for their comfort.

Saturday March 10th

The Eagles and Condors departed Villahermosa for Rancheria Boca Chilapa/Centalá. This area borders the Grojalva River and households are situated along the Rio Grojalva in a line system. Upon arriving we received a tour of the 32-member cooperatively owned gar-cichlid hatchery. Only in its second year of operation, the hatchery is producing approximately 50,000 gar fingerlings per annum. A number of large circular tanks, fry tanks and settling tanks are used to operate this facility. Total investment cost was approximately U.S. \$200,000 with the source coming from the Mexican government. The 32 members include 17 men and 15 women. The Eagles were briefed by a young village woman who was quite knowledgeable about running the facility. The methods used are carried out meticulously, especially the care of fry and fingerlings, and most of this work is carried out by the women members of the group. The hatchery is used to augment natural restocking in the river as well as supply local fish farmers with seed stock.

Recently, through a grant partially funded by the FAO, the Boca Chilapa coop had begun grow-out cage culture operations in a backwater area of the Grojalva River. Both gar and cichlids were being raised to market size. We also observed other fish cages situated in front of homes during our 10 minute boat ride to the cage complex. Overall, the Boca Chilapa cooperative made a highly favorable impression on the Eagles. It seemed at least through a fleeting tour of the village that strong leadership and a high degree of conflict-free cooperation was evident. When asked if aquaculture had potential for small-scale farmers and fishers of this region, the president of the cooperative Mr. Velazquez responded “absolutely, very great potential.”

Upon returning from the cage culture project, the Eagles were welcomed with a local snack break provided by the residents of Boca Chilapa consisting of native cichlid, tortillas and pazol (a popular regional corn based drink). In the ensuing exchange, the

Eagles asked questions concerning out-migration and employment opportunities in the area. The Condor residents from Boca Chilapa responded that they had been successful in creating more jobs and the children returned to the village after attending school in different regions of the Province. The women in particular seemed pleased with the hatchery, because it provided close-to-home opportunities to earn a share of the revenues distributed at the end of the spawning season.

The Eagles and Condors then traveled for about an hour downriver for lunch at a rustic restaurant situated on a tributary of the Grojalva River. We were informed of an incoming tide some 40 kilometers upstream from the Gulf of Mexico. The terrain was coastal, with vast expanses of tidal swamps and grassy wetlands.

The Eagle and Condor parties next made their way through the large village of Simon Sarlat. A few kilometers outside the village we stopped by the roadside and were greeted by a small farmers group who described their failed past experiences with tilapia culture. We surmised that the fish died due to lack of oxygenation in the pond they were being reared in. At this site, the farmers group described to us their project idea to enlarge and deepen the roadside ditch using an industrial dredge for fish culture purposes.

As dusk was approaching the Eagles and Condors traveled to Buena Vista where they met with another 20 member family cooperative and taken to a recently cleared site on the shores of Santa Anita Lake, a large natural body of water. Co-op members explained to us their desire to build a hatchery at this site. The co-op president even produced detailed engineering/design drawings of the hatchery and explained that an environmental impact study had been performed in preparation for plans to use net pens for grow-out in the lake. The costs for this facility were estimated at approximately U.S. \$150,000 by the co-op spokesperson.

At each stop Eagles introduced themselves and discussed where they came from, conditions back home for Indigenous People and a bit of their individual tribal histories. We noted early on that the Chontalles did not seem to have a strong ethnic-indigenous identity, as only a few spoke Chontale and the dress was that of the *campesino*. Throughout this trip the Eagles continued to evoke and bring forth strong cultural traditions and spirituality through song and prayer. It was notable in this regard that by the time the trip ended, our Condor counterparts had also begun to introduce themselves by their ethnic-indigenous affiliation.

Sunday March 11th

Eagles and Condors departed Villahermos for a three hour trip to Palenque, Chiapas. Upon arrival in Palenque the Eagles and Condors visited the famous Mayan ruins on the outskirts of the town. For many Eagles and Condors alike this was a very moving experience.

The Eagles and Condors then traveled to Misol Ha which is not actually a village but a Chol-run tourist destination situated at the base of a large verdant waterfall. The complex contains a large restaurant, gift shop and small cottages for overnight visits. In

addition the Tourist Bureau operates a 1,000 square meter pond to supply the restaurant. Another larger pond had just been created to increase production of native cichlids. This was the only area where we saw a large number of foreign tourists as well as tour buses. The Eagles and Condors met with the President of the Tourist bureau who discussed some of the history behind this development. He mentioned that this project began over 20 years ago and eventually the Tourist bureau learned how to run it. Operating a business proved to be an obstacle and while the facility employs up to 75 people, it was noted that the restaurant needs a new roof and that the cottages require constant upkeep. Approximately 900 foreign and 1,400 Mexican tourists stay overnight here on a yearly basis.

Monday March 12th

The Eagles and Condors departed Palenque for Metzabok, a small 65-person Lacandon village reached only by 50 kilometers of poorly maintained one-lane dirt-clay road. Accompanying us was **Ms. Manuela Morales Herna'ndez**, a biologist who works for the National Commission for the Protection of Natural Areas. Upon arriving in Metzabok, Eagles and Condors were guided in two hand-rowed fiberglass boats across a deep, clear pristine mountain lake surrounded by rain forest that has been entrusted to the Lacandon by the Mexican Government. Upon arriving at a rock outcropping wall that plunged into the lake, our guide **Mr. Rafael Tarano** explained the significance of the hieroglyphics in terms of Lacandon cosmology. Tucked away behind the rock wall was a cave situated at the end of a small indentation. The Eagles were greatly moved by this experience. No pictures were taken due to respect and reverence for this sacred site. The Eagles performed a small prayer-ceremony to honor the spirits at this site.

From Metzabok we traveled about 25 kilometers to NaHa, a well-known Lacandon village of 200 people situated at another large rain forest preserve (Kashanipour and McGee 2004). After a meal of chicken in a squash corn sauce we walked a trail that led into the rainforest, identified by the term "cloud forest" denoting the high pine forest (over 3,500 ft above sea level). This village was located at an altitude of approximately 4,000 feet. At a small 100-acre lake we turned around and went back to the village. The Eagles were then invited by a spiritual elder who performed a traditional Mayan ceremony, an event that was not part of the day's agenda. This ceremony greatly impacted all present. As dusk was unfolding we drove for approximately 2.5 hours to reach the asphalt road to return to Palenque.

Tuesday March 13th

At breakfast Mr. Alejandro Musalem, the Country Director for Heifer Mexico, spoke with the Condors outlining his impressions for future project development. Mr. Musalem indicated to the Eagles that he was especially interested in the group at Buena Vista. The Eagles outlined a number of low-cost aquaculture activities that could possibly be initiated in rural Tabasco. The Eagles further noted that a rural aquaculture network was emerging among the Condors as a direct result of this trip. The majority of Condors had never traveled to this extent. We noted that the response to Mr. Musalem's talk was well received by the Condors and promises were made to do further follow up work on the part of Heifer.

Eagles and Condors departed Palenque for Tapijulapa, Tacotalpa, Tabasco and visited a Chol village called Guerrero located in a mountain valley. The area is very scenic with the Balsas River a popular summer season tourist destination. This area is not without conflict between social classes and with the Mexican Government. It was pointed out to us by **Mr. Raymundi Auri**, a sociology instructor at the nearby Universidad Intercultural del Estado de Tabasco (Intercultural University of Tapijulapa), that the area was plagued with absentee ownership of river frontage and large cattle farms. Upon arriving in Guerrero we had to traverse two foot bridges over the river and a stream. **Mr. Asuncion Perez Demecio** led us on a tour of a three-tank Cichlid grow out operation. Water was supplied to the tanks from a nearby stream. Mr. Demecio was a recent graduate of the Intercultural University. Total investment in this two year old facility, which was run cooperatively by seven families, was approximately US\$12,000. Fish were produced for local consumption and brought US\$2.50 per kilogram. In response to questions by the Eagles, Mr. Demecio responded that "we can create employment and help our families." The cooperative members received training from the Council of Pueblo Indians.

Upon leaving Guerrero we traveled to the three year old Intercultural University of Tapijulapa (<http://www.ueit.edu.mx>). We were greeted by the rector, **Mr. Pedro Patas Luciano**, and other faculty members and were led to a small outdoor area to watch a Chol-Mayan play performed by students (in English) from the languages and cultural division. Mr. Luciano informed us that the school had approximately 300 students drawn from the immediate region of Tabasco. Many were the first in their families to attend an institution of higher learning. Approximately eighty percent of the student body attends with full scholarships and the other twenty percent pay US \$100 per month. Their overall vision, architecture and curriculum revolve around Mayan cosmology and involvement with the local elders in order to revive and sustain the rich indigenous history and culture. The Eagles and Condors then took a small lunch break and proceeded to individual classrooms where we met and answered questions from a very enthusiastic group of students.

Upon leaving the University we proceeded to a restaurant where we held our final exchange with the Condors. This session was led by Dr. Michael Skladany and Brenda Jo McManama. While time was short we were able to obtain input from the Condors as

discussed below. In short, the Condors were extremely thankful for this opportunity – one that they had never imagined before.

Wednesday March 14th

The Eagles depart Villahermosa for the United States.

VII. RESULTS/OUTCOMES

a. Specific Water-Quality Issues Faced by the Condors

Making better use of abundant water resources was evident at most of the Condor Chontal sites visited. In Tucta the overabundance of noxious water lettuce and hyacinth greatly inhibited the productivity of the lagoons. In Boca Chilapa water quality is considered excellent for the full running of the hatchery and cage demonstration project. Yet, the Eagles pointed out that the intake from the Grojalva River is downstream from Villahermosa where pollution could eventually become an issue. In Simon Sarlat, villagers described a site where the water quality was poor and an early fish culture project was terminated due to mass mortality of tilapia. Perhaps better site selection would improve future efforts to culture fish. In Buena Vista the abundant lake water seemed sufficient for hatchery operations but a more detailed water quality analysis needs to be undertaken.

b. Feedback From Workshop Participants

1. Eagles

The Eagles felt that this was an extraordinary trip because they were able to observe village life in its everyday settings. In particular the Eagles responded very favorably to the cooperative hatchery at Boca Chilapa. The proposed hatchery at Buena Vista also showed future potential, a matter that will be taken up by Heifer Mexico. The Eagles felt that a Condor network for aquaculture was a viable development due to this trip.

On the other hand the proposed pond at Simon Sarlat left many doubts. Outside of pond construction with a backhoe, not much emerged as to other costs and benefits. The relatively isolated location of the pond site raised concerns as to daily management and safe keeping. The Eagles suggested to Heifer that perhaps more scaled down low-cost projects could be substituted in this case as there are a number of water sources closer to the village.

The highlight for the Eagles (as well as many Condors) was clearly the ceremony witnessed in NaHa. Eagles also remarked that Condors had begun to proudly identify themselves by their indigenous-ethnic identity by the end of the trip. At the beginning of the trip we had to ask each Condor their indigenous-ethnic background.

Eagles were focused on the next steps and were pleased to find that there was a strong Heifer country presence on this trip. Throughout the visits, the Eagles emphasized the strength of traditional culture and spirituality to the Condors through an inclusive demonstration of songs and prayer. Regardless of the “technical” dimensions of a particular activity or project, the Eagles felt that strengthening traditional culture and life-ways held the key to community well-being.

On future trips of this kind it was suggested that the Eagle delegation consist of an expanded delegate pool, that more youth be brought along as part of a mentoring program, and that more Eagle women be involved in these exchanges. An expanded delegate pool should come from other representative regions of North America, including the South East, South West and Upper Mid West.

2. Condors

The Condors were asked a series of questions regarding their impressions of this trip. Given that we were running late they were broken down into groups based on their villages to expedite the process. The collective responses were overwhelmingly favorable.

Feliciano Lazaro and Melesio Perez,

Mr. Lazaro responded by saying that “I liked the way the different groups are working together at Boca Chilapa, Simon Sarlat, and Buena Vista.”

Mr. Perez stated, “I like the way we all have the same interests. It is useful to see our partners all involved in the same struggle. I was very pleased to feel a sense of connection with the others. The exchange of ideas was useful. I was very impressed with the Intercultural University as they are rescuing traditions that might be lost otherwise.”

Victor Manuel Jeramanez Valazquez and Ricardo Valascez

Mr. Valazquez mentioned that “This trip was very concrete – excellent. I hope that this isn’t the last time. In the future we might want to make it bigger and longer.”

Mr. Valascez echoed the sentiments of Mr. Valazquez, “My impressions are the same as my partners. It was excellent to see how people live. We don’t even dream about this kind of opportunity. Please continue doing this activity.”

Pepe May Cano and Thomas Jermanez

Mr. Cano remarked that “The farmer groups we met are well organized. The trip was fun and I hope that we do it again in the near future.”

Mr. Jermanez stated that “It was beautiful where we stayed at and where we visited. I hope to do it again soon.”

Biolio May

Mr. May said that “This trip is something that I will tell my daughter and grandchildren about. In my life I thought that I would never see these kind of activities and sights. Thank God we had this opportunity. We all left our work back home to make this trip and hopefully we will return one day.”

In a more general discussion of questions on how to improve exchanges of this kind, group responses emerged. Condors mentioned that perhaps the inclusion of project development personnel from the Mexican government or aid organizations like Heifer could accompany the group. The likelihood of future development aid was a prime concern for the Condors. Condors were very appreciative for being exposed to new ideas and the opportunity to see how others worked. Overall, the Condors felt that they became “stronger” and were inspired to persist in attaining their project goals. They felt they received a “force that has a lot of power and is something we could teach our children.” The Condors from Tucta also expressed their desire for more training such as that received by villagers in Misol Ha in terms of running a business catering to tourists.

Finally, Eagle Tom Edwards added that “we need to educate each generation and if we do so we will see positive change in our communities.”

VIII. CONCLUSION

In sum, this trip was very stimulating for Eagles and Condors alike. For Eagles, articulating the “next steps” in terms of developing future concrete activities is paramount. Building upon the IAN seems to be the key organizational mechanism for doing this. For Condors, obtaining funding and developing small-scale projects in terms of a strengthened network faces a number of constraints. At Tucta, land issues are a major obstacle requiring a concerted long term solution. The Boca Chilapa hatchery and cage culture demonstration project seemed to offer relatively unimpeded avenues for expansion. Simon Sarlat villagers would need a better site at which to begin small-scale aquaculture. At Buena Vista, a careful analysis of all the biological, economic and social variables needs to be conducted in order to evaluate the proposed hatchery site.

It is apparent that the involvement of Heifer Mexico is the key intermediate organization that would provide a link towards future aquaculture development. The Eagles suggested to Mr. Musalem that a number of low-cost aquaculture demonstration activities that could be carefully organized with attention to social and cultural variables. Eagles emphasized that culture or strengthening traditional livelihoods and life-ways held the key to any type of aquaculture development activity, both at present and into the future.

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