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University of Montana

University Development Linkages Project

"Institution Building and Internationalization at the University College of Belize and The University of Montana: Models for Sustainable Resource Development"

(936-5063)

4th Quarterly Report FY 1993 (Year Two)

Date: July 1 - September 30, 1993

Cooperative Agreement No. DAN-5063-A-00-1116-00

Project Officer: Ruth Frischer

Activities undertaken during the fourth quarter of the second year of the agreement, July 1 to September 30, 1993, are summarized below by project objective.

Objective 1: *Develop UCB's outreach capacity, including the UCB Adult and Continuing Education (ACE) Department, and certificate programs and courses offered through the Development and External Relations Office (DERO)*

- o Co-director Siebert reviewed proposals by UM faculty interested in presenting short courses in Belize. UM faculty presented short course proposals in the following subject areas: bioeconomics/marine-resource management, management of biological diversity, watershed management, environmental law, biological training of ecotourism guides, geological hazards associated with economic development, and tourism and social science research methods. OIP forwarded the proposals and accompanying faculty CVs for UCB and PAC review.
- o After the hosting of UCB's first faculty seminar on the UDLP linkage in June, a university-wide newsletter - "The Minutes" - was established to share information between faculty, students, and staff. Published on a bi-weekly basis, this newsletter has been circulated to local media who have used it as a source of news items regarding UCB.
- o UCB's DERO co-sponsored a number of natural-resource-related programs, including:
  - A presentation to the UCB community in the newly opened Science Education building by Dr. Glenn-Marie Lange (Research Scientist at New York University's Institute for Economic Analysis), entitled "Integrated Environmental-Economic Accounting, Natural-Resource Accounts, and Natural Resource Management in Africa," in conjunction with USAID-Belize
  - A two-day Marine Tour Guide Training Seminar on Caye Caulker in association with Siwa Ban Foundation, the Ministry of Tourism and the Environment, and the Caye Caulker Village Council
  - A UCB faculty (Business Administration Department/Research Committee) seminar in the Science Education Building on the Economics of Natural Resources. Dr. Arcadio Urrutia, Director of the Center of Resource Economics at the University of Concepcion in Chile, was the main speaker along with Virginia Vasquez of the Belize Audubon Society. The Belize Audubon Society co-sponsored this event.

Objective 2: *Enhance capabilities of UCB faculty and staff*

- o Upon the invitation of the Ministry of Natural Resources's Forestry Department, DERO participated in a week-long (July 8-15, 1993) Mangrove Education and Training Program for Belizean Science educators. The program was facilitated by the Smithsonian Institution's South Water Caye research staff and resulted in the acquisition of educational media for the teaching of mangrove/marine ecology topics.

- o Through DERO, two UCB Business Administration faculty members attended a two-day Natural Resource Economics Workshop in Belize City (October 14-15, 1993) which was sponsored by USAID, Belize's Natural Resources Management and Protection Project (NARMAP), the government of Belize's Ministry of Natural Resources, the World Wildlife Fund, and the Belize Audubon Society.
- o During the 4th Quarter, Mr. Palacio also prepared a paper dealing with sector analysis of nature tourism in Belize for presentation at the 2nd International Eco-tourism Conference in Caracas, Venezuela. This paper was based upon research conducted by Mr. Palacio in early 1993, supported in part by the UDLP grant, and will form the basis of his dissertation research in Belize.
- o Vincent Palacio has successfully completed his first year of course work and is progressing well in his professional development. Mr. Palacio was enrolled as a fulltime student, worked with Steve McCool as a research assistant, created a data base of the faculty and staff of the University of Montana at the International Programs Office, and served as a teaching assistant for Dr. Siebert. Mr. Palacio's major project was the Motivation Study of Tourists Who Visit Belize. This required travelling to Belize twice, once to initiate the study and then to complete the study. He presented the results of the study at the Second World Congress on Tourism and the Environment in Venezuela. The presentation was well received by the audience. The research this paper was based upon will form the basis of his dissertation research in Belize. He attended several conferences in Montana, participated in meetings regarding watchable wildlife, and participated in the Institute of Tourism and Recreation Research staff meetings. He assisted Tom Nimlos and Dick Smith in the preparation of the EIA short course they presented in Belize. Mr. Palacio was a guest lecturer on nature tourism in Steve Siebert's prerequisite class for the field practicum. The summer was spent as an intern working for the Lewis and Clark National Forest. During the two-month-intern assignment, Mr. Palacio worked alongside U.S. Forest Service resource-management professionals in a wide range of field and office tasks, including recreation management and tourism impact studies, estimation of wildlife populations, forest inventory and management, forest fire hazard assessment, and data management. He also attended weekly meetings at the Institute of Tourism and Recreation Research. He attended the Parks and Recreation Conference in Kalispell and the Mayors Conference on Tourism in Helena.
- o UCB made an effort to put a faculty senate in place, using many ideas which Professor Dick Solberg set forth in the draft faculty senate by-laws which he submitted for review during his faculty exchange at UCB in the fall semester of 1992.

Objective 3:     *Curriculum and course development at UCB*

- o UCB began to develop an Associate Degree program in Natural Resource Management at its new Belmopan campus by hiring Mr. Robin Williams, who will teach and assist in program development in conjunction with the project director. Mr. Philip Morgan, Mr. Vincent Palacio, and Co-director Siebert prepared a draft curriculum for the new Associate Degree program. The draft is under review by the UCB academic dean and key faculty members.

Objective 4:     *UCB/UM library enhancement*

- o Through participation in the Siwa Bai, co-sponsored Marine Tour Guide Training program, DERO acquired manuals on reef fish and creatures.
- o UCB acquired the following titles which were placed in the special Natural Resources Management section established by its librarian in accord with the project workplan:  
 (1) Ecology of Mangroves in South Florida; (2) Marine Science Curriculum Marvel-Rookery Bay National Estuarine Research Reserve; (3) Oceanus, Vol 30, #4 (Caribbean Marine Science); (4) A

Biological Assessment of the Columbia Forest Reserve (Toledo District, Belize); Mangrove Microbiology, "Role of Micro-Organisms in Nutrient Recycling"; (5) Ecological Analysis of Mangrove Conservation, A Case Study of Fiji; (6) Reef Fish Identification, Paul Humann; and (7) Reef Creature Identification.

- o The UM Mansfield Library purchased over \$900 worth of books relating to Belize, natural-resource management, and sustainable development. The Library received most of the volumes ordered.
- o Co-director Siebert continued to update the bibliography and references related to environment and development in Belize. The materials are available for use by any faculty, students and staff interested in Belize.

Objective 5:     *Development of a field practicum in Belize*

- o Philip Morgan of UCB will join Co-director Siebert and Asst. Professor Belsky in co-teaching the field practicum this year. The participation of Mr. Morgan will contribute to institutionalizing the field practicum at UCB; it may be a component in the new Associate Degree program. Mr. Morgan's and Mr. Palacio's background and experience will enhance the academic value of the course for both Belizean and U.S. students.
- o Drs. Siebert and Belsky are currently teaching the course "Belize: Society and Environment." The course is now offered over an entire semester and the number of academic credits granted has been increased from 1 (in 1992) to 2 (1993). Eleven students are enrolled in the course, including the five UM students scheduled to participate in the field practicum and two Belizeans completing undergraduate degrees in Resource Conservation and Wildlife Biology.

Objective 6:     *Collaborative Research Projects*

- o UCB established a Research Committee in July with DERO as a member, and hired Dr. Ismail Bin Yahya later that month as Research Officer and Coordinator of the Research Committee. Collaboration with UM faculty was included as one of the objectives of this committee. Specific activities for year 3 were identified at the August 18-19, 1993 UCB Project Planning Retreat for the accomplishment of this objective. They are:
  - Compilation of a list of UCB faculty/staff research capabilities and interests;
  - Request that UM notify UCB of all research/exchange activities conducted in Belize;
  - The list of UM faculty research expertise to be shared with UCB faculty by the committee;
  - UCB/UM Collaborative research efforts to be targetted at identified national needs; and
  - UCB faculty researchers to be linked with UM faculty researchers through the UCB Research Office.

Objective 7:     *Professional development of UM faculty and staff*

- o UM was voted in by a greater than three-fourths majority as the twelfth member of the Consortium for International Development (CID) at the July 1993 Board of Trustees Meeting. Certainly, UM's UDLP with UCB played a role in the favorable decision on admission. Membership in CID will expand the development-assistance professional opportunities available for UM faculty.

Objective 8:     *Enhance UM's international and cross-cultural curriculum*

- o Co-director Siebert and Asst. Professor Belsky redesigned the content, format, and syllabus of the "Belize: Society and Environment" course (co-listed in Forestry and Sociology) and increased the number of semester course credits earned from one to two.

- o Co-director Koehn discussed Belize with the chair of UM's International Committee's curriculum subcommittee. They agreed to incorporate Belize in the Committee's on-going review process. The International Committee considered how to assess the impact of the UDLP on UM's curriculum at its September meeting.

Objective 9: *Provide internship opportunities for UM students*

- o Three UM undergraduates completed internship assignments in Belize during the 4th Quarter. Two students worked with the Belize Forestry Department and completed projects on Caribbean pine seed selection and nursery development; and an inventory of mangrove forests in southern Belize. A third student worked at the Belize Zoo and Savannah Biological Station where he constructed a nature trail and completed two illustrated guides to common tree flora of the region. Evaluations of all three students were completed by both intern supervisors and the Coordinator of the International Resource Management Project at the UM School of Forestry (Co-director Siebert).
- o Three other UM students are completing final academic prerequisite studies for possible internship assignments in Belize in 1994.

Objective 10: *Develop internal advisory group for on-going project planning, monitoring and evaluation*

o Mr. Steve Cornelius, Director, Greater Caribbean, of the World Wildlife Fund, submitted a report following his evaluation of the UCB/UM UDLP project. He provided a general assessment on program development, program management, short courses and attachments, and the Lewis and Clark Forest involvement. He concluded that:

- o the project has considerable merit for Belize;
- o UCB is committed to the UDLP objectives;
- o development of environmental science curriculum is a UCB priority;
- o the establishment of the latter must be done in a well-thought out, unhasty fashion so as to secure internal support for the program;
- o the hiring of Mustafa Touré and Philip Morgan are a benefit to the UDLP program;
- o more effort to involve the NGO and GOB community will clarify the value of the program and their participation in it; and
- o more attention to clear and frequent communication at all levels and among all the participating organizations will help to ensure the success of the project.

The details of Steve Cornelius' evaluation and recommendations can be found in his report.

- o As a result of the first UCB faculty seminar in June 1993, it was recommended and approved that UCB department heads or chairs be included on the Project Advisory Committee; also it was recommended and approved that an in-house newsletter, "The Minutes," be established to enhance communication between UCB faculty/staff/students on project-related as well as other UCB issues.
- o The Project Advisory Committee held its first annual Planning Retreat, a two-day (August 18-19, 1993) affair with Government, NGO, and UCB participation. Members drafted the "Third Year Project Workplan" as a mechanism for developing and prioritizing project activities from UCB's perspective.

Program Sustainability

- o The victory of the UDP in Belize's June national elections provided an unexpected test of the project's sustainability. It is crucial that the efforts initiated under this project be continued independent of any

changes in the political party that governs in Belize. In fact, the ability to survive such political changes provides a strong indicator of project institutionalization. To date, every indication suggests that the project will be sustained and continue to prosper under the new government. The University College of Belize's commitment to project objectives remains as strong as ever. UCB staff continue to work smoothly with the new government and NGOs on joint activities co-sponsored by the Montana-Belize Partnership. New initiatives involving collaboration among the GOB, UCB, and UM are under discussion. There are signs that the new government intends to support the sustainable-development goals of the project. In sum, the early outcomes of the June 1993 elections have reinforced the initial perspective that support exists across a broad spectrum of political opinion in Belize for the societal objectives and basic premises of the UDLP.

- o The participation of Mr. Morgan will contribute to institutionalizing the field practicum at UCB; it may be a component in the new Associate Degree program.

Problems Encountered/Solutions to Problems Previously Identified:

- o UCB had to stop project-related disbursements until they received subcontract funds from UM. UM could not issue disbursements until UCB provided the proper reporting and documentation for expenditures required under the Subcontract.
- o UCB/DERO provided back-up documentation for direct costs for the 4th quarter of year 1, the 1st quarter of year 2, and the 3rd quarter of year 2. They also provided the required listing of their cost-sharing contribution for year 1 and year 2 (through the 3rd quarter). UM wired UCB two subcontract installments from the year 2 budget.
- o The project directors had several outstanding UM candidates in mind for the two semester-long faculty-exchange attachments at UCB available during the third year of the grant. Unfortunately, the candidates declined to participate at the last minute. The principal reasons appear to be (1) the reluctance of spouses to spend an entire semester in Belize; (2) competing professional commitments; and (3) reluctance of faculty to leave Montana for an extended period of time. The co-directors are addressing this problem on several fronts:

First, the Office of International Programs scheduled Professor Solberg to report personally on his positive experiences while on faculty exchange at UCB during an open faculty symposium in October.

Second, Drs. Koehn and Siebert increased their personal efforts to recruit suitable candidates for future years of the faculty exchange. Dr. Koehn followed up with individual contacts aimed at firming up nominations for the 1994-95 a/y. The response was encouraging.

Third, in consultation with UCB, the directors agreed to carry over two faculty-exchange appointments until later project years and to transfer funds from the unfilled spring 1993 exchange position into financial support for the advanced-degree education of UCB junior faculty at The University of Montana. The latter decision serves several important purposes: (1) the advanced-degree training of their own faculty is likely to result in the most positive long-term impact on UCB and its curriculum; (2) it redirects additional project funds to the primary direct benefit of UCB; and (3) it solves the immediate need to locate funds to support the additional semester of coursework toward the Ph.D. required by Vincent Palacio. This decision also addresses several of the key recommendations made in Steve Cornelius' evaluation report.

- o The establishment of the UCB Newsletter, "The Minutes", aided the sharing of UDLP project activities with faculty and administration as well as the general Belizean public.

- o Peer reviewers rated favorably both of the OIP's grant proposals for external funding to support overseas internships in sustainable development for UM students. However, neither proposal secured funding in stiff competition. This outcome reduces prospects for sustaining internships for UM students.

Spin-off Benefits

- o Two new Belizean students are completing undergraduate degrees in resource conservation at UM's School of Forestry this year: José Mendoza, Environmental Technician at the Ministry of Tourism and the Environment, and Ramon Pacheco, Secondary School Science Teacher from Orange Walk Town. Both students are sponsored by the Program for International Education Training (PIET) and funded by NARMAP.

ACRONYMS

DERO Development and External Relations Office  
 GOB Government of Belize  
 LCNF Lewis and Clark National Forest  
 NGO Non-governmental Organization  
 OIP Office of International Programs  
 PAC Project Advisory Committee  
 PACA Proyecto Ambiental de Centroamérica  
 PEC Project Executive Committee  
 UCB University College of Belize  
 UDLP University Development Linkages Project

Planned Travel

Sharon Alexander - staff exchangee to UCB, October  
 Mustafa Touré - staff exchangee to UM, October  
     - UDLP meeting in Arlington, TX, November  
 Peter Koehn - project administration meetings, DC  
     - UDLP meeting in Arlington, TX, November  
 Richard Vengroff - contracted services to UM, November  
 Sylvia Cattouse - staff exchangee to UM, December  
 Steve Siebert - preparation/presentation of field course in Belize, December  
 Jill Belsky - preparation/presentation of field course in Belize, December  
 Don Habbe - staff exchangee to UCB, January

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## APPENDIX

## PARTNER FOREST ACTIVITIES

### Introduction

During a December 1991 site visit, FDB's Chief Forest Officer identified firefighter training as one of his agency's most critical needs. FDB, however, did not have the funds or expertise to develop a firefighter training course. This was a serious problem because many of Belize's Forest Reserves have severe fire seasons. Firefighting training was not only necessary to enhance FDB's ability to protect forest resources, but also to improve firefighter safety. In addition, the Chief Forest Officer believed a firefighter training course would enable FDB to take full advantage of recent USAID and ODA grants for infrastructure improvements such as fire towers and communication systems. The target audience for this course was FDB's Forest Guards, field supervisors for firefighters.

During the December 1991 meetings between FDB and LCNF, a 4-phase strategy for developing and delivering a firefighting training course was agreed upon: 1) Prepare a needs assessment in Belize; 2) Expose FDB officials to fire management in Montana; 3) Prepare and deliver firefighter training course in Belize; and 4) Evaluate training results in Belize.

Phases 1, 2, and 3 were completed between January 1992 and February 1993. Phase 4 was completed during this reporting period (April 1993).

### Phase 4: Firefighter Course Evaluation

Course effectiveness was intensively evaluated by instructors Brad McBratney and Jess Secrest during the Belize fire season (April 1993). The evaluation visit focused on enhancing course applicability and transferring teaching responsibilities to Belizean instructors.

Forest Guards who attended the firefighter course were interviewed and completed detailed questionnaires. The results of these efforts are summarized below:

1. What did you enjoy most about the course?

- Fire behavior lessons
- Safety emphasis
- Instructor presentation styles

2. What did you enjoy least about the course?

- Too short for material
- Too much homework
- Not enough field exercises

3. What subject areas have you applied most?

- Fire environment/fire behavior
- Fuels classification and moisture
- Standards for survival

4. What subjects have you not applied?

- Extreme fire behavior
- Cold trailing

5. What subjects should be expanded?

Weather effects  
Fire-line tactics

6. What subjects should be eliminated?

None

7. Describe how course material helped you manage fire

Used fuel models to predict how two prescribed fires would behave  
Increased communication with crews  
Gained additional respect from crews

8. What course materials were most helpful?

Standards for Survival  
S-390 (Fire Behavior) materials  
Anchor point and safety zone overheads and handouts

9. Which field exercises were most helpful?

Weather observations  
Line construction  
Pumps and water handling

10. Recommend additional field exercises

Prescribed burning  
First-Aid  
Expand pumps and water handling

11. Other recommendations

Slow course down  
Send materials in advance  
Include more presentations from students

Based on student responses, the following actions will be taken when this course is delivered next:

- \* Schedule additional field exercises: Fireline tactics, firing techniques
- \* Send pre-work packet at least 2 weeks in advance
- \* Incorporate an FDB co-instructor

Discussions with FDB's Principal Forest Officer, Oswaldo Sabido, and Western Division Officer, Ian Gray, focused on transitioning course delivery to FDB personnel. An FDB instructor was identified from this year's cadre of students to co-teach the 1994 Wildland Fire Behavior and Suppression course. Plans for providing additional fire training for this individual in Montana were developed.

The senior FDB officials and LCNF evaluation team agreed that basic firefighter course for crew members would complement the course for Forest Guards (crew bosses). This 1-2 day course would provide crew members the rationale behind new firefighting and safety tactics employed by the Forest Guards. The FDB instructor would also co-teach this course in 1994.

During the evaluation visit, McBratney and Secrest developed a water handling system for a resort in the Mountain Pine Ridge Reserve. They also recommended fuels reduction options. The resort's owner, Francis Ford Coppola, was very appreciative of this assistance.

An unanticipated benefit of the fire training course was a new linkage between the Belize Meteorological Service and FDB. Two meteorologists who attended the course began sending daily weather forecasts during the fire season to FDB. Forecasts are faxed to the FDB office in Belmopan and radioed to Western Division headquarters.

#### UNIVERSITY LINKAGE ACTIVITIES

##### Silviculture Course

At the request of UCB, UM and LCNF developed a silviculture short course to provide FDB technicians a basic understanding of how trees and stands grow in response to natural and man-caused disturbances. The course also addressed how basic silvicultural practices can be used to achieve multiple resource objectives.

The course was taught in June by LCNF silviculturalist Jim Hertel, UM Professor Kevin O'Hara, and UM doctoral candidate Ken Brewer. The week-long course was delivered at the Mountain Pine Ridge Reserve. There were 15 students; most were FDB Forest Guards. Two workers from the nearby Pine Lumber Mill also participated. Morning lectures were followed by afternoon field trips. Subjects included stand dynamics, tree genetics, landscape management, and intermediate harvest treatments. At thinning and seed tree sites, students marked trees after observing tree responses at previously treated areas. On the last day, a final exam and course critique were completed.

##### Student Internship

Between June 1 and August 15, LCNF provided a natural resource internship for Belizean PhD student, Vincent Palacio. The goal of this internship was to expose Palacio to field-level, multiple-use management of National Forest lands. Palacio rotated weekly between recreation specialists, biologists, foresters, planners, and fire specialists. His duties included, evaluating riparian conditions, inventorying fish populations, collecting forest vegetation data, inspecting campgrounds, and monitoring recreational activities.

LCNF also provided funds for Palacio to present a paper at the World Ecotourism Conference in Venezuela.