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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)
2nd Annual Report FY 1993

Cooperative Agreement No. DAN-5063-A-00-i116-00

Submitted to:
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Bureau for Research and Development
Agency for International Development
Washington, D.C. 20523

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**University of Montana
University Development Linkages Project**

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Date: October 30, 1993
Cooperative Agreement No. DAN-5063-A-00-1116-00
Project Officer: Ruth Frischer

This report summarizes activities undertaken during Year 2 of the grant. We have included a description of progress toward the completion of each linkage objective as per the Year 2 Workplan. Problems and barriers affecting linkage progress, sustainability of the linkage, and quantitative outputs of the linkage are addressed. The annual report also involves assessments of the impact of the linkage on internationalization of UCB, UM, and LCNF as well as on UCB's capabilities to meet Belizean societal development needs in natural-resource management.

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 The appointment by UCB of Mr. M. Touré and Mr. P. Morgan as project officer and project director, respectively, has had a direct positive impact on the accomplishments and institutionalization of the linkage project at UCB.

- o UM short courses - 3

Environmental Impact Assessment, co-taught by UM's Professor Tom Nimlos and LCNF's Richard Smith, co-sponsored by BCES; 15 attended. The participants rated all aspects of the course in the good/excellent range.

Municipal and Rural Sanitation, co-sponsored by Ministry of Health, attended by all of Belize's Public Health Inspectors. UM's Dan Corti co-presented the course with 7 officials from the MOH, one each from MOA, PAHO, and the Belize City Council. The seven officials provided 22 of the 32 hours of instructions. Seventeen evaluations were completed. Approximately 85 percent of the participants rated all aspects of the workshop in the good range; ten percent rated it in the excellent range.

Forest Silviculture, co-taught by UM's Professor Kevin O'Hara, LCNF's Jim Hurtel, and Flathead National Forest's Ken Brewer. Co-sponsored by Belize Forestry Department; 16 Belizean foresters attended. The participants rated all aspects of the course and field exercises in the good/excellent range.

- o Belizean Firefighting Training Course, co-sponsored by Lewis and Clark National Forest (LCNF) and the Forestry Department of Belize (FDB).

Phase 1 - Needs Assessment - 2 LCNF fire specialists assessed FDB's fire training needs in Belize. LCNF shipped surplus fire hand tools and safety gear to FDB in preparation of the firefighting course.

Phase 2 - FDB Exposure to Forest Service Fire Management - 2 FDB officials came to Montana to determine which management practices should be included in the firefighter training course.

Phase 3 - Firefighter Training Course Delivery - 25 Belizean foresters and forest guards attended.

Phase 4 - Firefighter Course Evaluation - 2 LCNF instructors evaluated course effectiveness during Belize's fire season.

o UCB short courses - 2

Wildlife Inventory Methodology, developed and presented by UCB's Nimmi Bryant; 15 attended. All participants were enthusiastic, evaluating the workshop to have been of considerable professional value. They rated all aspects of the course in the excellent/good range.

National Environmental Education Workshop, developed and presented by UCB's Jack Meyer; 18 attended. The course was well-received. Approximately eighty percent of the participants rated the course as excellent. The other twenty percent rated the course as good.

o Project Executive Committee (PEC) decisions

Short-course instructors should spend 2 weeks in Belize.

Each UM short course should have a Belizean counterpart instructor.

Developed a strategy for improving UCB's public-awareness efforts.

o Project Advisory Committee (PAC) actions:

Appointed subcommittee to develop proposals for establishing a UCB certificate program in project-related areas.

Agreed upon principle of co-sponsorship for UCB-delivered short courses.

Identified 6 priority areas for UM/UCB-sponsored short courses.

Recommended each short course have specific objectives set out in advance and evaluated after the course is complete.

Requested that each UM short-course instructor engage in a course evaluation and leave behind a model course outline and teaching materials for future use by UCB.

o DERO prepared the "UCB 5-Year Development Plan: A Summary of Programme Targets."

o Cornelius Report: Evaluation of UM/UCB UDLP project. Recommendations:

Develop UCB's fund-raising skills

Prepare a brochure describing project activities

Participate in a collaborative national training-needs assessment in the natural-resource management area.

- o UCB commenced collaboration with Belize Center for Environmental Studies (BCES) in developing a year-long EIA training course.

Progress made in accomplishing Workplan objectives

- o Project collaborators developed and offered a second series of experimental short training courses. A total of 122 Belizeans received training through short courses sponsored by UCB.
- o The following agencies collaborated with UM, UCB, and LCNF in the delivery of these short courses through co-sponsorship: The Belize Zoo, BCES, Fire Department of Belize, the Ministry of Health, the Ministry of Natural Resources (Forestry Department), the Ministry of Agriculture, the Ministry of Education, PAHO, Programme for Belize, the Belize Audubon Society, the Ministry of Local Government, the Ministry of Tourism and the Environment, and San Pedro (Ambergris Caye) Town Board. Co-sponsorship by local organizations has had significant impact on the success of this year's short courses. In addition to assisting with instruction and making available course content and materials that are relevant for Belize, co-sponsorship by local NGOs and GOB ministries increased the effectiveness of the short courses by identifying clientele and helping with local arrangements.
- o Project-sponsored short courses now are coordinated through the DERO office at UCB. In the second project year, the co-directors devoted considerable effort to developing DERO's administrative ability to plan, organize, advertise, and deliver short training courses. There has been significant progress in these areas. It is encouraging to note that UCB delivered two highly regarded short courses on its own during the second year.
- o Co-director Siebert compiled a list of UM faculty who are interested in presenting short courses in Belize and the short courses they propose to teach.

Objective 2: Enhance capabilities of UCB faculty and staff

- o Vincent Palacio completed the first year of his doctoral studies in recreation management in the UM School of Forestry.

Guest lectured in the course "Belize: Society and Environment."

Participated in conference on parks, recreation, and wilderness management.

Returned to Belize to complete preliminary research on the motivation of travellers to Belize.

Prepared and presented a paper on sector analysis of nature tourism in Belize at the 2nd International Eco-tourism Conference in Caracas, Venezuela.

- o Vincent Palacio has successfully completed his first year of course work. He also attended weekly staff meetings at the Institute of Tourism and Recreation Research. He attended the Parks and Recreation Conference in Kailspell and the Mayors Conference on Tourism in Helena. Vincent

also was involved in several meetings concerning watchable wildlife in Montana. Year one of the three-year program was filled with challenges and learning experiences. 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 assisted Steve Siebert with Belize material in several courses. 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 the other 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. He assisted Tom Nimlos and Dick Smith in preparing 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. This internship allowed Mr. Palacio to gain valuable practical experience that will enable him to become a more effective instructor.

o Dr. Richard Solberg - UM faculty exchange. Accomplishments:

Drafted 22-page document on establishing a Faculty Senate.

Made recommendations on institutional policies regarding faculty appointments, promotion, and tenure.

Led team that evaluated the central administration of UCB and Belmopan Junior College (BJC).

Advisor to UCB faculty; consulted with campus personnel on budgetary policies and procedures.

Received written expression of appreciation from UCB President Cal regarding his institution-building contribution to UCB during the faculty exchange.

o UCB began an effort to put a faculty senate in place, using many of the ideas which Professor Solberg set forth in his draft Faculty Senate By-laws during the fall semester of 1992.

o Staff exchanges:

Ismael Hoare - UCB. Met with and received valuable information regarding cafeteria, housing, recreation, pharmacy, health services, and career services.

Enid McKoy - UCB. Worked with UM's Registrar's Office. She now expects to be able to publish an official exam schedule for the first time at UCB. She also benefitted from meetings regarding graduation requirements, transcript preparation, student registration/grade reports, and student and peer advising.

Elizabeth Pancake - UM. Worked closely with counterparts in UCB's DERO Office and UCB's Accounts Office. Set up spreadsheet for direct costs and cost match. Initiated process with DERO for gathering cost-share information.

- o UCB's Academic Vice President sponsored the first session in a new Faculty Seminar Series. The purpose of this seminar was to provide an opportunity for UCB faculty and staff to become better acquainted with the linkage project and to express their concerns.

Progress made in accomplishing Workplan objectives

In year 2, present and future UCB faculty needs continued to be identified. UCB faculty professional development began, in year 1, with Vincent Palacio initiating Ph.D. studies in the UM School of Forestry. He now has successfully completed one year of his studies. Vincent also gave guest lectures, and delivered a paper at an international tourism and environment conference.

UCB's priority staff needs continue to be reviewed and updated; staff enhancement continued in year 2 with visits to UM by Ismael Hoare and Enid McKoy. Dr. Solberg was an invaluable administrative advisor at UCB and fostered greater understanding and communication between UM and UCB.

Objective 3: Curriculum and course development at UCB

- o UM Faculty Exchange - Dr. Richard Solberg

Instrumental in drafting the original "terms of reference" for the newly constituted UCB Academic Dean's Council.

Authored proposals for variable-credit course offerings, new-degree offerings at UCB.

Participated in catalog production and curriculum planning.

Taught senior-level undergraduate class on basic concepts in modern genetics.

- o Curriculum development

Drs. Siebert and Belsky provided UCB with the syllabi and reading materials used in their two courses, "Belize: Society and Environment" and "Belize: Conservation and Development," for UCB to incorporate into their curriculum.

EIA short-course training materials are expected to serve as the foundation for a new UCB course on environmental-impact assessment.

President Cal received curriculum material from UM's Mathematics Department which interfaces well with what a task force on environmental education is working on at UCB.

- o UCB initiated discussion of an Associate Degree in natural-resource management at its Belmopan campus. The two-year program could be designed to include terrestrial, marine and eco-tourism components. UCB began developing the program by hiring a lecturer to teach and assist in program development in conjunction with the project director. Mr. Phillip Morgan, Mr. Vincent Palacio, and Co-director Siebert prepared a draft curriculum for the new Associate Degree program. The draft continues to be revised and will be reviewed by the UCB academic dean and key faculty members.

Progress made in accomplishing Workplan objectives

Curriculum needs have been assessed, and reviewed with the stakeholders. Discussions regarding modification of curriculum and course development at UCB are on-going between UM and UCB project leaders. Dr. Solberg taught a course on basic concepts of modern genetics and worked to enhance UCB's ability to provide its students with more options. UM field practicum leaders and the EIA short-course leader provided UCB with course syllabi and materials. UM's Mathematics Department provided valuable material for UCB's environmental task force. The project directors continued efforts to identify additional UM faculty for the exchange program at UCB. Recruitment and academic preparation of a core UCB faculty will support curriculum development in the long term.

Objective 4: *UCB/UM library enhancement*

- o OIP compiled lists of books, journals, and articles for both UCB's and UM's libraries.
- o UM's division of Biological Sciences donated approximately 50 textbooks to UCB.
- o DERO purchased books on research, resources, and development in Belize.
- o UCB's Head Librarian agreed to designate a separate section in the library for all books obtained through the project.
- o UM submitted the bulk of its library orders for the purchase of materials in the areas of natural-resource management, sustainable development, and Belize studies. UM's Mansfield Library has received most of the volumes ordered.

Progress made in accomplishing Workplan objectives

In year 2, OIP submitted its list of book orders to the UM library. To date, most of the books have been acquired. Co-director Siebert increased his Belize-related library collection and assembled a bibliography of Belizean development and environment-related subjects. UM's Mansfield Library volunteered to match UM's grant support for library acquisitions with annual support of \$500 in library acquisitions in the area of development studies. UM donated approximately 50 biological sciences textbooks to UCB. UCB's DERO office purchased books for their library on subjects related to the project. DERO invited its faculty to participate in compiling a list for their library acquisitions.

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

- o Professors Siebert and Belsky co-taught the prerequisite course entitled "Belize: Society and Environment" to 8 UM students on the Missoula campus, Fall Semester 1992.
- o Professors Siebert and Belsky also co-taught the first 10-day field practicum entitled "Belize: Conservation and Development" in January 1993. Participants included 5 Belizeans (2 UCB seniors, 2 officials with PACA project, and 1 from Belize Audubon) and 5 UM students.
- o In the practicum, UM and Belizean students worked in and around three protected areas where they conducted vegetation and soil surveys and socioeconomic surveys of local households to assess opportunities and constraints for protected-areas management. The pairing of UM and

Belzean students proved beneficial to both as UM students tended to have greater technical and theoretical knowledge while the Belizeans were much more knowledgeable about the local environment, culture, and socioeconomic situation. The students' extensive written evaluations indicate that the course was extremely valuable.

o Mr. Philip Morgan of UCB will join the instructional team for the second field practicum and serve as a co-director.

Progress made in accomplishing Workplan objectives

The first field practicum took place in January 1993. Both Belizean and U.S. participants considered it to be of great benefit to their education. Their suggestions for improvement in the course have been incorporated into plans for the second field practicum scheduled for early 1994.

Objective 6: Collaborative Research Projects

o UM Professor Steve McCool, along with Vincent Palacio and Ms. Joy Vernon of the Belize Tourism Board, prepared a survey instrument regarding motivations of foreign tourists who visit Belize. Mr. Palacio traveled to Belize twice this year to initiate and complete the survey.

o UM Professors Siebert and Belsky were awarded a competitive grant from U.S. Man and Biosphere for field research on "Socioeconomic and Ecological Considerations of Tie-Tie (Desmoncus sp.): Sustained Yield Harvesting and Use in Rio Bravo and Gale's Point, Belize." The research will provide funding support for several Belizean students. Professor Siebert also received a grant from UM's University Grant Program in support of further research on the same topic.

o UM Professor Kevin O'Hara reviewed several potential research topics with FDB counterparts.

o UCB established a Research Committee in July with DERO as a member, and hired Dr. Ismail Bin Yahya to be the Research Officer and Coordinator of the Research Committee.

o Dr. Siebert and Dr. Koehn discussed collaborative research possibilities with PAC members and UM faculty members, and encouraged the latter to develop research proposals with Belizean counterparts.

Progress made in accomplishing Workplan objectives

Vincent Palacio collaborated on the research project being undertaken by UM's Dr. Steve McCool and Joy Vernon of the Belize Tourism Board. Dr. McCool and Mr. Palacio developed the survey which Mr. Palacio conducted in Belize, and they jointly analyzed the data. Dr. McCool helped Mr. Palacio prepare a paper on the findings, which the latter presented at an international conference.

The UCB Research Committee identified collaboration with UM faculty as one of its objectives and specific activities for year 3 at the August 18-19, 1993 UCB Project Planning Retreat.

Co-director Siebert received significant external funding for his collaborative research in Belize.

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

- o UM's staff-exchange nomination committee held interviews and nominated Sharon Alexander, Dean of UM's Center for Continuing Education, and Elizabeth Pancake, OIP's International Development Coordinator, to be UM's staff exchanges for the second project year.

- o Dr. Solberg completed a faculty exchange at UCB. He learned about UCB's administration, curriculum, and the problems and needs that must be addressed for the University's continued development. His model progress reports and final trip report will serve as valuable points of reference for future faculty and staff exchanges. After his return to Montana, Dr. Solberg gave presentations on his experience in Belize to interested faculty and staff.

- o Mr. Palacio worked at OIP on compiling a data base which will make information regarding UM faculty and staff with international interests and/or experience readily available when international development opportunities arise.

- o Professor Tom Nimlos is now better prepared for future international projects utilizing his expertise in EIA, including the EIA lectures he subsequently delivered in Hungary. His experience will prove valuable in teaching UM students how environmental assessment is used internationally.

- o UCB staff exchanges at UM professionally and culturally enriched their UM staff hosts. Both visiting UCB staff members contributed to the internationalization of the UM campus by expanding staff horizons.

- o UM staff attachments at UCB - Elizabeth Pancake will be more effective in responding to UCB/DERO needs and assisting them with reporting and budget matters, and more sensitive to the issues involved in providing natural-resource management education in Belize.

- o In July, the CID Board of Trustees voted to admit the University of Montana as the 12th member of the Consortium for International Development. This greatly expands professional opportunities overseas for UM faculty.

Progress made in accomplishing Workplan objectives

During the 1992-93 Workplan year, three UM faculty and two staff members benefitted from professional opportunities in Belize. UM staff in the Registrar's Office and the Dean of Students offices reported professional benefits from Ms. McKoy's and Mr. Hoare's attachments, respectively. The project co-directors have reviewed trip reports as well as formal evaluations with each faculty and staff exchange in order to incorporate changes that would enhance the program.

The faculty-selection process is in place. The Director of International Programs invited UM faculty to join a pool of interested exchanges. The project co-directors have identified several excellent candidates for future faculty exchanges in Belize. Two staff-exchange candidates for year 3 have been nominated by the Nominating Committee.

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

- o In "The President's Message" in UM's Financial Report 1992, UM President Dennison cited the linkage agreement between UCB and UM as an example of the direction the University has charted with regard to promoting campus cultural diversity and international experience.

- o Professors Siebert and Belsky redesigned and lengthened the prerequisite course for the field practicum, "Belize: Society and Environment."
- o Professors Siebert, Belsky, O'Hara, and McCool incorporated case study materials from Belize in several regularly offered graduate and undergraduate courses.
- o The International Committee at UM began its campus-wide international curriculum review and agreed to integrate the UDLP into their on-going review process. The International Committee began to tackle the issue of progress indicators for curriculum internationalization.
- o Co-director Siebert developed and presented a proposal for a degree minor in International Resource Management (IRM) to the School of Forestry curriculum committee. Upon approval by all campus bodies, the proposal will be presented to the Board of Regents of the State of Montana for its approval.
- o Vincent Palacio and three other Belizean students introduced cross-cultural views and Belizean material in their UM classes and in informal meetings with UM faculty and students.

Progress made in accomplishing Workplan objectives

Faculty with Belize experience have introduced new international content into their courses. Several campus-wide and individual school committees commenced their review of UM's international curriculum. Belizean students at UM have introduced Belizean material in their UM classes.

Objective 9: *Provide Internship opportunities for UM students*

- o Dr. Siebert selected three UM students for internship assignments in Belize, and made arrangements for the interns to serve with the Belize Department of Forestry and the Belize Zoo. He and the intern sponsors reviewed and evaluated the internship assignments during late spring and summer.
- o Dr. Siebert identified potential internship assignments for 1994.
- o USAID/Belize indicated interest in sponsoring a UM intern.
- o Dr. Koehn met with granting-agency personnel and prepared two proposals that addressed UM's interest in locating funding for voluntary international community-service internships in Belize.

Progress made in accomplishing Workplan objectives

Three students from UM completed internships in year 2; one with the Belize Zoo and two with the Belize Department of Forestry. Dr. Siebert conducted in-depth evaluations with each intern. He also identified potential internship assignments for 1994 and began the process of identifying interns for year 3.

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

o PEC actions:

Reviewed faculty and staff exchanges, project implementation, short-course sponsorship and evaluations, cost sharing, sustainability and grant opportunities, and project contracted services.

Agreed to work within the existing curriculum and not overextend resources with regard to the establishment of certificate programs.

The first UCB faculty seminar in June 1993 recommended, and PEC approved, that UCB department heads or chairs be included on the Project Advisory Committee.

o PAC actions:

Assessed the delivery of short courses and the change in UCB project personnel.

Reviewed the content, number, participants, and logistics of the short courses delivered to date.

Approved project contracted services by Steve Cornelius and Richard Vengroff. Requested that some future contracted services be conducted by experts from Central America and the Caribbean regions. Agreed to submit the CVs of prospective consultants to the UM co-directors.

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, 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 Phillip Morgan are a benefit to the UDLP program;**
- o more effort to involve the NGO and a 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 regarding Mr. Cornelius' evaluation and recommendations are found in his report.

o Richard Vengroff's report: Evaluation of UM/UCB UDLP project. Completed the first of two parts of his evaluation by meeting with Belizean participants. The second part, at UM, will take place in Year 3.

o PAC accepted UCB's department heads or chairs as permanent members of PAC.

- o DERO established an in-house newsletter, "The Minutes," 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 GOB, NGO, and UCB participation. Members drafted the "Third Year Project Workplan" as a mechanism for developing and prioritizing project activities from UCB's perspective.

Progress made in accomplishing Workplan objectives

The Project Advisory Council (PAC) assessed project needs and activities, identified priorities and implementation timing, and discussed evaluation procedures. Regular monitoring and evaluation

proceeded beyond expectations. PAC met on five occasions during year 2. Two external evaluations were conducted; they addressed project needs and accomplishments.

Problems Encountered and Responses Adopted

A major problem affecting all project objectives is the short-term nature of the UDLP grant. In 1 March 1993 testimony presented on behalf of NASULGC, to the Subcommittee on Foreign Operations, Export Financing, and Related Programs of the Committee on Appropriations, U.S. House Representative, J. Dean Jansma of Pennsylvania State University, pointed out that, in order to be sustainable, "future U.S. development assistance programs need to recognize explicitly that development is a long-term effort." In an article entitled "A New Foreign Assistance Paradigm Linking U.S. Global and Domestic Interests" (a synthesis of 1/7/93 paper entitled "Multilateral Economic Regeneration/Development Cooperation: A New Paradigm for Change"), Preston LaTerny of the International Agricultural Program at the University of Arkansas articulates what is widely recognized in the technical assistance/development community: "Development assistance contracts are typically let by USAID for five years. The university/NGO/PVO community has consistently urged that USAID increase the nominal contract period to ten to twenty years (subject to performance safeguards) to forge sustainable links among institutions and enduring development momentum in host-countries."

Short-course logistics continued to cause concern. The principal issues involved venue, dates, clientele, and course content. On occasion, advance arrangements by UCB have not been sufficient. In other cases, UM faculty have encountered changes in their schedules which have precluded travel to Belize during the anticipated time period. Several approaches to overcoming these problems were introduced. Co-sponsorship by a Belizean organization working with UCB's DERO helped with logistics as well as with clientele identification and recruitment. Better advance planning by UCB is needed. This is part of the institutionalization process. Sharon Alexander's year-three staff attachment at UCB is expected to address these issues and to provide specific suggestions for operational improvement.

Dr. Richard Solberg's presence at UCB during the first semester of the 1992-93 academic year was a great asset in facilitating cooperation and coordination between UM and UCB. He prepared and submitted a model trip report to A.I.D. The appointment of Mr. Mustafa Touré as Development and External Relations Officer and Project Officer on the UCB-UM grant, with a direct reporting line to UCB's President, has improved UCB's responsiveness to project obligations. As a result, the UDLP project is functioning more efficiently and smoothly.

The problem of receipts substantiating UCB expenditures under the grant and the lack of matching-fund reports has been addressed. The new Project Officer at UCB, Mr. Mustafa Touré, compiled direct-cost receipts corresponding to the first installment of the subcontract for Year One. After they were received, verified, and accepted, UM released the second installment to UCB. UCB sent UM direct cost receipts for

expenditures through the third quarter of year 2; UM subsequently made two subcontract installments from the year 2 budget to their account in Belize. UCB worked on a revised cost-match proposal that will provide the required match in full. Matters concerning accounting at UCB, both for direct costs and matching funds, now look promising.

The PEC reviewed and endorsed project-management changes at UCB and the need for UCB monthly reporting on project activities and accomplishments.

The proposed Associate Degree program in natural-resource management at Belmopan is a major new development indicating UCB's commitment to the goals of the project. In general, the project co-directors found the suggested Associate Degree approach sensible and realistic in terms of higher education in the natural-resource management area in the Belize context.

It now appears that Vincent Palacio's coursework and qualifying exams may not be completed at the end of two years. He is likely to need to stay at The University of Montana for an additional semester. Due to funding constraints, this delay will limit the next UCB faculty member on exchange at UM to studies leading to a master's degree that can be completed in a year and a half.

There has been an absence of adequate mechanisms for information sharing about the project among faculty members at UCB. On the other hand, UCB faculty need to develop a greater appreciation of the importance of university involvement in development activities that benefit Belize and their own potential role in such endeavors. In particular, it would be useful to increase the involvement of Education faculty in outreach activity. The resolution to include UCB deans on the Project Advisory Committee will involve UCB academics more fully in the linkage project, keep UCB faculty better informed, and promote institutionalization objectives.

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, including (1) exploring possibilities for flexible scheduling for exchangees or for semester-length courses at UCB co-taught by two UM faculty; and (2) enhanced recruitment efforts. Prospects are bright for filling these slots with outstanding UM faculty in future years.

Progress Toward Ensuring the Sustainability of the Linkage

Co-director Koehn held discussions with international donor agencies regarding ways in which UM and UCB could sustain their association beyond the duration of the current project.

In an effort to help sustain UM's overseas internships, co-director Koehn commenced work on grant proposals soliciting external funding. Peer reviewers rated favorably both of the OIP's grant proposals. However, neither proposal secured funding in stiff competition.

The co-directors view moves by UCB to adopt a calendar, administrative structure, and academic policies that are modelled to a considerable extent on those in existence at the University of Montana as developments that will facilitate long-term sustainability of the linkage between the two institutions. It also is also most encouraging that, in his unsolicited November 1992 letter to President George Dennison, President Angel Cal of UCB wrote that "our University Linkages Program in the field of Natural Resources Management represents a tangible example of bilateral cooperation needed for the 21st century."

UM is actively participating in Consortium for Belize Educational Cooperation (COBEC) meetings.

UCB is considering building a housing unit for visiting faculty from abroad. UM will consider a proposal raised at the February COBEC meeting that faculty exchanges be sustained through the following type of arrangement: UCB provides free housing and local transport, the U.S. university provides the exchangee's salary for one semester, and the faculty member or the U.S. university provides international travel.

Belize has been designated as a center of excellence for a fisheries-management project. The Global Environmental Facility (GEF) designated the preservation of Belize's barrier reef of global significance under its biodiversity section. The on-going effort is to define ways of protecting the barrier reef; the Smithsonian Institution along with two other groups are interested in participating. UM and UCB are moving jointly to contribute.

According to President Cal, UCB will introduce an Associate Degree in natural resource management at its Belmopan campus. Its principal student body would be Government of Belize officials who would study on a part-time basis while continuing to be employed. If the program meets local needs and generates sufficient demand, UCB plans to consider adding a bachelor's degree in natural-resource management at a later date. At that time, there would be a cohort of students trained at the Associate Degree level who could then receive an additional two years of education at the Belize City campus. UCB's current plans are to have three faculty members teaching in this program at the Belmopan campus.

Tighter integration of UCB faculty into DERO activities is important for the long-term sustainability of natural-resource management educational activity at UCB. Broad faculty participation in planning and offering UDLP short courses is likely to generate increased support for project objectives. Faculty involvement and support also enhances prospects for continuation of UCB's natural-resource management efforts.

UCB has moved to develop its research capability and, thereby, to improve opportunities for collaboration among faculty at UCB and UM. The UCB faculty is now more fully aware of the collaborative research component of the project. This is an appropriate avenue for creating sustained collaboration between the two universities.

UCB has stated an interest in working as a partner with the business community of Belize, and to help in the overall strategy for the development of Belize's resources. Concomitantly, BCES has included UCB in its EIA training program. The Belize Center for Environmental Studies (BCES) is embarking on a one year Environmental Impact Assessment (EIA) Training Program. UCB agreed to collaborate with BCES in offering an EIA short course in response to the BCES proposal to conduct a joint training program with UCB. UCB's capacity in this area, in part, is an outgrowth of Professor Tom Nimlos' short course on EIA. The new EIA training course commenced in September 1993. The course is designed for personnel from the Government of Belize, NGOs, and others from the private sector with needs for such training.

Joe Whittinghill, Major Gift/Campaign Coordinator at the University of Montana Foundation, met with Mustafa Touré and two members of UCB's Board to discuss foundation organization, fund-raising programs, funding needs, and fund-raising costs. This initial meeting and linkage between the UM Foundation and UCB promises to be of considerable benefit in assisting UCB develop the resource base for sustaining activities initiated under the UDLP over the long term.

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 the UDLP 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.

Two new Belizean students are studying Resource Management and Conservation Biology at UM 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.

Assessment of the Impact of the Linkage on Internationalization of UM and LCNF

The linkage with UCB has provided an impetus for new strides in internationalization at The University of Montana. UM President George Dennison is dedicated to increasing internationalization and international opportunities for faculty, staff, and students. Four professors in the School of Forestry have introduced Belize-related material in regularly offered courses. The International Committee at UM meets regularly to review the international curriculum and to discuss international linkages and exchange opportunities for faculty, staff, and students. OIP is working on a data base of faculty and staff with international experience in order to increase these opportunities.

Substantial progress has been made in internationalization of LCNF (see attached memorandum).

Over the last year, there has been growing faculty interest in tropical natural-resource management. Also, an increasing number of courses with international content have been taught by UM faculty -- including Belize-specific material introduced by faculty who have participated in the linkage. There has been an increase in the number of UM students interested in the International Resource Management undergraduate specialization. As a result of the linkage and visits by Belizeans to Missoula, there is an increased awareness about Belize on the UM campus and throughout the entire community. The Partnership as a whole has enhanced the national reputation of The University of Montana, the Office of International Programs, and the Forestry School in the international development area. Certainly, UM's UDLP with UCB played a role in the favorable (more than three-fourths) July 1993 CID Board of Trustees vote on UM's application to join the Consortium for International Development. Membership in CID will greatly expand the technical- assistance professional opportunities available to UM faculty on development projects.

Assessment of the Impact of the Linkage on Strengthening Linkage Partner's Institutional Capabilities to Meet its Societal Needs

In two areas, the project has strengthened UCB's capabilities to meet societal needs in Belize: (1) course and curriculum development; including the ability to sponsor EIA courses which provide Belizeans with the skills to assure sustainable development by properly assessing and formulating ecologically sensitive projects and assisting in the development of a natural-resource management Associate Degree program; and (2) outreach; through links with project PAC members in both the public and non-governmental sectors, UCB's DERO has developed a number of initiatives aimed at raising public awareness of natural-resource management and sustainable-development issues by hosting seminars, symposia, and lectures by visiting scientists.

Quantitative Outputs of the Linkage Activities

- o Short courses - UM 3, UCB 2
 - Environmental Impact Assessment - 15 attended
 - Rural and Municipal Solid Waste Management - 16 Public Health Inspectors attended
 - Forest Silviculture - 16 attended
 - Wildlife Research Methodology - 30 attended
 - National Environmental Education Conference - 18 attended

- o LCNF Firefighting Training Course
 - Phase 1 - 2 LCNF fire specialists conducted needs assessment
 - Phase 2 - 2 FDB officials came to Montana for consultation

 - Phase 3 - Firefighter Training Course - 25 Belizean foresters attended
 - Phase 4 - 2 LCNF instructors evaluated course effectiveness in Belize

- o Staff exchanges - UM 1, UCB 2

- o Faculty exchanges - UM 1, UCB 1 [Vincent Palacio]

- o Collaborative research projects - 1 on-going

- o Field practicum - 10 days - 5 UM participants, 5 Belizean participants

- o UM internships - 3, successfully completed

- o Substantial new content based on Belize has been incorporated into at least 3 regularly taught UM courses.

- o Two news articles and four television news reports/interviews by Belizean media.

11.6.(a) and (b) Requirement

This annual report outlines the objectives and activities of the UM-UCB linkage and the results achieved after two full workplan years. During the second year, funds to meet project expenses have been used wisely and conservatively to accomplish the goals and objectives set out in the Year 2 Workplan. Purchases for the purpose of the linkage for UM and under subcontract with UCB were based on and made according to USAID guidelines for project purchases. All travel to Belize was made under U.S. flagship carriers whenever available. Supply purchases at UM were made from U.S. corporations.

The recipient did not utilize funds provided by A.I.D. for any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference, or training in connection with the growth or production in countries other than the United States of an agricultural commodity for export which would compete with a similar commodity grown or produced in the United States.

Spin-off Benefits

We have added this section in order to highlight spin-off developments that have benefitted Belize and Belizeans and have been professionally meaningful to members of the UM community as a direct result of the UDLP project.

Jane Solberg, an audiologist, accompanied her husband, Dr. Richard Solberg, to Belize. For nearly four months, she volunteered her expert services at Stella Maris School, a special education school, and at other Belizean schools. She trained local professionals in modern techniques of speech therapy and correcting learning disabilities. Mrs. Solberg worked with approximately eighty disabled students, their parents and relatives. She attempted to locate needed equipment and supplies for donation to Belize. During her stay, Mrs. Solberg made a televised appearance on work with learning-disabled children.

Through the initiative of co-directors Koehn and Siebert, UM admitted three Belizean USAID mission-sponsored students. Two are completed undergraduate degrees in Resource Conservation in the School of Forestry, one is completing an undergraduate degree in Wildlife Biology. These admissions are included in this report as an indication of interest in UM programs among younger Belizeans studying in

environmental and natural-resource fields who are potential UCB faculty and short-course instructors and as an indication of internationalization of the UM student body.

Adrienne Corti, Program Manager of the Campus Recreation Department at UM, accompanied Dan to Belize and presented a lecture on Personal Wellness American-style. The lecture introduced faculty and staff at UCB to the definition of wellness and how it is implemented in the U.S. She included misnomers of the American advertising industry regarding health claims. Personal wellness includes five dimensions: 1) self-responsibility, 2) nutritional awareness, 3) stress management, 4) physical fitness, and 5) environmental sensitivity.

The School of Pharmacy at The University of Montana acted on UCB President Cal's request for assistance in identifying faculty who could teach pharmacy classes on a temporary basis during the 1993-94 academic year at UCB. The UM Pharmacy School was able to help President Cal by suggesting that he recruit from the American Association of Retired Persons. The University of Montana also advertised the UCB opportunity widely. Both Dean Dave Forbes of the School of Pharmacy and Professor Russ Medora provided advice and assistance.

An Environmental Education Task Force held in Belize in June continued the work which began at the Environmental Education Workshop. The Task Force demonstrates initiative by UCB and recognition by other sectors of UCB's growing role in this area. The meeting covered an update on the appointment of a coordinator, follow-up to the Environmental Education Workshop, and coordination of new environmental-education initiatives in Belize.

ACRONYMS

BCES	Belize Center for Environmental Studies
BJC	Belmopan Junior College
COBEC	Consortium for Belize Educational Cooperation
DERO	Development and External Relations Office
EIA	Environmental Impact Assessment
FDB	Forestry Department of Belize
GEF	Global Environmental Facility

GOB	Government of Belize
IRM	International Resource Management
LCNF	Lewis and Clark National Forest
MOA	Ministry of Agriculture
MOH	Ministry of Health
NGO	Non-governmental Organization
OIP	Office of International Programs
PAC	Project Advisory Committee
PACA	Proyecto Ambiental de Centroamérica
PEC	Project Executive Committee
PAHO	Pan-American Health Organization
PVO	Private Voluntary Organization
UDLP	University Development Linkage Project
UDP	United Democratic Party

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APPENDIX

**LEWIS AND CLARK NATIONAL FOREST - BELIZE PARTNERSHIP
ANNUAL REPORT**

**By
SETH DIAMOND**

**For
INTERNATIONAL FORESTRY
WASHINGTON, D.C.**

**LEWIS AND CLARK NATIONAL FOREST
USDA, FOREST SERVICE**

June 1993



BACKGROUND

The Lewis and Clark National Forest (LCNF) entered into a long-term partnership with Belizean land managers and educators in October 1991. The goals of this program are to provide a formal channel for exchanging natural resource expertise and enrich the capabilities of LCNF and Belizean personnel.

LCNF has developed two collaborative avenues to achieve these goals: 1) a Partner Forest relationship with the Forestry Department of Belize (FDB), and 2) a formal tie with the University of Montana (UM) in a University Development Linkage Project with the University College of Belize (UCB).

The LCNF-FDB partnership was formalized in a Memorandum of Cooperation signed on December 23, 1991. This Partner Forest relationship was designed to enhance natural resource skills by exchanging information between field-level practitioners. Technical training is a major focus of this relationship.

The LCNF-UM partnership was formalized in a Memorandum of Cooperation signed on July 5, 1991. LCNF's role in the university linkage project is to provide a "management" perspective for natural resource training courses led by UM. The university linkage project is a 5-year institution-building program that received a \$500,000 grant from USAID in 1991. UM uses these funds to sponsor Belizean graduate students and deliver natural resource short courses in Belize. Collaborators in the university linkage project include Belizean government ministries, World Wildlife Fund, Belize Center for Environmental Studies, Belize Audubon Society and Programme for Belize.

REPORT OVERVIEW

This report covers all project activities between January 1, 1992 and April 30, 1993. The first section focuses on the LCNF-FDB Partner Forest relationship. This discussion is followed by a description of LCNF activities related to the university linkage project.



Foresters in Montana and the Central American country of Belize will be helping one another under an agreement signed by Earl Green, right, chief of Belize's forestry department, and Dale Gorman, supervisor of the Lewis and Clark National Forest.

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 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. Firefighter 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 firefighter 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.

These 4 phases were completed between April 5, 1991 and April 12, 1992. LCNF provided funds to cover its personnel and overhead costs. Travel funds for both LCNF and FDB personnel were provided by the Forest Service's Tropical Forestry Program (see Appendix A for itemized expenditures).

Phase 1: Needs Assessment

A needs assessment was a vital first step to tailor a firefighter training course to FDB's technological and institutional capabilities. Two LCNF fire specialists (District Ranger Jerry Dornbrovske and Fire Management Officer Roger Steerman) assessed FDB's fire training needs in Belize between April 5 and April 19, 1991.

After reviewing the assessment's objectives with FDB's Chief Forest Officer and Principal Conservation Forester, the LCNF team was taken to the Mountain Pine Ridge Reserve. This 250,000 acre

reserve produces most of FDB's commercial sawtimber and is subject to frequent lightning and human-caused fires. The LCNF team visited fire-related facilities and past burns. Two firestarts were investigated during their first day at Mountain Pine Ridge. One start escalated to an 80-acre fire. This incident enabled the LCNF team to observe fire suppression tactics, safety techniques, fire behavior, and crew organization. Weather readings were taken to determine if Forest Service nomograms could be used in Belizean fuel types.

During their 12 days in Belize, the LCNF team were escorted by FDB officials to almost all of Belize's major Forest Reserves. Tours of the Southern Coastal Plain, upland pine forests, and northern hardwood forests allowed a comprehensive assessment of FDB's fire management program. Historic and recent burns were observed. At each of the reserves the LCNF team addressed crew organization, fire detection, fireline tactics, safety, initial attack capabilities, current training, fire equipment, and communications. During evenings and weekends, past fire reports and weather data were reviewed. The needs assessment identified assets and opportunities in FDB's fire suppression program.

Assets

- Effective use of graders to construct fireline.
- Effective vegetation clearing techniques with machetes.
- Backburns extensively used.
- Desire to enhance suppression tactics.
- Desire to develop a prescribed burn program.
- Desire to improve firefighter safety.

Opportunities for Improvement

- Few safety precautions taken when fighting wildfires.
- No fire organization other than a fire boss.
- No radio communication between crew members.
- No suppression plans discussed or prepared.
- Reluctance to directly attack fires.
- No hand tools (e.g. pulaskis) to build fireline behind machetes.
- No fire safety equipment – Nomex clothing, fire shelters, etc.
- Backburning is not coordinated with fire attack efforts.
- No ignition patterns used during backburns.
- Inefficient use of firefighting personnel.
- Weather information is not incorporated into fire suppression tactics.
- No firefighter training.

Supply Shipment

LCNF shipped surplus fire hand tools and safety gear to FDB in December 1992. Shipping expenses were paid by the USAID office in Belize. The objective of this shipment was to provide firefighter training attendees with the necessary equipment and clothing for successful course completion. All fire tools and safety equipment remained in Belize.

Fire Supplies Shipped to FDB

30 fire shelters	30 fire fieldpacks
30 pairs Nomex pants	10 pulaskis
20 Combi tools	30 shovels
30 Nomex shirts	24 swatters
32 pairs leather gloves	

Phase 2: FDB Exposure to FS Fire Management

Two FDB officials, Oswaldo Sabido (Principal Forest Officer) and Glynnis Castellano (Administrative Officer) spent 2 weeks in Montana (August 4-15) to gain exposure to Forest Service fire management. The objective of this trip was to provide FDB an opportunity to determine which management practices should be included in the firefighter training course.

Initially, the FDB team was briefed on how LCNF was organized. Tours of the dispatch office and fire cache in the Supervisors Office were conducted. The next 5 days were spent on LCNF Districts. Fire detection methods were reviewed at a wilderness and non-wilderness lookouts. District fire planning, including prescribed burns were discussed extensively. Wilderness fire management was a major topic. Recent large wildfires were visited and the FDB team were briefed on burn patterns and suppression activities. Differences between National Parks Service and Forest Service fire management strategies were reviewed at Glacier National Park.

After visiting LCNF Districts, the FDB team were taken to Helena and Missoula to review and discuss regional fire management programs. At the Interagency Dispatch Center in Helena collaboration between local, state, and federal firefighters was described. The Missoula visit began with tours of the Intermountain Research Station's Fire Laboratory, Smokejumper base, Regional Fire Warehouse, and Regional Dispatch Center. Training opportunities were later discussed at the Northern Region's Fire Training Center.

The FDB-LCNF fire training program was presented to the Deputy Regional Forester. At the Missoula Technology Development Center, fire tool innovations were discussed. Urban interface fire tactics were presented by the Lolo NF. The site visit's final item was a day-long meeting focused on collaborative opportunities with UM professors.

Phase 3: Firefighter Training Course Delivery

The Wildland Fire Behavior and Suppression course was delivered by LCNF fire specialists Brad McBratney and Jess Secrest between January 24 and February 5, 1993. The course was delivered at the Mountain Pine Ridge Forest Reserve in Belize.

The course's clientele were primarily FDB Forest guards. In addition, course attendees included FDB's Principal Forest Officer, two Belize Meteorological Service weather specialists, two Belize Defense Force officers, one Belize City Fire Department firefighter, and an ecologist from the NGO, Programme for Belize. Total enrollment was 25.

The course was taught in 9 days and covered 1) fire behavior, 2) basic fire suppression tactics, 3) water handling, and 4) fire organization.

Fire behavior was the most lengthy component of the course, lasting 4½ days. Topics included the fire environment, fuels classification, topographic effects, fuel moisture, temperature-moisture relationships, wind effects, extreme fire behavior, and atmospheric conditions. The meteorological service weather specialists were able to provide excellent information on local weather patterns for this portion of the course. A unit test concluded this section. The average score was 83%.

Two days were spent on fire suppression tactics. Handline construction principals and methods, initial attack assessments, tool use, mop-up, and safety were addressed in the classroom and field. Course attendees considered the safety component particularly valuable.

The water handling section of the course generated much interest. The instructors addressed inexpensive foam preparation, applications for different pumps, and water use in mop-up and initial attack. Most of this section was taught via field demonstration.

LCNF instructors presented the Forest Service's "Large Fire Organization" as a potential model for facilitating inter-reserve and inter-agency cooperation when suppressing fires. Currently, fire organizations vary within each Forest Reserve.



Lewis and Clark Forest employees, Jess Secrest and Brad McBratney, with graduating participants.

Of the 25 participants, 23 successfully completed the course. Each graduate received a Wildland Fire Behavior and Suppression course certificate.



Lewis and Clark Forest employee, Jess Secrest, showing class in Belize how to use foam made from dish soap.

All participants rated the course excellent or good on evaluation forms. They stressed the practical value of this course and requested similar short-courses in the future. The only shortcoming identified was that there was insufficient time to fully explore all the material. Sending course notebooks prior to instruction was a streamlining recommendation. Several participants also recommended more practical exercises. Instructors were given excellent reviews and were commended for their openness, knowledge, and teaching skills.

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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 Secret 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

Environmental Impact Assessment Course

At the request of UCB, UM and LCNF developed an Environmental Impacts Assessment short course to provide natural resource professionals an overview of the environmental assessment process. The course was delivered at the Belize Center for Environmental Studies in Belize City from February 22 to 25, 1993 and co-sponsored by UCB.

The course was developed and taught by LCNF Planning Staff Officer, Dick Smith and UM Soils Professor, Tom Nimlos. Thirteen students (hydrologists, engineers, biologists, physical scientists, meteorologists, mangrove manager, public health officer, university administrator, and deputy mayor)

attended the course. The clientele were employed by a diverse array of organizations that included engineering firms, hydrological consultants, biological consultants, environmental NGOs, local government, UCB, Forestry Department of Belize, Belize Meteorological Service, and the Public Health Bureau. All students either write, evaluate, or provide input to environmental impact assessments.



UM soil professor Tom Nimlos discussing the effects of cleaning San Pedro Sewage and Water project.

The course was designed to expose the clientele to principles and processes associated with writing and reviewing environmental assessments. The recently passed Belize Environmental Protection Act (12/92) and the Ministry of Tourism and the Environment's environmental effects checklist were incorporated into the course. A course notebook was developed that included the latest environmental analysis publications. Materials included the UN Environmental Assessment procedures, EPA procedures manual, Belize Tourism Policy, an Affected Environment checklist, a sample impact assessment, a glossary, and reference list.

Three classroom days were spent discussing proposed actions, scoping, public involvement, the affected environment, effects analysis, mitigation, and monitoring. A copy of Belize's first Environmental Assessment, the San Pedro Sewage and Water EA, was used as a case study. A one day on-site review of the sewage EA concluded the course. A mitigation assignment related to

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this EA was completed by course participants. All participants received a certificate of course completion.

A 7-question course evaluation was completed by 8 students. All students gave an excellent or good rating to these questions. Students stated that the "hands-on" approach and field exercises made the EIA process easy to understand and implement.

Smith and Nimlos' final day was spent reviewing course evaluations and assessing natural resource curriculum needs with UCB.

Student Internship

During the winter and spring of 1993, plans were finalized for a summer internship on the LCNF for Vincent Palacio, a Belizean PhD student at UM. Palacio is funded through the USAID linkage project and is writing a dissertation on tourism management in Belize. Between June 1 and August 15, Palacio will be exposed to all facets of Forest and District-level management.