

Earthwatch
Institute engages
people worldwide
in scientific field
research and
education to
promote the
understanding
and action
necessary for
a sustainable
environment.

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www.earthwatch.org
800-776-0188

Executive Summary

Earthwatch Institute (EW) and Conservation International Brazil (CI) held their first joint Workshop of Pantanal Researchers in Campo Grande, 6-8 June, 2003. There were over thirty participants representing numerous NGOs, government agencies, and universities. Sixteen researchers presented their work to date in the southern Pantanal. The objectives of the workshop were to present and learn about the current research at the Pantanal Conservation Research Initiative based at the Fazenda Rio Negro (Mato Grosso do Sul). Besides the oral presentations, researchers also presented a written summary of their research objectives, methods, and how their results can be applied to CI's proposed Cerrado-Pantanal Corridor project. Discussion ensued about how to improve the data base for CI's Corridor project, as well as new areas to be surveyed, and information gaps needed to complete the data base. Results of EW's educational and professional fellowships were also presented, and both EW and CI acknowledged the importance of the fellowships for CI's environmental education goals.

Workshop Objectives and Format

The workshop had three primary objectives:

1. Present data/research conducted in the Pantanal (Mato Grosso do Sul);
2. Learn about Conservation International's database format that uses species occurrence and associated environmental measurements for CI Corridor project; and
3. Identify information gaps and standardize methods for conservation research.

Pantanal Researchers presented their results in a written format and gave a 15 minute oral presentation.

Day 01 - June 9th - Opening Presentations

The following CI and EW representatives addressed the workshop:

Monica Harris, *CI - Cerrado Pantanal Corridor Coordinator*
Reinaldo Lourival, *CI Senior Regional Director - Pantanal*
Mark Chandler, *EW Conservation Director*
Don Eaton, *CRI Pantanal Co-field Director*
Ricardo B. Machado, *CI*

Reinaldo Lourival *Corridor Project of the Pantanal - tool for conservation of biodiversity*

The objectives of the workshop are to:

- ◆ understand what each researcher is doing and the status of their studies,
- ◆ understand what are the expectations of both CI and EW for each project in the long run,
- ◆ establish conservation strategies and a common electronic database, and
- ◆ elaborate and to increase our partnerships with other scientific institutions such as Uniderp, UFMS and Embrapa.



The search for qualified researchers is an effort of all the institutions working in the region. It is necessary to use the scientific information generated by these research programmes to help the Ecological Corridor Program.

Mark Chandler *Conservation Research Initiatives at Earthwatch*

Earthwatch seeks to support scientific field research and involve the general public in science and education. EW believes that a more educated public that is better informed on conservation issues, together with stakeholders participation, social and economic factors, and better politics, will enable the public to implement ecologically sound decisions, which, in turn, will allow for a sustainable future.

Fellowship programs at EW involve different segments of society: educators, students, conservation professionals, corporate employees, local community members, and under-represented future leaders (people who do not have access to information).

Volunteers support is both economical and needed for field work.

Conservation Research Initiatives involve multiple projects at one location. The main goal is to transform scientific data into tools for conservation plans.

First step: to determine global conservation priorities

Second step: establish partnerships – and through them, EW establishes CRIs. There are two main goals supporting this step:

1. Research priorities (core research projects, monitoring, the support local researchers)
2. Education and engagement priorities (fellowship programs)

Strategic plans are developed based on partner input, and include discussion of:

- ◆ Ecological and human context
- ◆ Conservation targets
- ◆ Stakeholders assessment
- ◆ Goals
- ◆ Conservation capacity
- ◆ Conservation strategies and actions
- ◆ Project support
- ◆ Fellowships
- ◆ Workshops, seminars, publications

To date, EW operates under the following lessons learned. Conservation must:

- ◆ Involve local people
- ◆ Address sustainable livelihoods and self determination of people
- ◆ Assist with critical constituencies (young professionals community leaders)

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EW and CI have been working in the Pantanal CRI since 2000. In 2003, approximately 230 volunteers have participated on 7 research projects at the Fazenda Rio Negro, Pantanal.

Some of the participants that benefited from fellowship programs at the Pantanal CRI include:

- ◆ SEMA
- ◆ IBAMA
- ◆ Firemen
- ◆ RIO TINTO
- ◆ Conservation agencies
- ◆ NGO's

Ricardo B. Machado *CI Research Program Concerning the Cerrado*

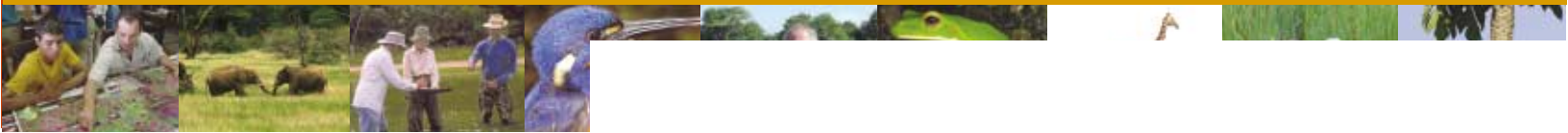
1. Open discussion with the researchers and CI about the database, brought up concerns relating to non-published data

2. To create a database for the species program, the following steps will be undertaken:

- A. Data compilation and organization
 - ◆ Develop and keep a data management system for fauna and flora species occurrence;
 - ◆ Organize and keep a collection on technical information on biodiversity;
 - ◆ To promote the integration of this information database with other systems in order to strengthen partnerships;
- B. Surveys and field studies
 - ◆ To develop studies on the biology and ecology of fauna and flora species from the Cerrado, with special interest on taxa that are of conservation concern;
 - ◆ To carry out short-term surveys on lesser known areas.
- C. Analysis of representation at different scales
 - ◆ To elaborate the analysis of species potential distribution to identify areas of great biological importance;
 - ◆ To analyze the efficiency of the group of conservation units in order to define a system of conservation units; and
 - ◆ To identify priority areas for conservation.
- D. Design of management plans for species that are threatened with extinction
 - ◆ To develop studies to evaluate the conservation status and the anthropogenic pressures on populations of threatened species;
 - ◆ To elaborate a management/conservation plan for threatened species;
 - ◆ To promote management actions and protection for populations of threatened species.

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- E. Species and communities monitoring
 - ◆ To develop/improve methodologies to monitor species and communities;
 - ◆ To implement standardized protocols to monitor species and communities in areas of special interest.

- F. Training and capacity building of undergraduate and graduate students
 - ◆ To stimulate and strengthen technical groups with emphasis on studies concerning biodiversity, conservation biology and landscape ecology;
 - ◆ To promote training and capacity build groups and researchers able to carry out rapid surveys, monitoring and integrated analysis of data.

NEXT STEPS

- ◆ To continue supporting research;
- ◆ To organize database; and
- ◆ To implement the monitoring system: locally – on specific areas and regionally – for specific groups

3. Ecological Corridor Monitoring

A. Regional Level

- ◆ Landscape use (species movements)
- ◆ Procedures

B. Local level

- ◆ Long-term monitoring (in order to detect community-level fluctuations)

4. Species and Communities Monitoring Goals:

- ◆ To follow the effectiveness of conservation actions employed at teh corridor area;
- ◆ To ceat a research network with comparable standardized protocols; and
- ◆ To adjust the planning of conservation based on the bias observed from monitoring data.

5. Database

Actual Status

- ◆ Catalogue species
- ◆ Review of data on UC's (Conservation Units)
- ◆ Incorporate data from CI sponsored projects
- ◆ Bibliographical review on taxanomic groups
- ◆ Improvement on specific models (restricted accessm, data security)

NEXT STEPS

- ◆ Species conservation goals:
 - Stable populations or overcoming threat
 - No loss of biodiversity
- ◆ To implement the ecological corridor goals:
 - Corridor statification
 - Redesign the landscape

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- Increase the size of protected areas
- ◆ Local participation goals:
 - Use of more appropriate techniques in production areas
 - Develop ways to maintain legal reserves

FINAL CONSIDERATIONS

- ◆ What data are being collected and what is their quality?
- ◆ What has each researcher been doing ?
- ◆ Make data available more generally available
- ◆ Detect where there is lack of information and complement with future studies
- ◆ What is the impact of such research on ecotourism and cattle raising activities?
- ◆ To establish a deadline for the publication of data

Research Presentations

1. Dinâmica de avifauna e Diversidade de Habitats no Pantanal do Rio Negro (Aquidauana, MS) – **Reginaldo Donatelli** (EW-supported – PI)
2. The response of peccaries and feral pigs to seasonal fluctuations in the Pantanal - **Alexine Keuroghlian** (EW-supported – PI)
3. Use of wildlife species to establish ecological sustainability indicators for the Pantanal wetland - **Walfrido Tomas** (Embrapa)
4. Ariranhas e Lontras no Rio Negro - **Helen Waldemarin** (EW-supported – PI)
5. Distribution of tree species and aerial biomass estimates in areas of Cerradão in the Pantanal of Nhecolândia, Mato Grosso do Sul - **Susana Salis** (Embrapa)
6. Jaguar Population Ecology in a Seasonal Flooded Environment and a Cerrado Reserve - **Leandro Silveira** (EW-supported – PI) Jaguar Conservation Fund
7. White-lipped Peccaries at Parque Nacional das Emas - Jaguar Conservation Fund-**Anah Jacomo**
8. Conservation of freshwater invertebrates, fishes, and habitats in the Pantanal - **Donald Eaton** (EW-supported – PI)
9. Bat assemblage in the Rio Negro region: species richness, diversity, food sources and associated ecto-parasites - **Erich Fisher, Andrea Araujo & George Camargo** ((EW-supported – PI) UFMS – Campo Grande)
10. Hyacinth Macaw project - **Neiva Guedes** - UNIDERP
11. Fruits and frugivores of the Pantanal – Fazenda Rio Negro - **Camila Donatti** ((EW-supported – PI), IBC)

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Day 02 - June 10th - Research Presentations Continued

1. Wildlife health and small mammals - **Paulo Sérgio D'Andrea, Heitor Herrera & Vitor Rademaker** (FIOCRUZ)
2. Environmental Education program and fellowships at the EW CRIs - **Susan Rauchwerk** (EW Education Director)
3. Environmental Education Component of the Cerrado-Pantanal Corridor Project - **Mariza Silva** – CI-Pantanal Environmental Education Coordinator
4. Brazilian teacher and student fellow experience and how it has been applied to the classroom – **Sandra Bianchi & Elda Ávila** (local schools)
5. Ecotourism impact and research in protected reserves- **Alexandre Prado** - CI Ecotourism coordinator

Group Activity - Identify information gaps and standardize methods for conservation research – Monica Harris and Reinaldo Lourival

GROUP 1:

Mônica Harris, Lysandre Ribeiro, Erika Ribeiro, Alexine Keuroghlian, Ellen Wang, Mark Chandler, Susan Rauchwerk, Suzana Salis, Camila Donatti, Walfrido Thomas, Erich Fisher, Andrea Araújo, Vitor Rademaker, Tatiana Fernandes.

GROUP 2:

Reinaldo Lourival, Tasso Medeiros, Reginaldo Donatelli, Don Eaton, Helen Waldemarin, Mariza Silva, George Camargo, Paulo D'Andrea, Arnaldo Maldonado.

HOW TO OPTIMIZE RESEARCH EFFORTS AT THE FAZENDA RIO NEGRO?

Develop list of common resources to be generated for the Fazenda Rio Negro , Pantanal researchers and other stakeholders (interested parties), to include:

1. Reference collection of plants, with information on date, collection site, collector's name, etc. (responsible: Camilla Donatti). All material collected during field courses should have duplicates, to be deposited in the herbarium; establish a formal agreement with Embrapa. Scan the herbarium plants and make them available on-line (Suzana Salis). Seed banks stored in vials. Collection of dry plants, classified by family. Suzana Salis will identify the plants. Fill out forms; send plants to Campo Grande and CI will send to Embrapa in Corumbá; Need to find room to deposit biological material at Conservation research Initiative.

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- A. Production of field guides of the Rio Negro region (both electronic and hard copies)
 - i. Birds – Donatelli in 2004 – supported by IBC
 - ii. Fruits and seeds – Galleti in 2004? – supported by IBC
 - iii. Bats – Erich Fisher et al.
 - B. Production of species lists (with photos?) for the web
 - i. Birds – Donatelli
 - ii. Plants, fruits, seeds – Galleti Galetti & A. Keuroghlian et al
 - iii. Bats – Erich Fisher et al.
 - iv. Mammals – Galleti and Silveira
 - v. Fish and aquatic invetebrates– Eaton
 - vi. Other?
 1. Need to identify where on web, and who maintains species lists, timeline
 2. How to add layer of habitats, i.e. cerradão, salinas, river, etc.
 - C. Maps – e.g. Don Eaton's geo-referenced Fazenda Rio Negro map –
 - i. Copy available at Fazenda, should it go on the web and elsewhere ?
 - ii. Should it be the standard geo-referenced map to use for all collections/records at Fazenda
2. Discussed developing a common databank for CI and Cerrado/Pantanal corridor project
 - A. Discussed data sharing procedures, for example send information to CI to be published on its website.
 3. Discussed Laboratory waste

Researchers producing toxic waste should be responsible to send it to Campo Grande to be disposed as hospital material; gather information on possibility of burning waste at Embrapa; appropriate cardboard boxes for the laboratory.
 4. Generate Monthly updates for distribution to EW and CI staff to identify activities happening at Fazenda (research - Alexine, educational - Mariza, other –Tasso).
 5. Discussed the need for more interchange of information among the projects in order to document the activities proposed with clear definition of goals and tasks. For example, establish standardized protocols for data collection including the overlap of sampling sites to gather more data.
 6. Define research sites to evaluate the efforts in data collection.
 7. There is a need for formal authorization to remove any material collected at the Fazenda Rio Negro, acknowledged by CI and EW

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8. For each sample that is removed from the farm, one duplicate (or a representative sub-sample) must be deposited in a well-known collection. Numbers must be agreed to by CI. For example, fish specimens are deposited in the zoological collection of UFMS and if it requires identification, it should be sent to the National Museum, Rio de Janeiro.
9. Include acknowledgements and/or mention field assistants or locals in publications to present the projects to the workers of the Fazenda Rio Negro.
10. All written reports sent to EW and SEMA should also be addressed to the Conservation International/Pantanal and vice-versa. Material collected should be mentioned in the reports.
11. Evaluation of projects - A scientific board with representatives of CI & EW and invited professionals will evaluate these projects. Earthwatch projects are evaluated every 4 years – and undergo a scientific evaluation - check procedure.
12. To establish regular meetings for the presentation of results and sharing of experience.
13. Resident researchers or field assistants should have a formal contract.
14. Information to be passed along for the tourists about CI and EW: focus on the Ecological Corridor Project. The HOTSPOTS video and about the Corridor should be showed to all visitors. The manager (Tasso) should include information on CI, the farm and the partnership with EW on the introductory talk to the visitors – Alexine and Tasso - already in action.

WHAT RESEARCH COULD BE EXTENDED TO THE ECOLOGICAL CORRIDOR PROJECT ? Surveys on distribution of species in relation of landscape characteristics within and outside the corridor area

1. Create permanent sampling plots (in partnership with the University of Brasilia-UnB);
2. Select indicator species;
3. Partnership with the Post-graduate program from the Federal University of Mato Grosso do Sul (UFMS);
4. Use the UFMS base in the Pantanal;
5. Duration of the survey: 5 years - to provide information on species occurrence
6. To compare data from the ones obtained at the Rio Negro Farm since it has been accumulating a good amount of information;
7. To employ the diversity indices that had been elected by the researchers during the workshop;
8. To use local residents as well as students and workers;

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STEP 1

- ◆ Register presence or absence of species; then, information on abundance

STEP 2

- ◆ Set up a meeting with researchers to define research areas, key-groups (taxa), protocols, costs, partnerships, constraints, schedules, etc.
- ◆ Birds (Coordinator: Reginaldo Donatelli. Collaborators: Adriani Hass, Neiva R. Guedes, José Ragusa, Marco Aurélio Pizo, Eliezer, Maçal, Dalci, Gláucia Seixas)
- ◆ Vegetation (Suzana Salis, Angela Sartore, Arnildo Pott, Vali Pott, Geraldo Damasceno, Katia Nunes, Edna, Fábio Scarano, Camila Donatti, Mauro Galetti)
- ◆ Medium-sized and large mammals (Alexine Keuroghlian, Walfrido M. Tomas, Guilherme M. Mourão, Rodney, Eric Fisher, Milton Caceres, Marcelo, Vitor Rademaker, Ubiratan Piovezan).
- ◆ Herpetology (Jeff Himmelstein, Ellen Wang)
- ◆ Fishes (Agostinho, Debora, Don Eaton, Emiko Resende, Otavio Froelich)
- ◆ Insects
- ◆ Invertebrates (Don Eaton, Onofre)

SITES THAT SHOULD BE SAMPLED:

- ◆ Surroundings of the Alegria and Nhumirim farms
- ◆ Rio Negro farm – and neighbors (IBC and EW) (salinas, capões, cordilheiras)
- ◆ State Park of the Rio Negro (“Babaçual” and “Buritizal”)
- ◆ Swamp on Upper Rio Negro (IPPAN/UNIDERP)
- ◆ Surroundings of “ Lourdes”
- ◆ Surroundings of the mountain chains (“joelho” of the Taquari River)
- ◆ “Serra de Maracajú”

Reminder: It is important to have a sampling design that covers areas of low, medium and high flood of the Negro River.

To facilitate the researchers should work in the following priority sites:

UNIDERP (Swamp at Upper Negro River and “Serra de Maracajú”)

- ◆ CI & EW (To establish a formal contract with UNIDERP; contact José Sabino and Waldir Taddei to check the research status at the UNIDERP base in the Pantanal; to find ways to travel to the base). To establish a partnership with the EW to strengthen the alliance by sharing logistics: classrooms, vehicles, discount in overnight rates, etc. - in process - Alexine

State Park of the Rio Negro

- ◆ To plan the purchase of the park and provide the logistics required for research until mid 2004 allowing the work to begin by early 2005;
- ◆ Prediction of having some logistics ready by late 2003.

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Fazenda Nhumirim (Embrapa)/ Fazenda Alegria

- ◆ Existing data on wetlands, vegetation, fishes, anteaters, small mammals and aerial census.
- ◆ Research to complement database; conduct bibliographic research.

Identify potential areas to work as research base to extend the work to other priority areas

Database

- ◆ Maps of distribution of all species occurring in the corridor
- ◆ Interchange of information among researchers to check the status of all data collected, either published or not
- ◆ Deadline to publish data: 5 or 10 years?

COMMENTS AND SUGGESTIONS FOR FUTURE WORKSHOPS:

1. There was feedback on what a great opportunity it was for others (e.g. EW supported and non-EW supported scientists, EW staff, CI, Pantanal teachers and students, etc.) to hear about EW and CI programs, and all the diversity of projects happening at the Fazenda Rio Negro
2. Everyone wanted to know more about what was happening
3. Broad consensus from researchers and stakeholders about wanting another workshop
 - a. When: some wanted it on a yearly basis, others biannual
 - b. About: either a focus on Rio Negro research or broaden to whole of Pantanal
 - c. Target audience: besides researchers and conservation organizations, other groups suggested to be included are:
 - i. Eco-tour operators, hotels
 - ii. Teachers and students
 - iii. Fellows
 - iv. Government agencies
 - v. Other university researchers
4. The workshop and presentations by scientists demonstrated how researchers investigating a broad range of topics from diverse backgrounds can interact, work together and share research
5. Good exposure on how and why science shared with and engaging the general public produces significant and necessary outcomes for conservation
6. Demonstrated importance of fellowship program for scientists, CRI program and fellows.

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PANTANAL WORKSHOP FEEDBACK AND OUTCOME

1. Discussed common contract between CI, EW and scientists for research at Fazenda, with issue of use of data and when it should become "public"
2. Discussed generating a common scientific review procedure for evaluating projects before they are supported by EW and CI, and periodic review.

(Previous # 3 already discussed above)

3. Identified need to implement new communication pieces

A. annual report to be produced in combination between CI and EW to include all research at Fazenda,

(comment – section on monthly updates included above)

- B. For this communication piece, it should be
- i. produced in both Portuguese and English
 - ii. need to identify roles of EW and CI, timelines, etc.
 - iii. produce both a hard copy and web based pdf copy

4. Produce a report of workshop for distribution to participants

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Workshop Participants

1	Alexandre Prado	Conservation International	a.prado@conservation.org.br
2	Alexine Keuroghlian	Earthwatch Institute	ewrnegro@terra.com.br
3	Anah Jácomo	Fundo Cons Onça pintada	jacomo@procarnivoros.org.br
4	Andrea Araujo	Universidade Federal MS	andreaa@nin.ufms.br
5	Arnaldo Maldonado	Fio Cruz	
6	Camila Donatti	ESALQ/USP	cdonatti@terra.com.br
7	Don Eaton	Univ. of Nevada, Reno, IBC	ewrnegro@terra.com.br
8	Elda Ávila	Professora	lucelda@terra.com.br
9	Ellen Wang	Earthwatch Institute	ellenwang@hotmail.com
10	Erich Fisher	Universidade Federal MS	efischer@nin.ufms.br
11	Erika Guimarães	Conservation International	e.guimaraes@conservation.org.br
12	George Camargo	Universidade Federal MS	gecam@nin.ufms.br
13	Heitor Herrera	Fio Cruz	herrera@ioc.fiocruz.br
14	Helen Waldemarin	Ecolontras	hfrancine@yahoo.com
15	Leandro Silveira	Fundo Cons Onça pintada	l.silveira@jaguar.org.br
16	Lúcia Salsa	UNIDERP	propp@uniderp.br
17	Lysandre Ribeiro	Conservation International	l.ribeiro@conservation.org.br
18	Mariza Silva	Conservation International	m.silva@conservation.org.br
19	Mark Chandler	Earthwatch Institute	mchandler@earthwatch.org
20	Mônica Harris	Conservation International	m.harris@conservation.org.br
21	Neiva Maria Guedes	UNIDERP	projetoararaazul@uol.com.br
22	Reginaldo Donatelli	UNESP- Bauru	rjdonat@uol.com.br
23	Reinaldo Lourival	Conservation International	r.lourival@conservation.org.br
24	Rodrigo Marcondes	CI/Fazenda Rio Negro	marc_mcdscool@hotmail.com
25	Sandra Bianchi	Professora	sandra_bianchi@enersulnet.com.br
26	Suzana Lima	CI/Fazenda Rio Negro	suzana@fazendarionegro.com.br
27	Susan Rauchwerk	Earthwatch Institute	srauchwerk@earthwatch.org
28	Susana Salis	Embrapa	smsalis@cpap.embrapa.br
29	Tasso Medeiros	CI/Fazenda Rio Negro	tasso@fazendarionegro.com.br
30	Tatiana Freitas	Fio Cruz	tatpadua@yahoo.com.br
31	Vitor Rademaker	Fio Cruz	vrademaker@yahoo.com
32	Walfrido Tomas	Embrapa	tomasw@cpap.embrapa.br

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