Title of Proposed Project:

The IABIN Data Integration and Analysis Center (IABIN DIAC)

A Pilot Application for the Integration, Visualization, Sharing and Analysis of IABIN Thematic Network Data

In response to IABIN's 3rd Request for Proposals
for the
Development of Value-Added Tools for Decision-Making

Submitted by:
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November 16, 2009

General Secretariat
Department of Sustainable Development
Organization of American States
1889 F St., N.W.
Washington, D.C. 20006

Luisa Fernanda Neira and Richard M. Huber

The Conservation Biology Institute (CBI) is pleased to submit the following proposal, ***Data Integration and Analysis Center (IABIN DIAC): A Pilot Application for the Integration, Visualization, Sharing and Analysis of IABIN Thematic Network Data***, in response to the 3rd IABIN RFP for the Development of Value-Added Tools for Decision-Making. CBI is requesting $99,833 to build this IABIN DIAC application over a period of 6 months.

With this proposal, CBI is offering the Data Basin to build an initial version of the IABIN Data Integration and Analysis Center (IABIN DIAC). This web based application will be dynamically linked to the IABIN web site and enable the integration, visualization, sharing and analysis of Thematic Network data. This tool will also facilitate the integration of IABIN Thematic Network data into current decision-making processes for environmental, economic, and social issues.

CBI looks forward to this opportunity to help IABIN achieve a higher level of standardization, integration and application of Thematic Network information across Latin America.

Please contact me if there are any questions or points of clarification required with this proposal.

Sincerely,

President and Executive Director

I. Project Summary

To date, IABIN has focused on the development of standardized information within the five Thematic Networks (TNs). Scientists, conservationists, planners and decision makers desperately need to use this type of information while addressing current environmental, economic and social problems. We propose to develop a prototype application, the IABIN Data Integration and Analysis Center (DIAC), to improve the accessibility of TN information for important conservation, development, planning and scientific applications.

The IABIN DIAC will be built on the Data Basin ESRI platform, developed by the Conservation Biology Institute in partnership with ESRI. This prototype will allow users to aggregate TN datasets, integrate TN data with other available information, and to conduct structured data queries. We will carry out a pilot demonstration where TN datasets are both well-developed and compliant with standard data sharing protocols. This project will demonstrate the ability of the emerging technology to increase the value of these data to decision makers through structured data integration, visualization and analysis functions. This demonstration project will help define the blueprint for future management, distribution and application of all TN datasets across Latin America and the Caribbean.

A la fecha, IABIN se ha enfocado en desarrollar la información estandarizada dentro de las cinco Redes Temáticas (RT). Científicos, ecologistas, planificadores y tomadores de decisión requieren usar este tipo de información de manera urgente, a la vez que enfrentan problemas ambientales, económicos y sociales actuales. Proponemos desarrollar una aplicación prototípica (el Centro de Análisis e Integración de Datos IABIN - CAID), para mejorar el acceso a la información de RT para la conservación el desarrollo económico, la planeación y las aplicaciones científicas relevantes.

El CAID IABIN será construido sobre la plataforma de Data Basin-ESRI, desarrollada por el Instituto para la Biología de la Conservación (CBI) en asocio con ESRI. Este prototipo permitirá a los usuarios usar las bases de datos de RT de manera agregada, integrar los datos de RT con otra información disponible, y llevar a cabo análisis de datos de forma estructurada. Realizaremos una demostración piloto en la cual las bases de datos de RT estén bien desarrolladas y cumplan con los protocolos estándares para compartir datos. Este proyecto demostrará la capacidad de la tecnología emergente de aumentar el valor de estos datos a tomadores de decisión a través la integración estructurada de datos, visualización y funciones de análisis. Este proyecto piloto ayudará a definir el modelo para el futuro manejo, distribución y aplicación de todas las bases de datos de RT a través de América Latina y el Caribe.

II. Project Description

A. Rationale

IABIN has vastly improved our knowledge of data completeness, quality and accessibility across the LAC region through the creation of 5 regional thematic networks. Through this work, it has supported the significant advancement of consortia around these themes, and the integration of regional information that conforms to documented standards. There is considerable work required to fill data gaps, implement a minimum set of quality standards, and serve the data to the network and a broader stakeholder audience.

It is extremely important at this time that IABIN demonstrate how these important datasets can be integrated for application to current conservation and development challenges by key stakeholders and decision-makers. The ability to provide this efficient and effective access to this information will ultimately result in the continuing flow of support for the ongoing development and maintenance of the data and its supporting network.

This project is designed with this end use in mind. A prototype application will be developed that allows the integration of datasets across different Thematic Networks and enables standard data queries to support conservation, resource management, and development decision making processes.

B. Background: Conservation Biology Institute and Data Basin

The Conservation Biology Institute (CBI) is a non-profit 501(c) 3 organization founded in 1997. The primary CBI office is in Corvallis, Oregon with staff also located in California, Colorado, Virginia, and Washington. The mission of CBI is to provide scientific expertise to support conservation of biological diversity through applied research, education, planning, and community service. CBI has a strong track record of successful working relationships with public agencies, scientists, corporations and other NGO's to develop practical scientific and technological solutions to complex conservation and natural resource issues. CBI staff who will be available to work on this project regularly conduct their business in English and Spanish.

Over the past two years CBI has championed and directed the development of a new web-based technology called Data Basin that provides a quantum leap forward in the arena of spatial data integration, management, visualization, analysis and sharing. Foundation support of this technology is approaching $1.5M at this time and ESRI has provide more than $.5M in in-kind services to transfer the mapping technological foundation over to their software.

CBI is proposing to use Data Basin technology to create the IABIN Data Integration and Analysis Center (IABIN DIAC). Data Basin is an innovative website that

allows scientists, practitioners, and citizens to overcome existing challenges by making reliable datasets, tools, and information about experts centrally available and easy-to-use. Individuals and organizations can explore and download from a vast library of conservation datasets, upload their own data, and produce customized visualizations that can be effortlessly shared with others. Data Basin magnifies the value of existing conservation investments by empowering people with data, information, and a mechanism to connect in exciting new ways. One important aspect of the Data Basin platform is that it is flexible and can be tailored to meet specific geographical, topical, or organizational needs.

Data Basin is being constructed using ArcGIS Online (a new ESRI initiative) and traditional ESRI GIS mapping technology as the foundation. Working closely with ESRI technical teams, CBI conservation scientists and programmers are building a website that is cutting-edge both technically and socially. Technically, Data Basin is pushing the envelope of allowing users to: (1) combine their spatial datasets with others; (2) create and customize their own maps; and (3) gain access to specific analytical tools. Socially, Data Basin provides a platform for: (1) sharing datasets, maps, and projects; (2) user-defined security; (3) user-defined groups; (4) a simple ratings system from datasets and maps; and (5) direct links to experts.

Spatial datasets are made available in two ways. Shapefiles and raster files (other file formats soon) are uploaded and stored as part of ArcGIS Online as layer packages (stored in ESRI's data farm) while at the same time converted to a map service hosted on the Amazon cloud (see Figure 1). All datasets and maps require full metadata for inclusion into the system, and only datasets and maps can be rated by the user community. Users can either download individual files as layer packages from the ArcGIS Online data farm to be used on their own desktop, or elect to use the provided mapping tools (including user-defined composition and individual layer customization) within Data Basin in which case the map services are used. Data Basin also allows users to incorporate other available map services, including those provided by the five Thematic Networks.

Maps created in Data Basin can be saved and shared with specific groups or all other Data Basin users. Users are provided commenting tools allowing for spatially explicit critique of maps that can be shared with the author or others. Users can publish sets of datasets and maps (called projects) so users can easily find and utilize important collections. Datasets can also be downloaded to a user's desktop GIS system for additional analysis.

Establishing connections between other websites is also an important feature of Data Basin. For example, users to the official IABIN website can be easily transferred to a specific location within Data Basin to take advantage of the many services and tools without loosing brand recognition.

Data Basin is largely a free service but requires users to create profiles to aide in connecting people of various interests, knowledge, and skills. Users are provided easy-to-use tools for creating groups that can either be made public or private.
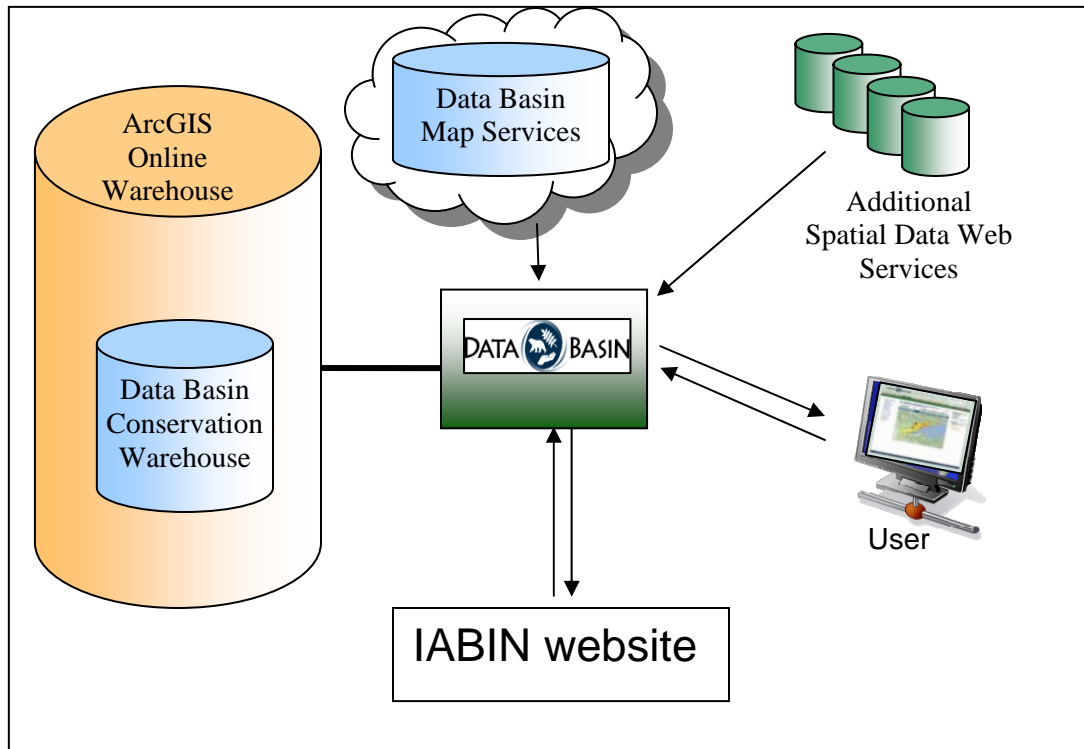

Figure 1. General schematic diagram of Data Basin.

IABIN will be able to leverage the considerable past investment in the technology, partnerships and data. IABIN will also derive ongoing benefits from this 'ground floor' connection to the ongoing development of this emerging technology that will continue to generate more data and accessible analytical capability and tools. The Data Basin initiative is also developing an important community of users and partner relationships that will be advantageous to the successful application of IABIN TN data.

Many of the relationships that have been established through the Data Basin partnership are already associated with providing conservation related data to the multilateral development bank, economic development, and environmental assessment communities. These established relationships bring the opportunity for immediate use of the TN information to guide the economic and social development process. As one example, IDB has contracted a Working Group of NGOs to build environmental decision support tools to guide their project assessment and funding

processes, and is supporting the use of Data Basin for this application. Another example is the close relationship between Data Basin and the Climate Change community, CBI has been funded to build a Climate Center within Data Basin to aggregate current climate change data and model and facilitate their use across the scientific and development community.

Data Basin is currently being programmed in English, but there are no restrictions that would prevent future releases of this technology in Spanish and Portuguese. All available datasets and maps will be displayed in their original form and language. All data abstracts and metadata can be completed in English, Spanish or Portuguese.

C. Project Goals and Objectives

This project will result in the development of a prototype application of IABIN DIAC that can be refined in the future to address broader needs across IABIN and its client and stakeholder communities. This application will be built on the Data Basin technology platform. The IABIN DIAC will enable the integration, visualization and analysis of the data that is being developed by the individual Thematic Networks. It will also enable the data to be integrated with other important contextual information. The component goals and objectives are listed below.

Goal 1. Document the status of IABIN data across the different Thematic Networks relative to the ability to aggregate these data for visualization, analysis and sharing.

> Objective 1. Communicate with the TN leads, and the managers of each TN server to document the status of the data, the format of the data, the spatial projection that is being used, and the ability to share data from each TN server with the IABIN DIAC.

> Objective 2. Complete a report that summarizes the ability to access TN data for integration, visualization and analysis.

Goal 2. Develop a fully functional IABIN DIAC system prototype that will support the integration, visualization, query and analysis of IABIN TN data within the context of the IABIN web presence.

> Objective 1. Develop the system requirements for the IABIN DIAC system that will allow it to support the aggregation of information across multiple TNs, integration of this information with other available contextual information, and completion of query and visualization functions that will support the IABIN data use needs of the broader stakeholder community.

Objective 2. Identify the basic queries of the IABIN TN data that will be most commonly asked by the user community. Build applications within the IABIN DIAC to carry out these queries in visualization and reporting formats.

Objective 3. Enable to demarcation of an area of inquiry for analysis and reporting.

Objective 4. Create a seamless dynamic link between the IABIN.net website and the Data Basin IABIN DIAC application that will be transparent to system users.

Goal 3. Demonstrate the functionalities of this IABIN DIAC prototype within a selected pilot region.

Objective 1. Select a geographic area (preferably a country) where there is a critical amount of available data provided in the necessary file formats and technology which can be used to demonstrate the power of data integration, visualization and analysis to support conservation, resource management and development decision-making. Information that should be present include well-developed data in a minimum of 3 Thematic Networks where the data is supported with protocols, permissions and projections that are based on an equivalent standard with the Data Basin protocols.

Objective 2. Create dynamic links to the TN data with the IABIN DIAC system that will allow a user to select data subsets for visualization and analysis.

Objective 3. Create the ability to integrate other Data Basin system datasets to enhance the contextual visualization and analysis of the selected datasets.

Objective 4. Demonstrate the ability of the IABIN DIAC to perform an initial set of structured queries of the data within user selected geographic areas to answer specific questions that are critical and timely for the broad conservation and development community through the generation of both visual and printed reports.

D. Project Activities and Methodologies

1. Review status of the data and the technology across the different TNs.

Review status of the data and the technology across the different TN servers with regard to the ability to aggregate this data onto a common platform for visualization and analysis. This review will be completed through detailed

discussion with both the content specialists for each of the Thematic Networks and the technology experts who are managing the servers. A report will be written on the current level of interoperability of data across the Thematic Networks, and recommendations will be provided that address the steps that will be required to support full integration of this data in the future.

Deliverables

i. Status report on the data and technology across the different TNs relative to the ability to integrate and analyze this data by the broader stakeholder community.

2. Develop IABIN DIAC system requirements

A set of IABIN DIAC system requirements based on the Data Basin platform will be completed that demonstrate the ability to aggregate data from different the TN servers, manage and manipulate the data to address specific needs, save and share value added maps, and perform basic queries of the data.

The requirements that have been identified thus far include:

A. A separate IABIN Data Integration and Analysis Center (IABIN DIAC) within the Data Basin technology platform.
   i. The home page and the workspace for this IABIN Center will showcase the different Thematic Networks and associated consortium of organizations within each network.

B. The ability to import/upload data from:
   i. Servers that currently manage the data for each of the five IABIN Thematic Networks.
   ii. Other datasets developed and hosted by IABIN.
   iii. Partner portals (e.g., GeoSUR, IABIN, etc.) for additional data layers that carry datasets in the same projection. The system will be able to import data in multiple projections in the near future.
   iv. Any other local, regional and national datasets that provide valuable context for visualization and analysis.
   v. All other datasets that reside within the greater Data Basin database (approx. 850 to date).

C. The ability to protect datasets with security measures that control the ability of groups and individuals to view, use and distribute each dataset. The system will provide different levels of security to defined groups that are established by the IABIN DIAC administrator.

D. The ability of system level functions that include the ability to:
   i. Search for datasets within the system and established partnerships,

      ii.   Create Work Groups and Data Folders,

     iii.   File and manage selected datasets in these Work Groups and Data Folders.

E. The development of data visualization and map creation functions tat include the ability to:
  - i.   Create new maps through the integration of existing datasets.
  - ii. Customize each theme of these maps by color and transparency
  - iii. Save newly created maps as a new file
  - iv. Distribute newly created and existing maps for review and editing within designated groups and individuals.
  - v. Insert "on-the-screen notations" that can be saved as a component of these new map files.

F. The requirement that each uploaded dataset will be accompanied with an abstract and a completed set of core meta-data fields to ensure the proper interpretation, use and attribution of these data. The abstract and metadata can be completed in English, Spanish or Portuguese.

G. The ability to identify and graphically 'save' any specific user defined "Area of Interest" which can include:
  - i.   Existing jurisdictional country boundaries
  - ii. User defined polygons that can be uploaded as shape files or created "on-screen". Any on-screen derived polygons can be saved as a new graphics layer and used for visualization and analysis.

H. Reporting functions will be programmed into the system that
  - i.   Document the intersection between a selected area of interest and all active data layers.
  - ii. Document correlations between TN data layers within a selected area of interest.

Deliverables

    i. Final list of IABIN DIAC system requirements.

3. Identify basic IABIN DIAC system queries.

Identify the basic queries that users will want to perform across all active data layers in the IABIN DIAC system. At a minimum, users will want to see and report on the 'intersection' between different thematic data layers. Examples of these queries include:

- What invasive species are correlated with a specific ecosystem within a selected area of interest?
- What ecosystems are found within the protected areas of Costa Rica?

Deliverables

    i. Documented list of queries that will be supported in the prototype IABIN DIAC system.

4. Select pilot demonstration area.

Select a pilot area (country) where sufficient information is accessible from multiple TNs and standard data sharing and formatting protocols are in place. The demonstration will ideally be carried out at the country level.

Deliverables

    i. Documented decision on the selected pilot demonstration area, and the rationale behind the selection of this area.

5. Develop the IABIN DIAC system prototype.

Complete the development of the Data Basin DIAC prototype following the agreed upon requirements that were developed with OAS, IABIN and the TNs.

Deliverables

    i. A fully functional IABIN DIAC prototype system that carries out the functions that were documented in the system requirements and standard queries reports.
   ii. A report documenting the IABIN DIAC system properties and functions.

6. Link the IABIN DIAC prototype to www.IABIN.net.

The IABIN DIAC prototype will be dynamically linked to the IABIN web site. Users of the DIAC will not be aware that all data integration and analysis functions will occur within the Data Basin servers at CBI.

Deliverables

    i. A dynamic link that allows the users to implement the functions of the IABIN DIAC directly from the IABIN web site.

7. Perform IABIN DIAC prototype demonstration and training.

Carry out two demonstration and training of the Data Basin DIAC prototype. One of the demonstration and training sessions will be held in the US (Washington DC) and the second will be held in the region (probably where the demonstration

project will be completed). Feedback will be solicited during these sessions to direct the future development of the IABIN DIAC.

Deliverables

    i. Organize and implement one US demonstration and training session.
    ii. Organize and implement one regional demonstration and training session.
    iii. Report that summarizes the training sessions and the recommendations for the future development of the IABIN DIAC.

8. Evaluate IABIN DIAC support to address regional conservation and development issues.

Over the life of this project, the Principal Investigator will work with the conservation and development community to elucidate how to make the TN data most useful address current conservation and development issues. A short report will be completed that summarizes these recommendations to help position the future activities of IABIN to support these needs.

Deliverables

    i. Recommendations to improve IABIN TN data use for conservation and development issues (Month 5-6).

9. Complete progress and final reports.

A number of short reports will be completed over this project period. These reports are listed below:

Deliverables
    i. Review of IABIN TN data and technology relative to centralized data integration and analysis (Month 2).
    ii. IABIN DIAC system requirements (Month 3).
    iii. Interim project report (Month 3).
    iv. Report documenting the IABIN DIAC system properties and functions (Month 5-6).
    v. Workshops summary and recommendations (Month 5-6).
    vi. Recommendations to improve IABIN TN data use for conservation and development issues (Month 5-6).
    vii. Final project report (Month 6).

E. Time frame / work plan / work schedule:

Work Plan - Time Frame						
	2010					
Activity (responsible party)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
1. Review status of the data and the technology across the different TN servers. (Dennis Grossman)	■					
2. Develop IABIN DIAC system requirements (Dennis Grossman, Jim Strittholt, Brendan Ward)	■	■				
3. Identify basic IABIN DIAC system queries. (Dennis Grossman)	■	■				
4. Select pilot demonstration area. (Dennis Grossman)	■	■				
5. Develop IABIN DIAC prototype. (Brendan Ward)	■	■	■	■	■	■
6. Link the IABIN DIAC prototype to www.IABIN.net. (Brendan Ward)				■	■	
7. Perform IABIN DIAC prototype demonstration and training. (Dennis Grossman)					■	■
8. Evaluate IABIN DIAC support to address regional conservation and development issues. (Dennis Grossman)					■	■
9. Complete final report. (Dennis Grossman)						■

F. Team Composition and Task Assignment

Dennis Grossman, Ph.D.   Principal Investigator.
Senior Scientist, Conservation Biology Institute
See CV in Appendix 1.

Jim Strittholt, Ph.D.   Senior Project Advisor
President, Conservation Biology Institute
See CV in Appendix 1.

Brendan Ward,   Technical Lead
Senior Programmer and GIS Analyst, Conservation Biology Institute
See CV in Appendix 1.

G. Staffing Schedule:

Project Funding only

Supported by Proposal Budget	Staff input by Month						Total staff months
CBI Staff	1	2	3	4	5	6	Total
1 Dennis Grossman	0.5	0.5	0.25	0.25	0.5	0.5	2.5
2 Jim Strittholt	0.25					0.25	0.5
3 Brendan Ward	0.2	0.2	0.4	0.41	0.2	0.2	1.61
4 Programmer	0.04	0.04	0.2	0.2	0.13	0.1	0.71
5 Technical Asst	0	0	0	0	0	0	0

Including in-kind Contributions

Total Support to Project (with in-kind)	Staff input by Month						Total staff months
CBI Staff	1	2	3	4	5	6	Total
1 Dennis Grossman	0.5	0.5	0.35	0.35	0.5	0.59	2.79
2 Jim Strittholt	0.6	0.39	0.4	0.4	0.4	0.6	2.79
3 Brendan Ward	1	1	1	0.57	1	1	5.57
4 Programmer	1	1	1	0.57	1	1	5.57
5 Technical Asst	0.5	0.5	1	1	1	0.64	4.64

H. Summary of Costs

BUDGET

Personnel	Proposal Months	**Proposal Cost**	CBI Cost Share	**Total Project Cost**
Dennis Grossman	2.5	**$35,000**	$4,000	**$39,000**
Jim Strittholt	0.5	**$5,000**	$34,000	**$39,000**
Brendan Ward	1.61	**$15,000**	$37,000	**$52,000**
Programmer	0.71	**$5,000**	$34,000	**$39,000**
GIS/Scientist	0.0	**$0**	$32,500	**$32,500**
Travel	Trips			
Non-local Travel				
(Corvallis - DC)	5	**$6,500**		**$6,500**
(DC - demo site)	2	**$3,500**		**$3,500**
Local Travel in DC		**$250**		**$250**
Other Direct Costs				
Computer Services		**$3,000**	$15,000	**$18,000**
Communications		**$500**		**$500**
Printing		**$200**		**$200**
Total Direct Costs		**$73,950**	$156,500	**$230,450**
Indirect Cost (35%)		**$25,883**	$54,775	**$80,658**
Total		**$99,833**	$211,275	**$311,108**

Budget Explanation

CBI is requesting $99,833 to build this IABIN DIAC application over a period of 6 months. CBI will commit an additional $211,275 of existing project funds to support the successful completion of this project. The total project benefit to IABIN will be $311,108, which represents a 1:2.12 match for the requested IABIN funding.

I. Legal Status of Submitting Organization.

RECEIVED JUL 0 5 2002

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INTERNAL REVENUE SERVICE                        DEPARTMENT OF THE TREASURY
P. O. BOX 2508
CINCINNATI, OH  45201


                                    Employer Identification Number:
Date:   JUN 2 5 2002                 91-1840582
                                    DLN:
                                     17053089829072
CONSERVATION BIOLOGY INSTITUTE      Contact Person:
260 SW MADISON AVE STE 106           MICHAEL A LUDWIG           ID# 31470
CORVALLIS, OR   97333-0000          Contact Telephone Number:
                                     (877) 829-5500
                                    Our Letter Dated:
                                        October 1999
                                    Addendum Applies:
                                        No


     Dear Applicant:

          This modifies our letter of the above date in which we stated that you
     would be treated as an organization that is not a private foundation until the
     expiration of your advance ruling period.

          Your exempt status under section 501(a) of the Internal Revenue Code as an
     organization described in section 501(c)(3) is still in effect.  Based on the
     information you submitted, we have determined that you are not a private
     foundation within the meaning of section 509(a) of the Code because you are an
     organization of the type described in section 509(a)(1) and 170(b)(1)(A)(vi).

          Grantors and contributors may rely on this determination unless the
     Internal Revenue Service publishes notice to the contrary.  However, if you
     lose your section 509(a)(1) status, a grantor or contributor may not rely on
     this determination if he or she was in part responsible for, or was aware of,
     the act or failure to act, or the substantial or material change on the part of
     the organization that resulted in your loss of such status, or if he or she
     acquired knowledge that the Internal Revenue Service had given notice that you
     would no longer be classified as a section 509(a)(1) organization.

          You are required to make your annual information return, Form 990 or
     Form 990-EZ, available for public inspection for three years after the later
     of the due date of the return or the date the return is filed.  You are also
     required to make available for public inspection your exemption application,
     any supporting documents, and your exemption letter.  Copies of these
     documents are also required to be provided to any individual upon written or in
     person request without charge other than reasonable fees for copying and
     postage.  You may fulfill this requirement by placing these documents on the
     Internet.  Penalties may be imposed for failure to comply with these
     requirements.  Additional information is available in Publication 557,
     Tax-Exempt Status for Your Organization, or you may call our toll free
     number shown above.

          If we have indicated in the heading of this letter that an addendum
     applies, the addendum enclosed is an integral part of this letter.


                                                    Letter 1050 (DO/CG)
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Appendix 1. Curriculum Vitae of Primary Project Staff

Dennis Grossman, Ph.D., Principle Investigator
James Stritholt, Ph.D., Senior Project Advisor
Brendan Ward, M.S., Technical Lead

Curriculum Vitae

Dennis H. Grossman, Ph.D.

Contact   **Address**
Land: (703) 255-9241   **349 Park Street NE**
Cell: (571) 216-2651   **Vienna, VA 22180**
Email: denny@consbio.org   **USA**

Professional Experience

Senior Scientist – Conservation Biology Institute   **2008 –**
- Provide support for the development and deployment of advanced web tool, Data Basin, that supports the development and implementation of conservation solutions through the integration, analysis and sharing of spatial information.
- Assist in the management and execution of a multi-organizational effort to develop, maintain and distribute the Protected Areas Database for the US (PAD-US).
- Assist in the management and execution of a multi-organizational effort to develop, maintain and distribute the National Conservation Easement Lands Database for the US (NCED).

The Nature Conservancy
  Senior Policy Advisor – International Government Relations Division   2008 –
  Senior Scientist – Latin America Division   2009 –
- Developed and managed Inter-American Development Bank project to improve their ability to use conservation information for the assessment of infrastructure development projects across South America.
- Coordinated a Working Group of 6 international conservation NGOs (The Nature Conservancy, Conservation International, Birdlife International, NatureServe, World Conservation Monitoring Centre and World Wildlife Fund) to improve integration of conservation planning approaches, access to conservation related data, and development of decision support database and other tools for use by multi-lateral development banks and public agencies to integrate conservation values into development projects.
- Developed environmental Early Warning Systems for environmental agencies in Colombia and Venezuela to support their assessment, permitting and licensing processes for private sector development projects.
- Trained TNC staff along with conservation and resource management partners across South America on the appropriate use of current data and technology to improve the planning of infrastructure development projects and decrease the environmental impacts of these projects to ecosystem integrity and biological resources.

Principal Associate – Abt Associates   **2006 – 2007**
- Provided leadership for the development for USAID Natural Resource Management proposals.
- Developed conservation data and tools to assist the InterAmerican Development Bank assess infrastructure development projects relative to their environmental guidelines.

- Manage multi-stakeholder process for the U.S. Roundtable for Sustainable Forests to frame the focus for the 2010 US National Report on Sustainable Forests

Vice-President for Science – NatureServe, Arlington, VA.   **2000 - 2006**
- Managed the NatureServe Science Division (over 50 personnel), along with senior managers who were responsible for scores of subcontractors.
- Managed about 50 grants and contracts and associated budgets (approximately $4 million / yr) with US Government Agencies (USFS), USAID, USGS, NPS, BLM, NASA, NOAA, others), foundations (Moore, Packard, Surdna, others), private industry (Sears-Lands End, Office Depot, LL Bean, Temple Inland, International Paper, others), and institutions (IDB, TNC, American Forest and Paper Assoc., others)
- Managed project for the US Roundtable for Sustainable Forests to clarify stakeholder vision and requirements for the 2010 US National Report on Sustainable Forests.
- Served on the NatureServe management team to start up and create a sustainable business plan for this new NGO.
- Managed numerous scientific and technical teams to develop biological and ecological assessment standards that spatially identify resource management and conservation priorities.
- Developed and managed project of the Gordon and Betty Moore Foundation to fill critical natural resource conservation information gaps across Peru and Bolivia, and incorporate this information into local level regional development decision making processes.
- Managed conservation and development assessment project for the Conservation Trust of Puerto Rico to assess and map the conservation priorities and development opportunities across the Island.
- Worked with the forest and paper industry (Weyerhaeuser, Georgia Pacific, Temple Inland, Mead, Lands End, Sears, etc.) to provide a new set of biodiversity information to support the certification standards of the Sustainable Forestry Initiative and the Forest Stewardship Council. ,
- Integrated practical scientific methodologies for application to conservation planning processes and decision support technology.
- Managed project for NOAA and OBIS (Ocean Biological Information System) to develop global standards for coastal and marine habitat classification and mapping that are needed to support the conservation and management of ocean resources.
- Managed project to complete terrestrial ecosystem classification and mapping across the South American continent to serve as the basis for The Nature Conservancy's conservation planning programs.
- Provided leadership and guidance for the development of proposals, formulation of proposal teams and project partnerships, writing technical proposals, preparing project budgets and project management.

Chief Ecologist - The Nature Conservancy, Arlington, VA.   **1988 - 2000**
- Organized and managed global teams to develop standards for the classification and mapping of terrestrial vegetation and freshwater ecosystems to be used as the foundation for resource management and conservation decisions. These standards are now recognized and used across US organizations and agencies, as well as internationally. Worked with international partners (e.g. UNEP-FAO) to ensure standardization and coordination of global land cover classification and mapping efforts.

- For McKnight Foundation, developed standards for the classification and mapping of freshwater ecosystems across the Great Lakes Basin and determined priorities for effective resource management and conservation actions across the Basin.
- Worked with USAID office in Jamaica to test Rapid Ecological Assessment process and develop baseline inventory and management plans for the John Crow - Blue Mountains and the Montego Bay National Parks.
- Worked for the World Bank to apply Rapid Ecological Assessment standards to guide development project activities in the State of Matto Grosso, Brazil.
- Helped to establish the TNC Field Office in Indonesia, and worked with the Government of Japan to secure financial support for this new office.
- Provided conservation leadership with science and technical support across TNC programs in Southeast and East Asia, the Far East and the Pacific.
- Helped to develop and support network of Heritage Programs and Conservation Data Centers across the Western Hemisphere in order to identify areas of conservation concern.
- For National Parks Service, developed and managed a multi-year effort to classify and map vegetation across all Parks as the information basis for resource management decisions.
- Raised funds through federal agencies, private foundations and multi-lateral institutions to support conservation projects.
- Managed large department of scientists and annual budgets ranging from $.5 to $3 million per year.

Fellow - Environment and Policy Institute, East-West Center, Honolulu, HI 1983 - 1988
- Managed expert committees to address key natural resource management policy, forest policy and sustainable development issues for nations across Asia and the Pacific.
- Developed and managed workshops to advance the application of scientific knowledge for the implementation of environmental policies, development of forest management standards, and the implementation of regional plans and conservation assessments.

Scientist - USAID Graduate Education Project.
        Bogor Agricultural Institute. (IPB), Bogor, Indonesia.   1982 - 1983
- Developed graduate curriculum in ecology and environmental planning for IPB Science Faculty.
- Developed a graduate course in natural resource assessment and conservation planning.
- Evaluated the environmental and agricultural success of transmigration projects through field studies in Kalimantan and Sumatra.

Ecologist / Environmental Education Specialist,
        University of California at Davis   1977 - 1983
- Developed and taught field courses in biology, ecology and environmental education in California, Canada, India and Nepal.

Environmental Consultant - Development Sciences, Inc., Sagamore, MA   1977 - 1978
- Worked with EPA contracts to develop, implement strategies for the delegation of Clean Water Act authority to individual states.

Environmental Consultant/Field Ecologist –
        Dane County Regional Planning Commission, Madison, WI. 1977

- Carried out field reconnaissance and mapping of wetland and riparian resources to direct and monitor compliance with conservation zoning and planning objectives.

Field Ecologist - EPA Research Grant, Institute for Environmental Studies, University of Wisconsin – Madison.   1972 - 1976
- Developed research objectives, field design to document and monitor impact of the Portage River Power plant on the biology and ecology of adjacent wetlands.
- Led field teams to gather data on Portage River Power Plant to monitor ecosystem health and complete impact assessment.

Environmental Consultant - Berkeley Ecology Center, Washington D.C. and Kensington, California.   1971
- Set program guidelines and objectives for Office of Environmental Education (OEE).
- Developed OEE grant guidelines through participatory process.
- Reviewed OEE grants and provided recommendations for project funding.

Education

Doctor of Philosophy	Botany (Plant Ecology), University of Hawaii; 1991
	Dissertation: ***Natural Regeneration Dynamics in a Lowland Tropical Rainforest following Disturbance in Kalapana, Hawaii***
Master of Science	Botany (Plant Ecology), University of Wisconsin – Madison; 1982
	Thesis: ***The Application of Ecological Principles for Improved Transmigration Planning in Indonesia***
Bachelor of Science	Botany, University of Wisconsin – Madison; 1976

Committee Membership

2007 – 2008	EPA Science Advisory Board – Report on the Environment Review Panel
2006	Montreal Process Criteria and Indicators Working Group for Sustainable Forests – Member of US Delegation
2005 –	NASA Biodiversity and Ecological Forecasting Team – NASA
2003 – 2007	EPA Science Advisory Board – Valuing the Protection of Ecological Services and Systems
2000 – 2006	Heinz Center Forest Ecosystem Team - Status of the Nation's Ecosystems
2000 –	Roundtable on Sustainable Forests – US Inter-Agency Core Team
1996 –	Ecological Society of America – Panel for Vegetation Classification – Executive Committee
1995 – 2007	Federal Geographic Data Committee – Vegetation Subcommittee

Selected Publications & Reports

Swenson, J.J., B.E. Young, S. Beck, P. Comer, J. Córdova, J. Dyson, D. Embert, F. Encarnación, W. Ferreira, I. Franke, D. Grossman, P. Hernandez, S. Herzog, C. Josse, G. Navarro, V. Pacheco, B. Stein, M. Timaná, A. Tovar, C. Tovar, J. Vargas, C.M. Zambrana-Torrelio. In Press. Integrated Conservation Mapping In A Large Mega Diverse Landscape.

Grossman, D.H, P. Geissler, S. Morre, G. Robertson and S. Walen. 2007. Consultation to Guide the Preparation of the 2010 National Report on Sustainable Forests. Roundtable for Sustainable Forests. Meridian Institute.

Stoms, D. M., P. J. Comer, P. J. Crist and D. H. Grossman. 2005. Choosing surrogates for biodiversity conservation in complex planning environments. Journal of Conservation Planning 1: 44-63.

Madden, C.J. and D. Grossman. 2004. A Framework for a Coastal/Marine Classification Standard. NatureServe. 169 pp.

Weitzell, R.E., M.L. Khoury, P. Gagnon, B. Schreurs, D. Grossman and J. Higgins. 2003. Conservation Priorities for Freshwater Biodiversity in the Upper Mississippi River Basin. NatureServe and The Nature Conservancy.

Jennings, M., D. Grossman, R. Peet, et al. July 2000. An Initiative for a Standardized Classification of Vegetation in the United States - -Draft. Panel for Vegetation Classification, Ecological Society of America.

Bryer, M.T., K. Maybury, J.S. Adams and D.H. Grossman. 2000. More than the Sum of the Parts: Diversity and Status of Ecological Systems. In: Stein, B.A., L.S. Kutner, and J.S. Adams (eds). Precious Heritage: The Status of Biodiversity in the United States. Oxford University Press.

Anderson, M., P.Comer, D.Grossman, C.Groves, K.Poiani, M.Reid, R.Schneider, B.Vickery, A.Weakley. 1999. Guidelines for Representing Ecological Communities in Ecoregional Conservation Plans. The Nature Conservancy.

Grossman, D.H., P. Bourgeron, D.N. Busch, D. Cleland, W. Platts, G.C. Ray, C.R. Robins and G. Roloff. 1999. Principles for Ecological Classification. In: Szaro, R.C., N.C. Johnson, W.T. Sexton and A.J. Malk (eds). Ecological Stewardship: A Common Reference for Ecosystem Management. Volume II. Elsevier Science Ltd.

Grossman, D.H., D. Faber-Langendoen, A.W. Weakley, M. Anderson, P. Bourgeron, R. Crawford, K. Goodin, S. Landaal, K. Metzler, K.D. Patterson, M. Pyne, M. Reid and L. Sneddon. 1998. *International Classification of Ecological Communities: Terrestrial Vegetation of the United States. Volume I: The National Vegetation Classification Standard.* The Nature Conservancy.

Grossman, D.H., K.L. Goodin and C. Reuss (eds). 1994. *Rare Plant Communities of the Conterminous United States: An Initial Survey*. The Nature Conservancy. 625 pp.

Grossman, D.H. and K.L. Goodin. 1994. *Patterns of Rarity in Plant Communities of the United States. Status and Trends Report.* National Biological Survey. Dept. of the Interior.

Grossman, D.H., S.F. Iremonger and D. M. Muchoney. 1992. *A Rapid Ecological Assessment of Jamaica: Phase 1 - An Island Wide Characterization and Mapping of Natural Communities and Vegetation Types*. The Nature Conservancy, Arlington, Virginia.

Higgins, J., M. Lammert, D.H. Grossman and M. Bryer. 1996. *A Framework for the Classification of Freshwater Aquatic Communities: Proceedings from a Workshop.* The Nature Conservancy.

Sobrevila, C., P. Bath, D.H. Grossman *et al.* 1992. *Evaluacion Ecologica Rapida* (Manual of Rapid Ecological Assessment). A Manual for Use in Latin America and the Caribbean. The Nature Conservancy, Arlington, Virginia.

Professional Society Memberships

Ecological Society of America
Society for Conservation Biology
International Association for Vegetation Science

CV
Jim Strittholt, Ph.D.
See attached pdf file

CV
Brendan Ward
See attached pdf file
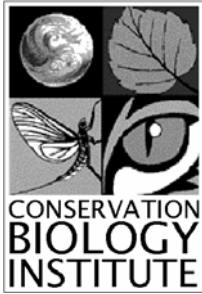
James R. Strittholt, Ph.D. - CURRICULUM VITAE

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Corvallis, OR 97330
Phone: (541) 752-1337

PERSONAL: Born May 14, 1956, Cincinnati, Ohio (citizen of U.S.A.) Married, three children

EDUCATION: **1994 Ph.D. Conservation Biology - Landscape Ecology** from The Ohio State University,Columbus, OH
Dissertation: "*A Regional Nature Reserve Design Using Geographic Information Systems for the Edge of Appalachia, Adams County, Ohio*"
1985 M.S. Zoology from Miami University, Oxford, OH
Thesis: "*Population genetics of yellow perch in Lake Erie and selected impoundments*"
1980 B.S. Botany, B.A. Zoology, and Secondary Education Certification from Miami University, Oxford, OH

PROFESSIONAL EXPERIENCE: August 1997 - present. **Founder, President and Executive Director of the Conservation Biology Institute,** Corvallis, OR
http://www.consbio.org

January 1995 - 2000**. Founder and President of Earth Design Consultants, Inc.,** Corvallis, OR

1994 - 1995. **Ecologist for North American Wilderness Recovery, Inc.,** Portland, OR - Responsible for scientific research and technical advising for conservation planning.

1992 - 1993. **The Ohio State University Presidential Fellow,** Columbus, Ohio - Responsibilities focused on research in conservation biology.

1989 - 1992. **Graduate Researcher: Center for Mapping, The Ohio State University,** Columbus, Ohio - Responsibilities included grant proposal writing, research project liaison, computer mapping and educational materials production.

1987 - 1989. **High School Science Teacher, Sycamore High School, Cincinnati**, OH - Courses taught included Biology I, Human Anatomy & Physiology, and Chemistry.

1986 - 1987. **High School Science Teacher, Princeton High School,** Cincinnati, OH - Courses taught included Chemistry, Environmental Science, and AP Biology.

1985 - 1986. **High School Science Teacher, Homestead High School,** Ft. Wayne, IN - Covered for Science Department Head for a one year sabbatical. Courses taught included Human Anatomy & Physiology, Zoology, and Bacteriology.

1983 - 1985. **Graduate Teaching Assistant, Department of Zoology, Miami University,** Oxford, OH.

1981 - 1983. **High School Science Teacher, Badin High School,** Hamilton, OH. Courses taught included: Biology I, Biology II, Microbiology, and Environmental Science.

1980 - 1981. **Large mammal keeper at Columbus Zoo,** Columbus, OH. Animals under my care included primates (gorillas, orangutans, and chimps), bears, cheetahs, and a variety of small South American mammals.

AWARDS AND ACTIVITIES:

2005	• Adjunct faculty Oregon State University (Corvallis, OR) Environmental Sciences Program
	• Invited speaker at NASA symposium on Ecological Forecasting, Washington, DC
2004	• Recipient of Excellence in GIS award from ESRI
	• Invited speaker at Northwest Forest Plan Conference Portland, OR
	• Invited reviewer for Journal of Applied Ecology
2003	• Invited reviewer for Environmental Management
2002	• Invited to be a scientific advisor to the Big Open Wild Bison Recovery Program
	• Invited by the IUCN to membership in the World Database on Protected Areas Consortium
	• Invited to participate in a meeting of Oregon Land Trusts
	• Invited as a science team member to review forest management for

	the Tongass National Forest
	• Invited by IKEA to review the high conservation value forest concept in the Foothills Model Forest in Hinton, Alberta
	• Invited to attend a pan boreal mapping meeting in Moscow, Russia
	• Chosen to be the U.S. Conservation Science Representative in the Temperate Rainforest Campaign
	• Invited to participate in the review of Criteria and Indicators by the U.S. Forest Service and various meetings on forest sustainability
2001	• Invited member in NASA Biodiversity Working Group
	• Invited by the IUCN to participate in endangered species recovery working group
	• Invited to participate in a forest fire workshop in Ashland, OR
	• Chosen to write methods review for Global Forest Watch (Washington, DC)
	• Reviewer for Conservation Technology Support Program
2000	• Invited scientist to review the progress and future direction of the National Biological Information Infrastructure by The Academy of Natural Sciences (Philadelphia, PA).
	• Invited scientist to work on the Criteria and Indicators Technical Workshop Roundtable on Sustainable Forests (Denver, CO).
	• Invited presenter at the Annual ESRI Users Conference (San Diego, CA).
	• Reviewer for Conservation Technology Support Program
1999	• Invited participant to review the Cascadia Grantmaking Program by the David and Lucille Packard Foundation (Los Altos, CA).
	• Invited scientist to review of NASA's Mission to Planet Earth environment program (Washington, D.C.).
	• Reviewer for Conservation Technology Support Program.
1998 assessment	• Invited participant and presenter at an international forest
	meeting organized by the U.S. Forest Service (Salt Lake City, UT).
1997	• Invited book reviewer for Island Press (San Francisco, CA). Written review of Biodiversity Loss: Economic and Ecological Issues by Perrings et al. 1995 was published in Conservation Biology 11(4):1039-1040 in August 1997.
	• Elected on Science Advisory Committee to The Wildlands Project, Tucson, AZ.
	• Reviewer for the Journal of the Society for Conservation Biology
	• Invited to participate in NASA forum on remote sensing and conservation (Washington)
1996	• Invited participant and presenter at Econet Conference in Lison, Portugal.
	• Invited scientist to review conservation planning on Mesoamerica Conservation in Belize.
	• Invited scientist to participate in North American conservation assessment conducted by World Wildlife Fund, Washington, D.C.

1995	• Advisory Board member for Minnesota Ecosystems Recovery Project (Red Wing, MN) and Public Lands Watch (Ft. Collins, CO).
1994	• GIS consultant for deforestation project in Southwest India.
	• GIS consultant for U.S. Agency for International Development project in El Salvador.
	• GIS consultant to The Nature Conservancy (Ohio Chapter), Columbus, Ohio
1992	• Awarded a Presidential Fellowship by the Graduate School at Ohio State University, Columbus, OH.
1990	• Elected member to Phi Sigma Biological Honorary and Phi Kappa Phi Honorary
	• Elected to the Graduate Studies Committee, School of Natural Resources, Ohio State University, Columbus, OH.

INVITED LECTURE & TEACHING SEMINARS:

2005	• Invited speaker to Oregon State University Environmental Sciences Program and Department of Forest Resources
2004	• Invited speaker for Graduate Speaker Seminar, Department of Forestry, Oregon State University
2003	• Invited to speak to GIS class at Oregon State University
	• Invited to speak to Conservation Biology Graduate Seminar at Oregon State University
2002	• Invited to sit on a panel on the topic of building collaborations between conservation biologists and animal behaviorists at the National Animal Behavior Conference
	• Invited to speak at a teacher-training seminar at Oregon State University (Corvallis, OR)
	• Co-organized and spoke at a strategic planning meeting before a group of PNW funders in Seattle, WA
2001	• Invited to present to the Doris Duke Charitable Foundation on forest conservation
	• Invited to speak before the Consultative Group for Biological Diversity in Charlotte, NC
2000	• Invited instructor for a workshop on connectivity at the American Association for the Advancement of Science Regional Annual Meeting (Ashland, OR).
1999	• Invited instructor at the People and Nature Partnership workshop in Crescent City, CA
	• Invited instructor on conservation planning at Siskiyou Field Institute (Cave Junction, OR)
1998	• Invited lecturer to the Ancient Forest Activist Conference (Ashland, OR)
1997	• GIS/science consultant for The Wildlands Project technical meeting

(Calgary, Alberta)
- Invited presenter at Tillamook Bay National Estuary committee meeting (Tillamook, OR)

1996
- Seminar speaker at New Mexico Wildlands Project meeting (Santa Fe, NM)
- Seminar speaker at the New England Aquarium (Boston, MA)
- Guest instructor for 1 week on Conservation Planning and GIS at the
Smithsonian Institution Research Facility (Front Royal, VA)

1995
- Seminar speaker at Environmental Law Conference, University of Oregon (Eugene, OR)
- Guest instructor for 1 week on Conservation Planning and GIS at the
Smithsonian Institution Research Facility (Front Royal, VA)
- Invited to speak at public outreach program at Tillamook Bay National Estuary Project

PROFESSIONAL ORGANIZATIONS: Society for Conservation Biology
American Institute of Biological Sciences
Ecological Society of America
International Association for Landscape Ecology

PUBLICATIONS:

ARTICLES

Strittholt, J.R., H. Jiang, and N.C. Slosser. In Prep. The spatial distribution patterns of late-seral forests in the Pacific Northwest, USA. Ecological Applications.

Strittholt, J.R. In Review. After the Smoke Clears – Ecological Impacts from Salvage Logging. Chapter in a book on Wildfire (Title pending) by Island Press.

DellaSala, D.A. and J.R. Strittholt. In Review. Ecosystem recovery of post-fire landscapes: context and scale matter. Frontiers in Ecology.

Strittholt, J.R., D.A. DellaSala, and H. Jiang. In Review. Status of mature and old-growth forests in the Pacific Northwest, USA. Conservation Biology.

Scott, J.M., T. Loveland, K. Gergely, J.R. Strittholt, and N. Staus. 2005. National Wildlife System: Ecological context and integrity. Natural Resources Journal 44(4): 1041-1066.

Slosser, N.C., J.R. Strittholt, D.A. DellaSala, J. Wilson. 2005. The landscape context in forest conservation: Integrating protection, restoration, and certification. Restoration Ecology 23(1): 15-23.

Jiang, H., J.R. Strittholt, P.A. Frost, and N.C. Slosser. 2004. The classification of late seral forests in the Pacific Northwest, USA using Landsat ETM+ imagery. Remote Sensing of Environment 91(2004): 320-331.

Odion, D.C., J.R. Strittholt, H. Jiang, E.J. Frost, and D.A. DellaSala. 2004. Fire history andseverity patterns and forest management in the Klamath National Forest, Northwestern California, U.S.A. Conservation Biology 18(4): 927-936.

Staus, N.L., J.R. Strittholt, D.A. DellaSala, and R. Robinson. 2002. Rate and pattern of forest disturbance in the Klamath-Siskiyou ecoregion, U.S.A. between 1972 and 1992. Landscape Ecology 17: 455-470.

Heilman, Jr. G.E., J.R. Strittholt, N.C. Slosser, and D.A. DellaSala. 2002. Forest fragmentation of the conterminous United States: Assessing forest intactness through road density and spatial characteristics. Bioscience 52(5): 411-422.

Strittholt, J.R. and D. A. DellaSala. 2001. Importance of roadless areas in biodiversity conservation in forested ecosystems: A case study – Klamath-Siskiyou Ecoregion, U.S.A. Conservation Biology 15(6): 1742-1754.

Paquet P., J.R. Strittholt, and N.L. Staus 2001. Feasibility of timber wolf reintroduction in Adirondack Park. Pages 47-64 in, D.S. Maehr, R. F. Noss, and J.L. Larkin (eds.), Large Mammal Restoration, Island Press, Washington, D.C.

DellaSala, D.A., N.L. Staus, J.R. Strittholt, A. Hackman, and A. Iacobelli. 2001. An updated protected areas database for the United States and Canada. Natural Areas Journal 21:124-135.

Noss, R.F., J.R. Strittholt, G.E. Heilman, Jr., P.A. Frost, and M. Sorensen. 200. Pages 334-372, in R. F. Noss ed., The Redwood Forest: History, Ecology, and Conservation of the Coast Redwoods, Island Press, Washington, D.C.

Strittholt, J.R., G.H. Heilman, Jr., and R.F. Noss. 2000. A GIS-based model for assessing conservation focal areas for the redwood ecoregion. Conservation Geography-2000: 43-45.

Noss, R.F., J.R. Strittholt, K. Vance-Borland, C. Carroll, and P.A. Frost. 1999. A conservation plan for the Klamath-Siskiyou Ecoregion. Natural Areas Journal 19(4): 392-411.

Carroll, C., R.F. Noss, and J.R. Strittholt. 1999. The wolf as a focal species for regional conservation planning: A reintroduction feasibility study for the Klamath region. Restoring the Wolf Proceedings, Defenders of Wildlife 69-78.

DellaSala, D.A., S.T. Reid, T.J. Frest, J.R. Strittholt, and D.M. Olson. 1999. A global perspective on the biodiversity of the Klamath-Siskiyou ecoregion. Natural Areas Journal 19(4): 300-319.

Miller, B., R. Reading. J.R. Strittholt, C. Carroll, R.F. Noss, M. Soulé, O. Sanchez, J. Terborgh, D. Brightsmith, T. Cheeseman, and D. Foreman. 1998. Using focal species in the design of nature reserve networks. Wild Earth 8(4): 81-92.

Strittholt, J.R. and R.F. Noss. 1997. Conservation Planning Using GIS. Pages 160-162 in, The Science of Conservation Planning: Habitat Conservation Under the Endangered Species Act, World Wildlife Fund and Island Press, Washington, D.C.

DellaSala, D.A., J.R. Strittholt, R.F. Noss, and D.M. Olson. 1996. Managing Inland Northwest Landscapes for Natural Resources and Biodiversity: Core Reserves an Essential Component. Solicited paper for the Wildlife Society Bulletin. 24(2): 209-221.

Strittholt, J.R. and R.E.J. Boerner. 1995. Applying Biodiversity Gap Analysis to a Regional Nature Reserve Design for the Edge of Appalachia, Ohio. Conservation Biology. 9(6): 1492-1505.

Strittholt, J.R. 1994. A Vision for Life. The George Wright Forum. 11(4): 13-16.

Falcon, E., J.R. Strittholt, A.I. Alobaida, R.W. Schmidley, J.D. Bossler, and J.R. Ramirez. 1993. A review of digital geographic information standards for the state/local user. URISA Vol. 5, No. 2 pp. 21-27.

Strittholt, J.R. 1988. Low levels of genetic variability of yellow perch (*Perca flavescens*) in Lake Erie and selected impoundments. In, The Biogeography of the Island Region of Western Lake Erie. J.F. Downhower (ed.), Ohio State University Press, Columbus, Ohio pp. 246-257.

TECHNICAL MANUALS, REPORTS, AND REVIEWS

Strittholt, J.R., R. Noguerén, and J. Bergquist. In review. Intact Forest Landscapes of Alaska, USA. A report and electronic atlas by the World Resources Institute and Conservation Biology Institute. 89 pp.

Strittholt, J.R. and H. Rustigian. 2005. Ecological impact assessment of urban development on the Santa Clara River Watershed. A report prepared for the Lawyers for Clean Water and Environment Now. 24 pp.

Strittholt, J.R. and H. Rustigian. 2005. The Santa Clara River watershed, California. A report prepared for the Lawyers for Clean Water and Environment Now. 30 pp.

Strittholt, J.R., D.A. DellaSala, E. Fernandez, P.A. Frost, and G.E. Heilman. 2005. Oregon's wild forests: conservation value of Oregon's Inventoried Roadless Areas. Report by the Conservation Biology Institute in collaboration with World Wildlife Fund and Oregon Natural Resources Council.

Strittholt, J.R., P. Lee, and W.D. Spencer. 2005. Ecological components of endangered forests. A technical paper for the Wye River Group. 36 pp.

Strittholt, J.R. and H. Rustigian. 2004. Living in fire prone natural landscapes – reducing the risk to rural communities from wildfire. Report by the Conservation Biology Institute in collaboration with World Wildlife Fund and Wildwood Environmental Consulting, Inc. 22 pp.

Strittholt, J.R. and H. Rustigian. 2004. Ecological issues underlying proposals to conduct salvage logging in areas burned by the Biscuit fire. Report by the Conservation Biology Institute. 46 pp.

Strittholt, J.R. and P.A. Frost. 2003. A review of the relationship between global language centers and biodiversity. Report to Terralingua. 18 pp.

Bredensteiner, K., K. Palacios, and J.R. Stritthholt. 2003. Assessment of aquatic habitat monitoring data in the Rogue River Basin and southern Oregon coastal streams. Report submitted to The David and Lucille Packard Foundation. 89 pp.

Heilman, G.E. and J.R. Stritthholt. 2002. Klamath-Siskiyou private lands conservation assessment. Report for the World Wildlife Fund. 84 pp.

Strittholt, J.R., N.L. Staus, and N.C. Slosser. 2002. Conservation science review of nine forested ecoregions of the U.S. A technical report to the Doris Duke Charitable Foundation. 163pp.

Stritthholt, J.R. and D. DellaSala. 2002. Scientific basis for roadless area conservation. 91pp.

Jiang, H., J.R. Stritthholt, J. Bergquist. 2002. A vegetation classification of the Siltez River Basin using Landsat 7 ETM+ satellite imagery. A technical report to the Confederated Tribes of the Siletz Indians. 17pp.

Stritthholt, J.R., N.C. Slosser, and N.L. Staus. 2002. Conservation science review of the Pacific Northwest. A technical report to the Brainerd Foundation. 170pp.

Spencer, W.D., M.D. White, J.A. Stallcup, and J.R. Stritthholt. 2001. On the global and regional ecological significance of southern Orange County: Conservation priorities for a biodiversity hotspot. A technical report to the Endangered Habitats League. 44 pp.

Bredensteiner, K.C., J.R. Strittholt, and D.A. DellaSala. 2001. Comments supporting the proposed mineral withdrawl for national forest and Bureau of Land Management Lands in the Siskiyou Wild Rivers Area of Oregon and California. Submitted to the U.S. Forest Service and BLM. 76pp.

Staus, N.L. and J.R. Strittholt. 2001. Conservation planning for aquatic biological integrity in the Klamath-Siskiyou using multiple spatial scales. A technical report to World Wildlife Fund. 71 pp.

Strittholt, J.R., N.L. Staus, and M.D. White. 2000 Importance of Bureau of Land Management Roadless Areas in the Western U.S.A. A scientific review for the National BLM Wilderness Campaign. 91 pp.

Paquet, P.C., J.R. Strittholt, and N.L. Staus. 1999. Wolf reintroduction feasibility in the Adirondack Park. A technical analysis for the Adirondack Wolf Citizens Action Committee. 84pp.

Strittholt, J.R. and R. Robinson. 1999. Land cover classification and change detection for the northern Rocky Mountains, U.S.A. Technical report for World Wildlife Fund Canada. 33pp.

Strittholt, J.R., R.F. Noss, P.A. Frost, K. Vance-Borland, and C. Carroll. 1999. A conservation assessment and science-based plan for the Klamath-Siskiyou ecoregion. A report to the Siskiyou Project, Cave Junction, OR. 126pp.

Noss, R.F., N.C. Slosser, J.R. Strittholt, and C. Carroll. 1999. Metrics of ecological integrity for terrestrial ecosystems and entire landscapes. A technical review to the EPA. 122pp.

Strittholt, J.R., G.E. Heilman, Jr., R.F. Noss. 1999. A GIS-based model for assessing conservation focal areas for the redwood ecosystem. A report to Save-the-Redwoods League, San Francisco, CA. 75pp.

Wilson, J. J.R. Strittholt, N.C. Slosser, and D. A. DellaSala. 1999. Global forest restoration: A review. A scientific review for World Wildlife Fund International . 75pp.

Strittholt, J.R. and P.A. Frost. 1997. An Enduring Features Gap Analysis for the Canada-U.S. Rocky Mountains. A technical report for World Wildlife Fund Canada, Toronto, Ontario.

Strittholt, J.R., R. J. Garono, and P.A. Frost. 1997. Spatial Patterns in Land Use and Water Quality in the Tillamook Bay Waterhsed: A GIS Mapping Project. Technical report for the Tillamook Bay National Estuary Project, Garibaldi, OR.

Strittholt, J.R. 1996. Guidelines for Mapping. Pages 1-200 in, A Conservation Framework Package. The Wildlands Project, Tucson, AZ.

Strittholt, J.R. and P.A. Frost. 1996. Eelgrass Mapping Using Multispectral Airborne Imagery for Tillamook Bay, Oregon. Technical report prepared for the Tillamook Bay National Estuary Project, Garibaldi, OR.

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ABSTRACTS

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Strittholt, J.R. 2004. Non-federal lands: Protecting and restoring biodiversity. Environmental Law Conference 2004 annual meeting (Eugene, OR).

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DellaSala, D.A. and J.R. Strittholt. 2004. The Northwest Forest Plan ten years later – How far have we come, Where are we going? Ecological Society of America 2004 annual meeting (Portland, OR).

Strittholt, J.R. and D.A. DellaSala. 2003. Roadless area conservation values in the Pacific Northwest, USA. Conservation Biology 2003 annual meeting (Duluth, MN).

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Strittholt, J.R., N.L. Staus, and D.A. DellaSala. 2000. Representation of ecoregions of the United States and Canada by Protected Areas. Paper presented at the Society of Conservation Biology 2000 annual meeting (Missoula, MT).

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Heilman, Jr. G.E., J.R. Strittholt, and D.A. DellaSala. 2000. A forest intactness assessment for forest ecoregions of the United States: Eastern results. Paper presented at the Society of Conservation Biology 2000 annual meeting (Missoula, MT).

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Slosser, N.C., J.R. Strittholt, N.L. Staus, G.E. Heilman, Jr., and R.R. Robinson. 2000. Pacific Northwest conservation assessment: A website. Poster presented at the Society for Conservation Biology 2000 annual meeting (Missoula, MT).

Strittholt, J.R., R.F. Noss, and G.H. Heilman, Jr. 1999. Defining focal areas for conservation of redwoods using GIS. Paper presented at the Society of Conservation Biology 1999 annual meeting (College Park, MD).

DellaSala, D., J.R. Strittholt, and N. Staus. 1999. An updated protected areas GIS database for the United States. Poster presented at the Society of Conservation Biology 1999 annual meeting (College Park, MD).

Heilman, G.H., Jr., J.R. Strittholt, and D. DellaSala. 1999. A forest intactness assessment for the forest ecoregions of the U.S.: Appalachia Case Study. Paper presented at the Society of Conservation Biology 1999 annual meeting (College Park, MD).

Paquet, P., J.R. Strittholt, and N. Staus. 1999. Assessing gray wolf reintroduction feasibility in the Adirondack Park, New York USA. Paper presented at the Society of Conservation Biology 1999 annual meeting (College Park, MD).

DellaSala, D. A., J.R. Strittholt, W. Wettengel, E. Dinerstein, D. Olson, K. Kavanagh, G. Castilleja, and A. Hackman. 1998. Conservation assessment of North American Forests: Importance, status, and degree of intactness. Paper presented at the Society of Conservation Biology 1998 annual meeting.

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Strittholt, J.R. and P.A. Frost. 1997. Results from an Enduring Features Gap Analysis for the northern Rocky Mountains (USA). Invited paper presented at the Society for Conservation Biology Meeting in Victoria, BC.

Strittholt, J.R., R.F. Noss, and P.A. Frost. 1997. A Biodiversity Conservation Plan for the Klamath- Siskiyou Ecoregion. Paper presented at the First Conference on Siskiyou Ecology in Cave Junction, OR.

Strittholt, J.R., P.A. Frost, and R.F. Noss. 1996. An enduring features gap analysis for the northern Rocky Mountains (USA). Paper presented at the Society for Conservation Biology Meeting in Providence, RI.

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DellaSala, D.A., J.R. Strittholt, R.F. Noss, and D.M. Olson. 1996. Managing Inland Northwest Landscapes for Natural Resources and Biodiversity: Core Reserves an Essential Component. Paper presented at the Society for Conservation Biology Meeting in Providence, RI.

Strittholt, R. R. 1995. A regional nature reserve design for the Edge of Appalachia (Adams County, Ohio). Paper presented at the Society for Conservation Biology Meeting in Ft. Collins, CO.

Strittholt, J.R. 1994. Parcel-based mapping in conservation land evaluation. Paper presented at the Natural Areas Association Meeting, West Palm Beach, FL. Abstract: Proceedings p. 65.

Strittholt, J.R. and R.E.J. Boerner. 1993. Designing a regional nature reserve using geographic information systems. Paper presented at the Ecological Society of America Meeting, Madison, WI. Abstract: Proceedings of the Ecological Society of America 74 (2 Supplement): 449.

Strittholt, J.R. and R.E.J. Boerner. 1993. Influence of habitat fragmentation on a regional nature reserve design. Paper presented at the Natural Areas Association Meeting, Orono, ME. Abstract: Proceedings p. 22.

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Strittholt, J.R. and R.E.J. Boerner. 1992. The use of large scale conservation gap analysis in nature reserve design. Paper presented at the 54th Midwest Fish and Wildlife Conference, Toronto, Canada. Abstract: Proceedings p. 244.

Strittholt, J.R. 1992. Digital database construction for a GIS used in regional nature reserve design. Paper presented at the Natural Areas Association Meeting, Bloomington, IN. Abstract: Proceedings p. 57.

PROFESSIONAL SKILL AREAS:

Project Management: Experienced in managing multi and interdisciplinary conservation research projects.

Nature Reserve Design: including Conservation Gap Analysis, Vegetation Mapping, Landscape Ecology Applications, Parcel-based Mapping and Modeling, Watershed Analysis, Corridor Design, and Habitat Fragmentation Modeling.

Geographic Information Systems: Well-versed in ARC/INFO, ARCVIEW, ERDAS Imagine 8.3, OSU-Map. Some experience with ARCGRID, Autocad, MapII, Mapgrafix, and Spans. Experience in constructing a GIS database for nature reserve planning as well as GIS hardware/software installation and training.

Remote Sensing: Experienced in satellite and aerial photography interpretation and processing. Considerable processing experience in ERDAS Imagine, MIPS, and Intergraph software.

Large-format Map Scanning and Editing: Considerable experience using Intergraph hardware and software including Microstation, IRASB, IRASC, and IVEC.

Ecological Assessment and Field Biology: terrestrial and aquatic vertebrates, vascular plants, and community ecology.

Communications and Public Speaking: 7 years teaching experience, experience in outdoor and natural history education via Hamilton County Park District, OH. and Columbus and Cincinnati Zoos, experience speaking to user groups and technical personnel through the OSU Center for Mapping.

Brendan C. Ward

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Objective:	To conduct ecological research quantifying the interactions between natural & human-caused disturbances, landscape dynamics, and plant & animal population dynamics. To contribute scientific analyses and data to support ecologically-appropriate land and fire management.
Key Skills:	High level of proficiency in ecological modeling, statistical & spatial analysis, GIS, computer programming, and technical writing.
Education:	***Master of Science in Forest Ecology*** University of Wisconsin – Madison, Madison, WI Graduated: August 2004 ***Bachelor of Science in Environmental Science*** Minors in Computer Science and Chemistry Western Washington University, Bellingham, WA Graduated: June 2002, *Magna Cum Laude*, with Honors
Professional Experience:	***Conservation Biologist / GIS Analyst*** *Conservation Biology Institute (www.consbio.org)* *Dec. 2007 - Present* At the Conservation Biology Institute, I am contributing heavily to the development of the Data Basin project (www.databasin.org), a cutting-edge conservation data commons and analytical platform. My core tasks involve locating relevant data, processing into standardized formats and projections, editing metadata, and uploading to Data Basin. I have developed numerous programs and a processing pipeline to facilitate the cataloging and processing of hundreds of datasets. I have also contributed to other projects at the Conservation Biology Institute, including estimation of potential fisher habitat as a function of fire and fuels management in the Sierra Nevada, and have assisted with the development of extensions for the landscape simulation model LANDIS-II for this effort. ***Biological Scientist / GIS Specialist (GS-11)*** *LANDFIRE Project (www.landfire.gov)* *Missoula Fire Sciences Laboratory, USFS Rocky Mountain Research Station* *2004 – Dec. 2007* During my employment with LANDFIRE, I was the technical team lead of the fire regimes modeling team. The LANDFIRE project was responsible for mapping current and potential vegetation, wildland fuels and fire behavior, estimated historic fire regimes, and vegetation departure for all land area in the United States. As team lead, I managed the daily operation of the fire regimes modeling team, which was tasked with simulating historic vegetation disturbance and succession dynamics using the model LANDSUM, and mapping fire regime characteristics, current succession stages of vegetation communities, and measures of current vegetation departure from simulated historic reference conditions. These datasets are specifically intended to inform land management decisions regarding fire and ecosystem restoration. I have largely been responsible for the development and implementation of the methods and analyses for which my team was responsible. I have authored or co-authored a

	number of technical analyses specifically intended to guide methodological development for LANDFIRE production.

I have contributed extensively to the methods and datasets of other key teams within LANDFIRE, acting well outside my position duties. I developed mission-critical programs for classifying ground-based vegetation plots to Ecological Systems, spatially applying classification and regression trees for mapping potential vegetation and canopy fuels, and processing SSURGO datasets for seamless nationwide use in vegetation mapping, among others. I developed methods and software for geo-locating training plots using available imagery when ground-based datasets are unavailable.

Graduate Research Assistant
Forest Landscape Ecology Laboratory, Department of Forest Ecology & Management
University of Wisconsin – Madison
2002 – 2004

I conducted research on landscape-level ecological effects of the interaction between rural residential development and public forest management using the forest landscape simulation model, LANDIS-II. I explored possible future trajectories of tree species composition, age structure, landscape heterogeneity, aboveground live biomass, and disturbance processes that arose from different levels of restriction to timber harvests on a public forest in northern Wisconsin. I made important improvements to model procedures and developed a database-powered approach to handle model inputs and outputs.

Research Experience for Undergraduates Intern (National Science Foundation)
Department of Forest Science, College of Forestry, Oregon State University

2001

I designed and implemented a simulation modeling study to analyze windthrow disturbance dynamics in the Cascade Mountains of Oregon. I developed a simulation modeling framework that can be used to predict areas of high windthrow susceptibility given a small set of model inputs. I presented this research at the 2003 U.S. regional meeting of the International Association for Landscape Ecology. I conducted a network analysis of debris flow disturbance events in relation to stream and road networks in the H.J. Andrews Long Term Ecological Research watershed. |
| **Publications:** | Ward, B.C., D.J. Mladenoff, and R.M. Scheller. 2005. Simulating landscape-level effects of constraints to public forest regeneration harvests due to adjacent residential development in northern Wisconsin. Forest Science 51(6): 616-632.

Ward, B. and D.J. Mladenoff. 2004. Landscape-level effects of the interaction between residential development and public forest management in northern Wisconsin, USA. Master of Science Thesis, University of Wisconsin - Madison.

Ward, B.C. 2002. A simple rule-based simulation approach to modeling windthrow in forests of the western Cascade Mountains of Oregon. Senior Thesis, Huxley College of Environmental Studies, Western Washington University.

Ward, B. 1998. "A Student Becomes a Teacher," in Community Boatbuilding Manual, M.P. Murphy (Ed.). WoodenBoat Publications: Brooklyn, ME. pp 18-20. |
| **Awards:** | Several monetary and grade-step awards - LANDFIRE Project (2004-2007). Outstanding Graduating Senior in Honors Program (2001-2002), Outstanding Graduating Environmental Science Student (2001-2002), Western Washington University Honor Roll, Western Washington University President's List, Mary Kupfer Award (1998), Outstanding Graduating Senior in Math Department (1997-1998), Eagle Scout. |

Other Employment:	***Sailing Instructor*** 2000 - 2001 (Lead); 1999, 2002 (Assistant) Department of Physical Health, Education, and Recreation, Western Washington University. ***Substitute Facilities and Programs Manager*** Summer 2000 Lakewood Facility, Viking Union Administration, Western Washington University.
Volunteer experience:	***Computer Programming and Ecological Modeling Assistant*** Winter 2001 Landscape Ecology Laboratory, Department for Environmental Sciences, Western Washington University. ***Youth Program Leader*** 1995 - 1998 Bantry Bay Gig Project, Atlantic Challenge Foundation, Tacoma, WA.