



# What is Adaptive Management and How Can It Help Conservation?



**Marcia Brown, Vinaya Swaminathan & Lou Ann Dietz  
FOS-UMD Course in Adaptive Management for Conservation Projects**

# This Presentation

- What is adaptive management?
- What are the Conservation Measures Partnership and the *Open Standards for the Practice of Conservation*?
- How can applying the Open Standards improve conservation projects?
- Miradi adaptive management software
- Training in adaptive management

# About Foundations of Success



## **Our Structure**

- Non-profit organization

## **Our Mission**

- To improve the practice of conservation

## **Our Strategy**

- Work with practitioners of all kinds to improve the design, management, monitoring, and learning from conservation projects and programs

# Some Partners and Clients



- **Big NGOs** – TNC, WWF, WCS, BirdLife Intl
- **Smaller NGOs** – Rare Conservation, Appalachian Trail Conservancy, COBI
- **Networks** – Locally Managed Marine Areas Network, Eurosite, Conservation Measures Partnership
- **Government Agencies** – US State Fish and Wildlife Agencies, CA MPA Monitoring, Metsahalitus (Finnish Forestry)
- **Donors** – Packard, Moore, Duke, Christensen, GEF
- **Academic Institutes** – University of Maryland, Monterey Institute of International Studies, Organization of Tropical Studies, University of South Pacific

## Structure

- Master's program in Sustainable Development & Conservation Biology at the University of Maryland, College Park

## Mission & Strategy

- To attract the world's best candidates for leadership in conservation biology and development programs, and to provide them with the multidisciplinary, conceptual and experiential learning experience necessary to address the biodiversity crisis that now faces the planet.

# The Story of Washington's Murder (according to Bill Sutherland)

**12<sup>th</sup> Dec 1799 Inspects plantation in snow**

**13<sup>th</sup> Sore throat**

**14<sup>th</sup> Dec 2:00 AM Breathing difficulties**

- Mr Rawlins, Estate overseer, provided mixture molasses, vinegar and butter
- Mr Rawlins ordered by Washington to remove 0.75 imperial pint blood

**10:00 AM Dr James Craik, personal physician, arrives**

- Preparation dried beetles applied to throat
- 1 pint blood removed
- No improvement so another 1 pint blood removed
- Vinegar in water gargle – near suffocation
- 2 more pints blood removed

**3:00 PM Dr Elisha Dick, prominent physician arrive**

- 1.8 pints blood removed
- Pulse low

**10:10pm Died**



**Total > 6.5 pints removed**

# Pierre Charles Alexandre Louis (1787-1872)



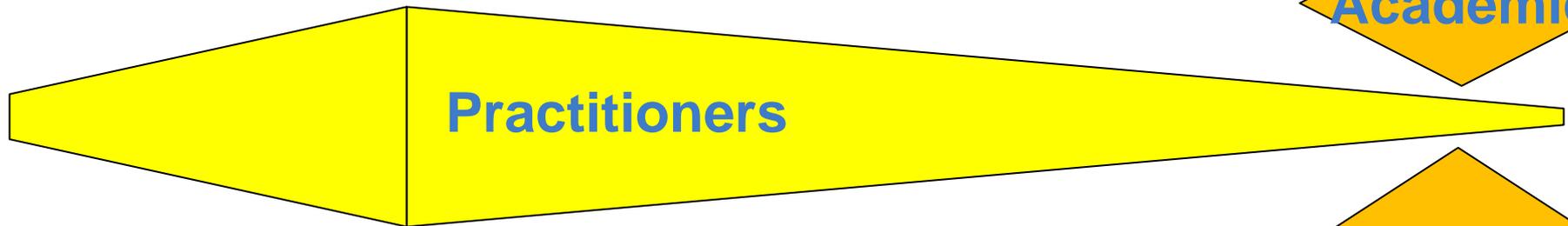
- Introduced numerical methods to examine the effectiveness of medical interventions
- Showed blood letting ineffective

# How Practitioners Make Decisions

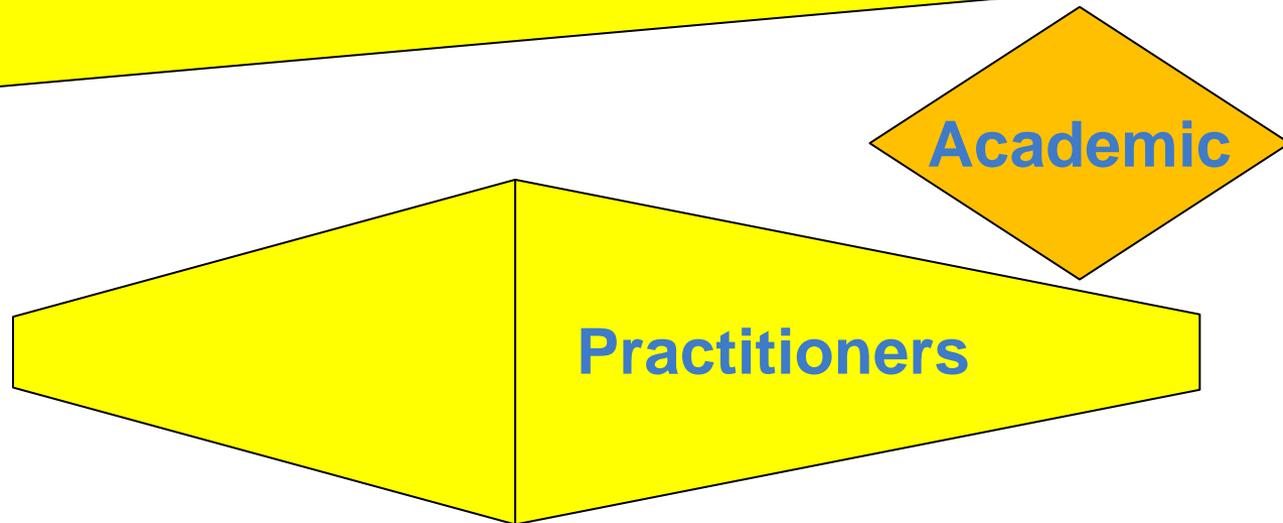
Myth; Anecdote; Observation; Comparison; Replicated; RRC

Documented

Now



Future



# Why Do Adaptive Management?

- Are we achieving an impact?
- Are we doing the right things?
- Are we doing them well?

# What is Adaptive Management?

Whatever  
Anyone Wants

# What is Adaptive Management?

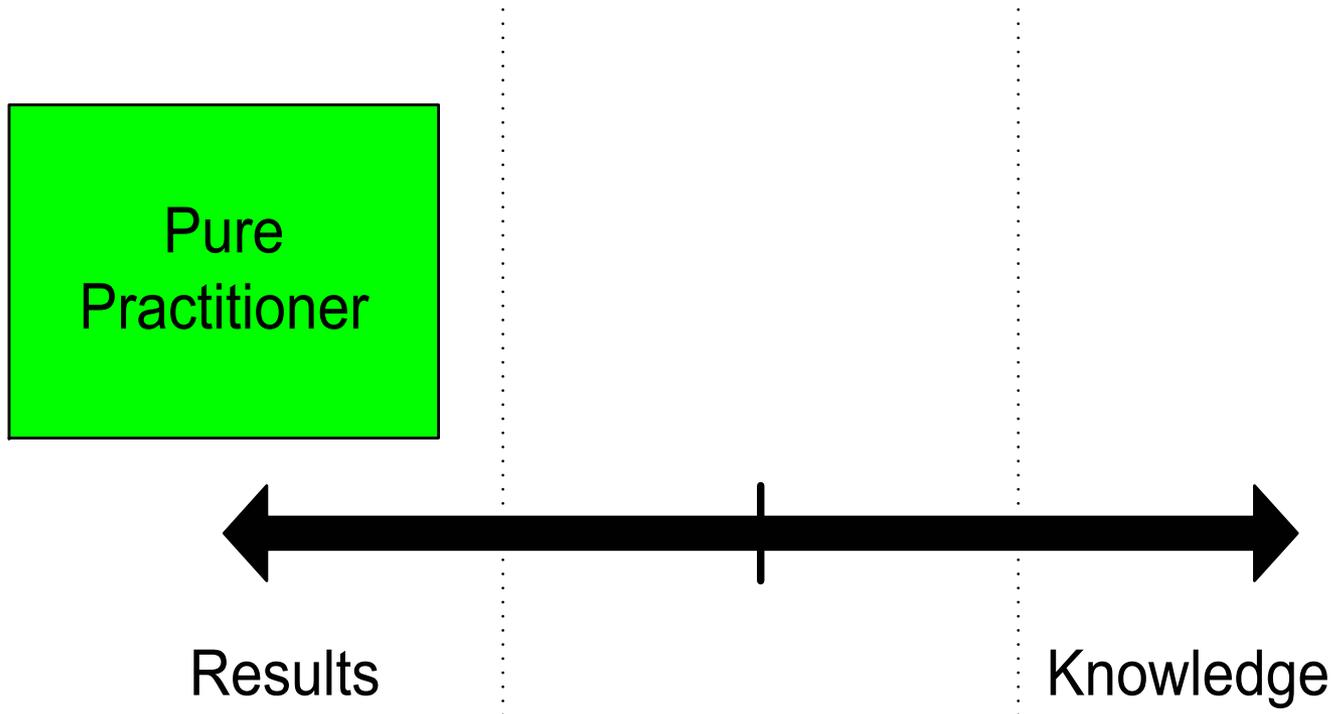


# What is Adaptive Management?

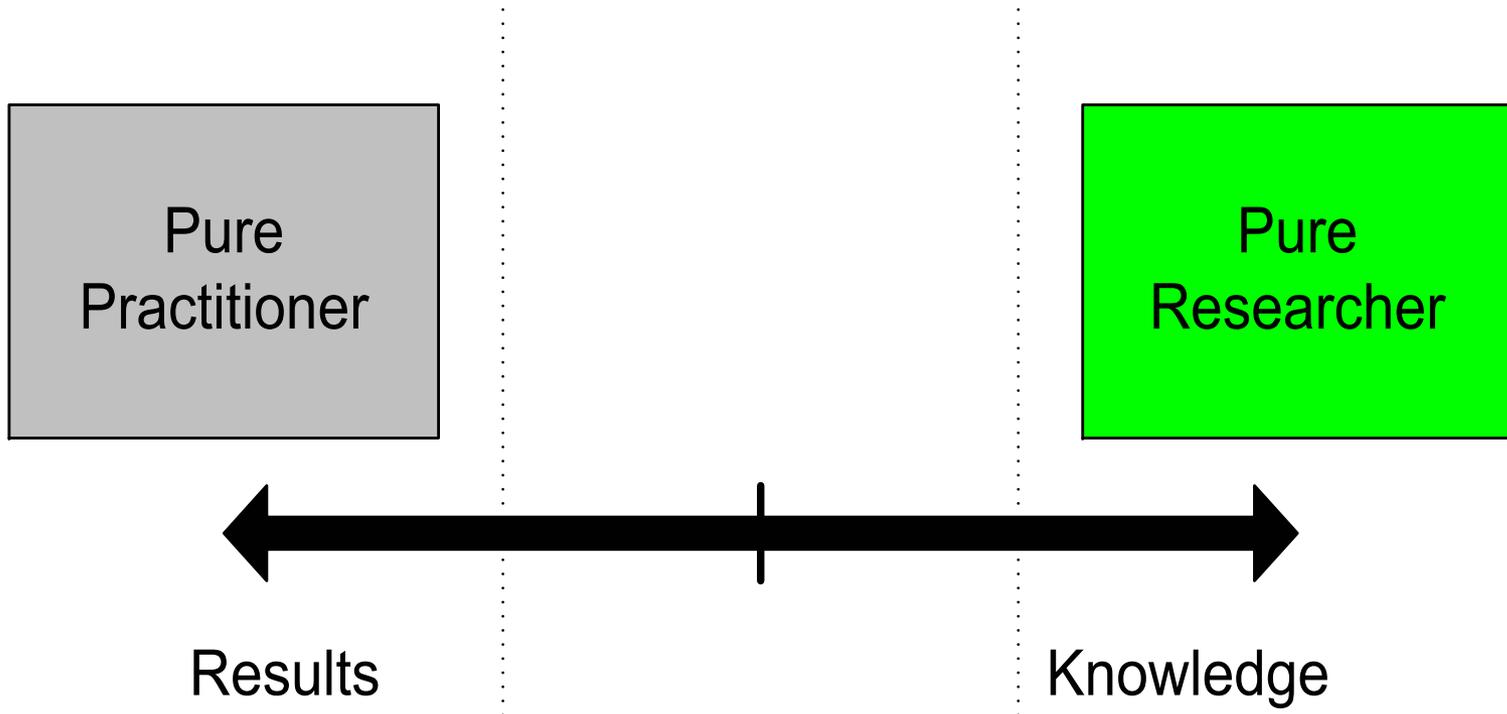
The integration of project or program planning, management, and monitoring to provide a framework for:

- Testing assumptions
- Learning
- Adapting

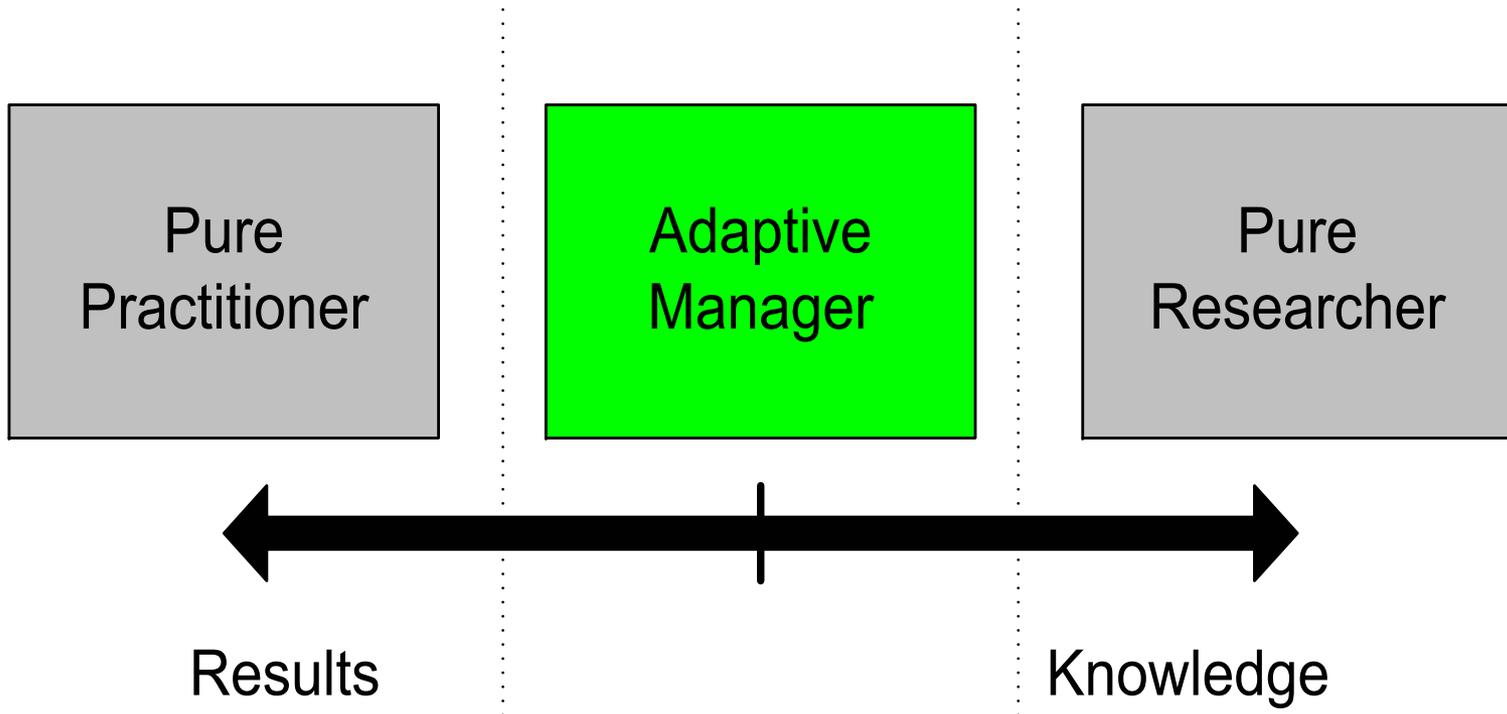
# Adaptive Management Combines Action and Research



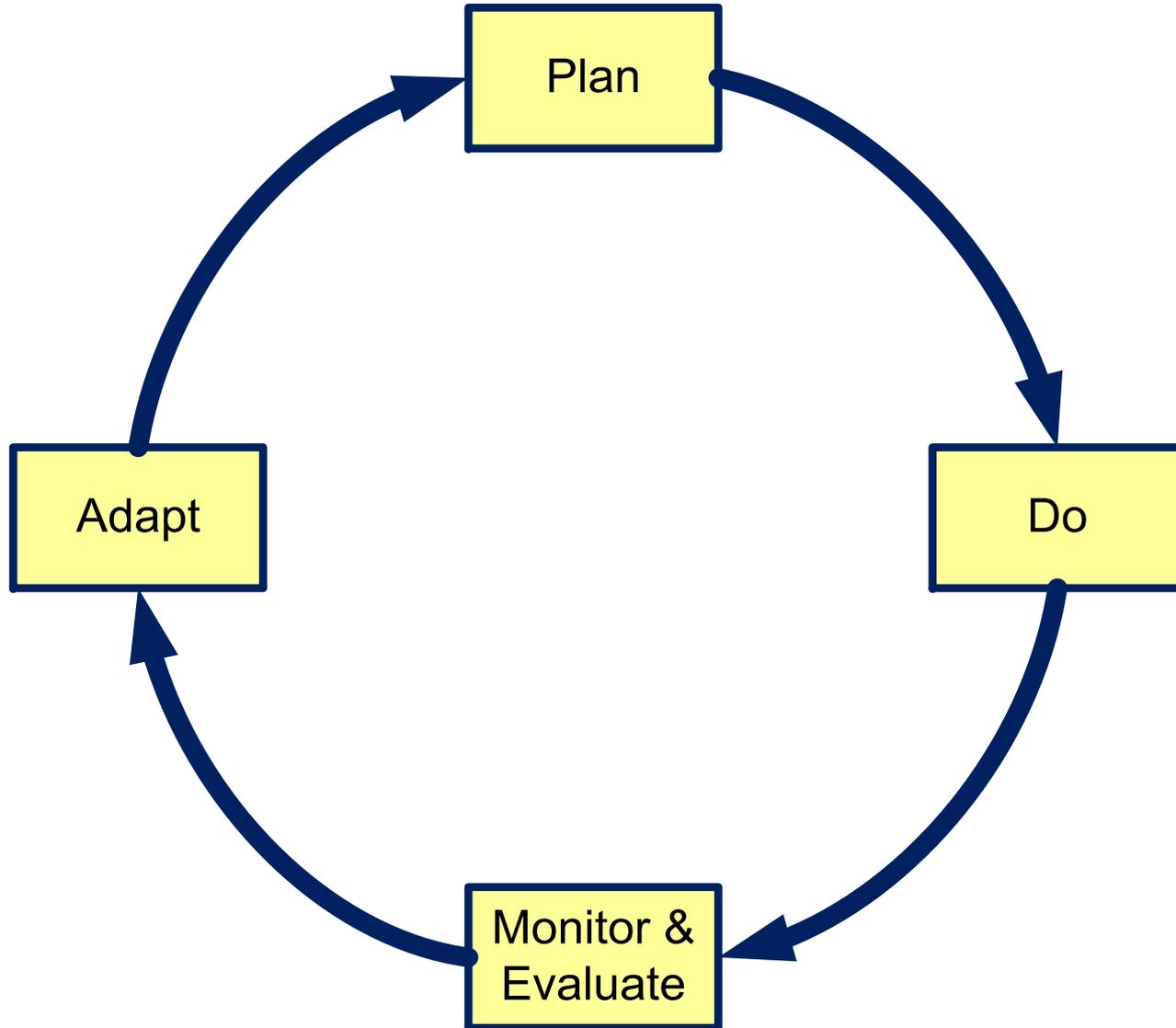
# Adaptive Management Combines Action and Research



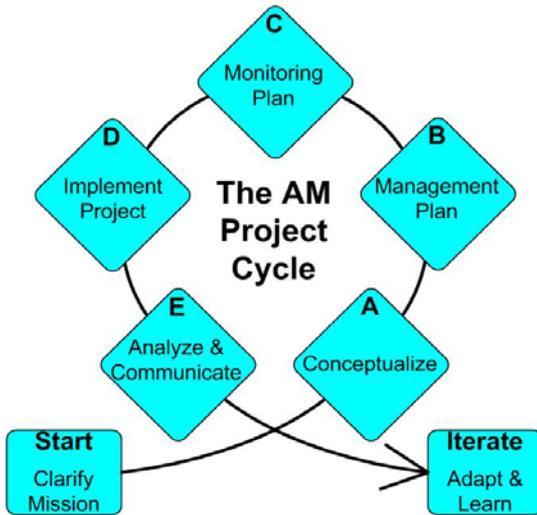
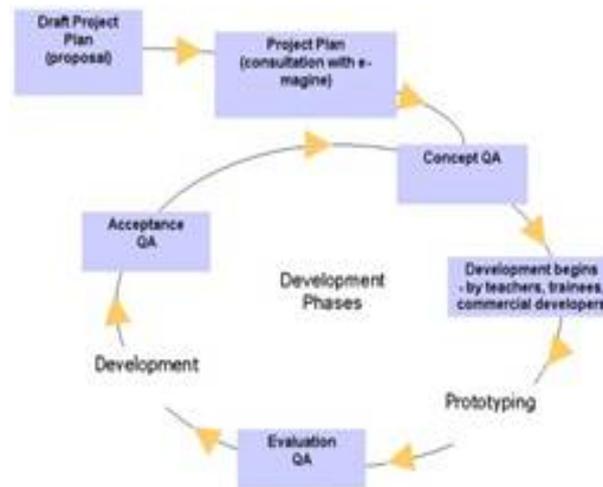
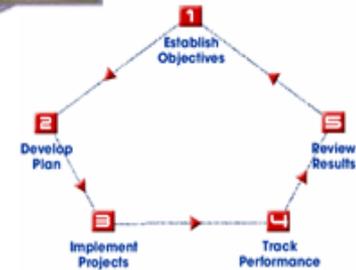
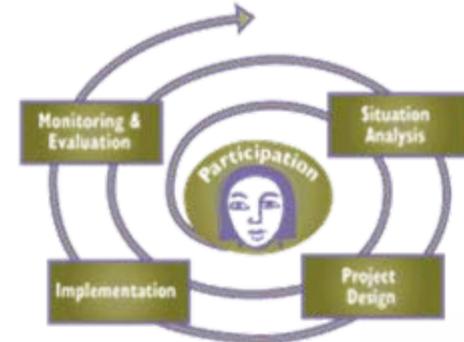
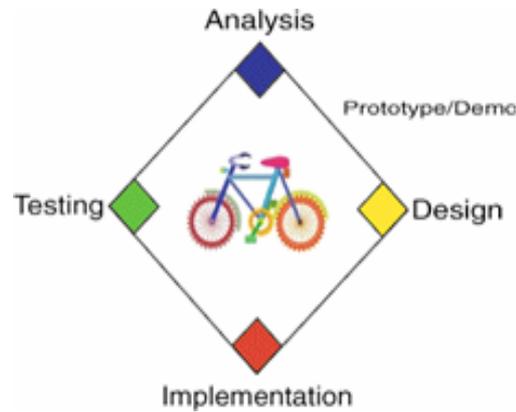
# Adaptive Management Combines Action and Research



# Adaptive Management is Based on Project Cycle Management



# Many Versions of Adaptive Management in Practice



# Conservation Measures Partnership (CMP)

## Members:

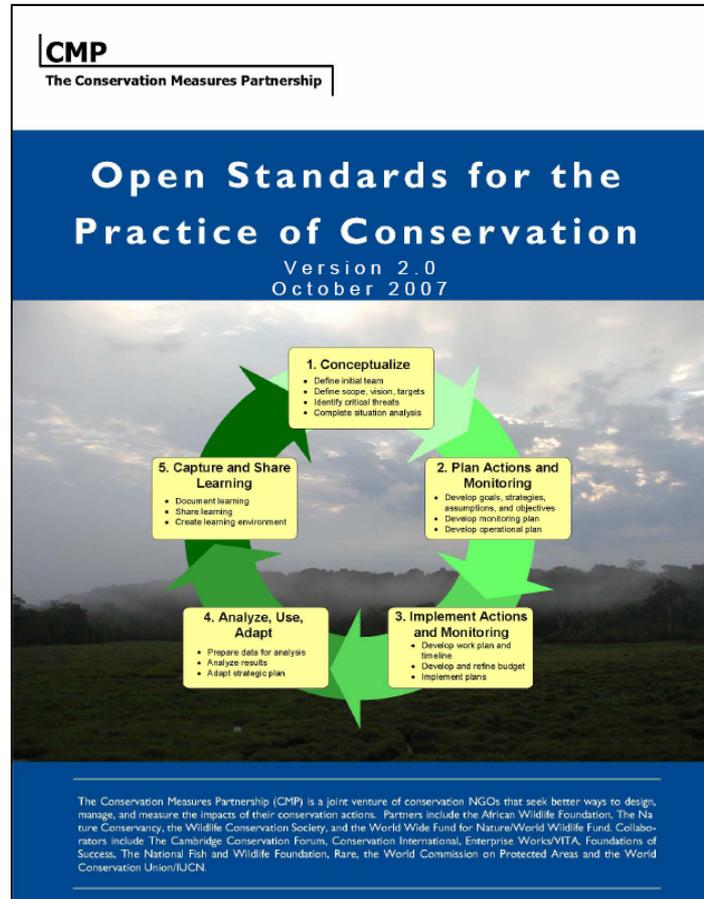


## Funding Support:



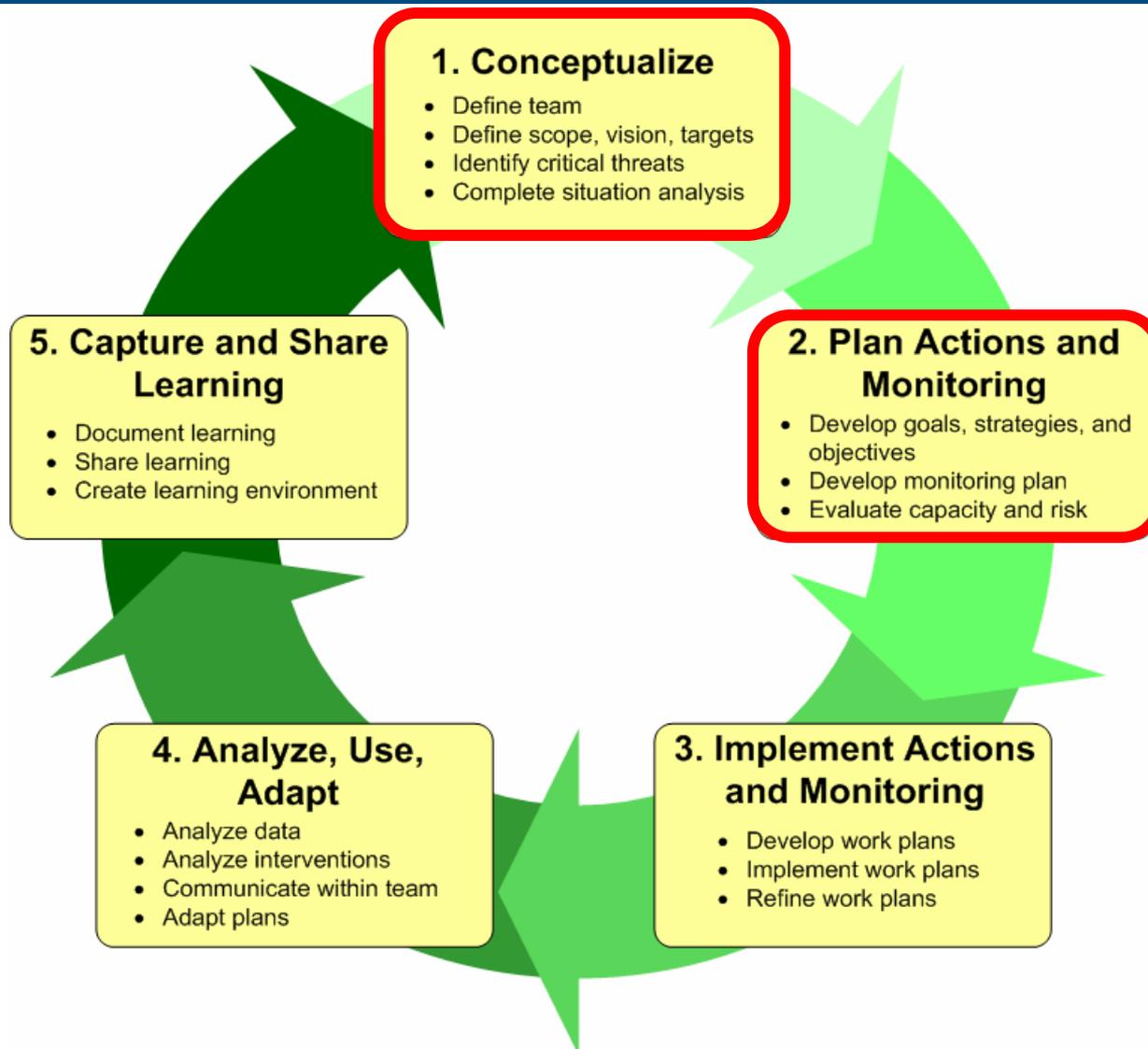
# The CMP *Open Standards* for the *Practice of Conservation*

www.ConservationMeasures.org



CMPinfo@ConservationMeasures.org

# What is CMP's Approach to AM?



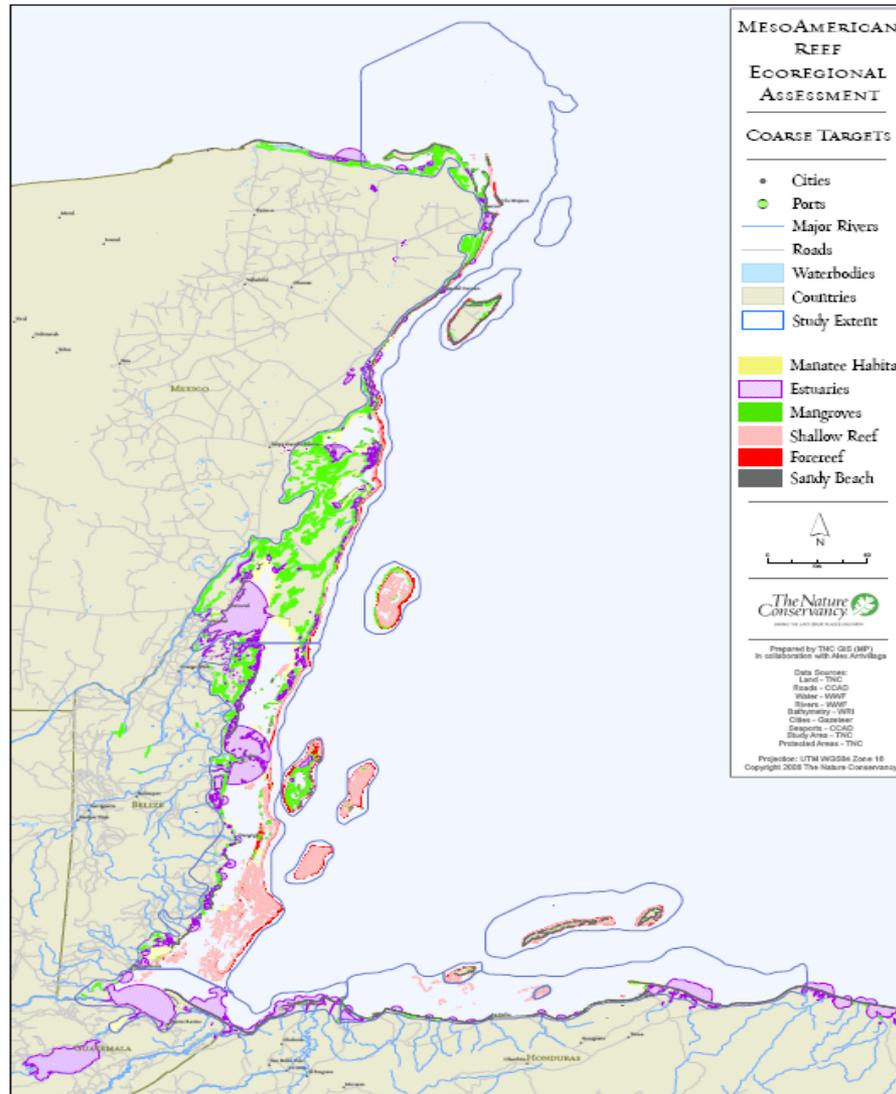
# CMP's Working Hypothesis

*The hypothesis is that a project following the Open Standards will have a better likelihood of achieving conservation results and will be able to demonstrate those results*

# This Presentation

- Background on FOS
- What is adaptive management?
- What are the Conservation Measures Partnership and the *Open Standards for the Practice of Conservation*?
- How can applying the Open Standards improve conservation projects?
- Miradi adaptive management software
- Training in adaptive management

# Example: Mesoamerican Reef



# The *Open Standards* Help You... Focus Your Project

- Identify what you are working to conserve

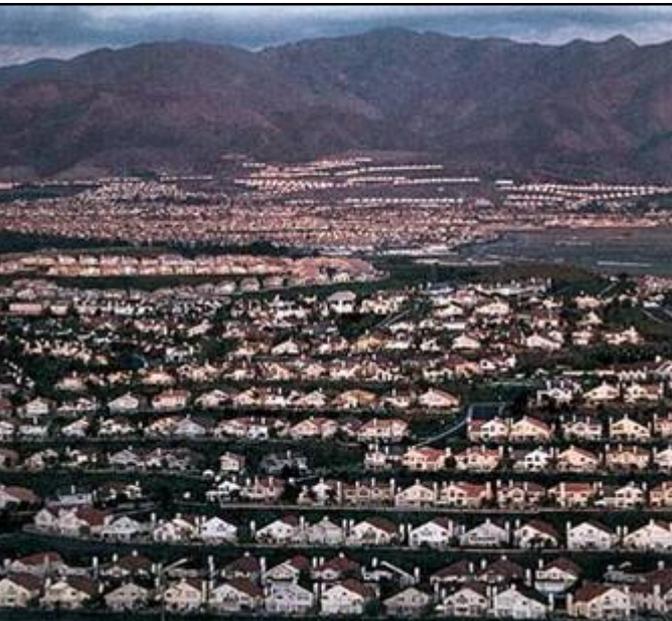


# The *Open Standards* Help You... Focus Your Project



# The *Open Standards* Help You... Focus Your Project

- Identify and prioritize threats to your ecosystems, resources, or species



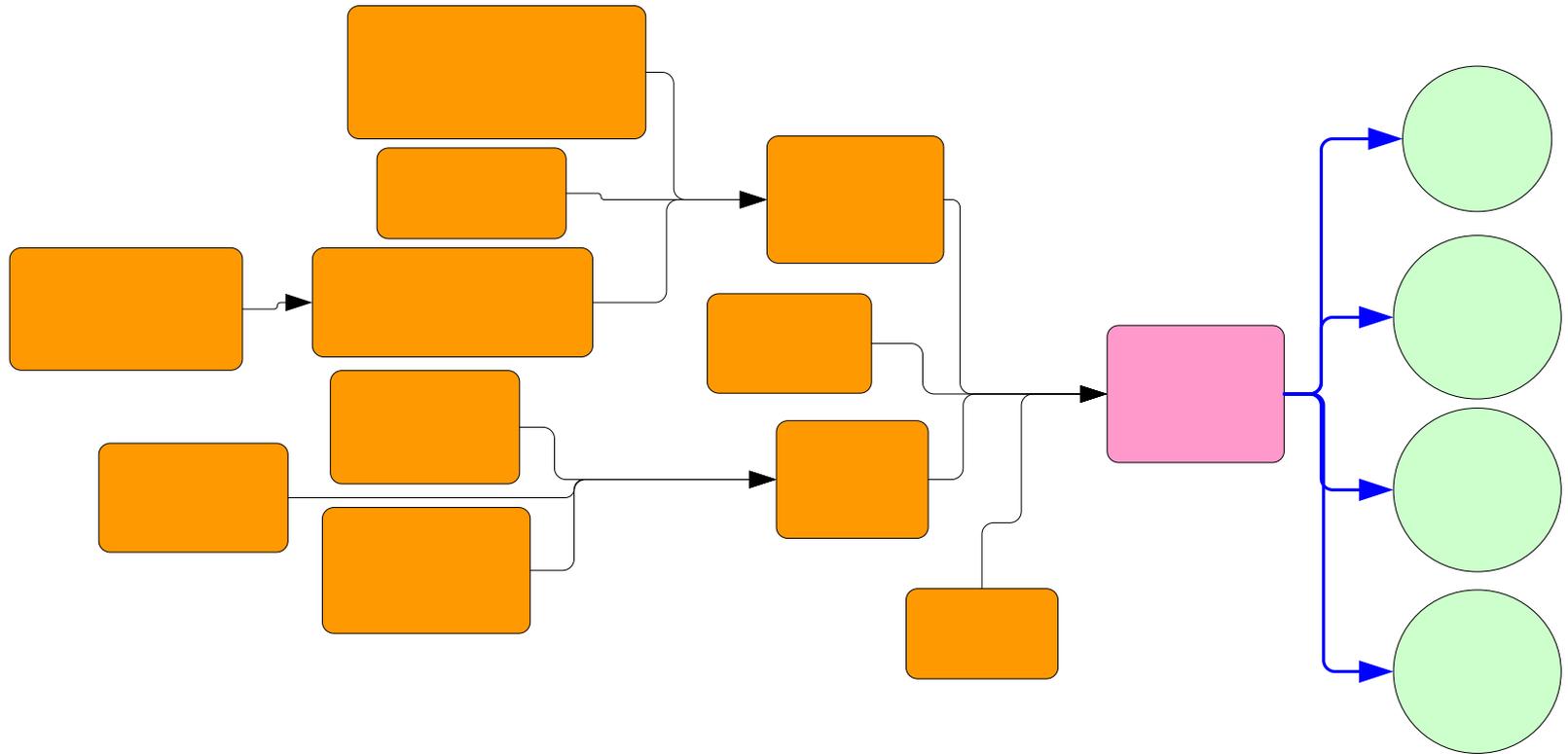
# The Open Standards Help You... Focus Your Project

- Rate threats so you know where to take action

Threats	Coral Reefs	Seagrasses	Beaches & Dunes	Mangroves	Estuaries & Coastal Lagoons	SPAG's	Whale Shark	Summary Threat Rating
Global Climate Change	Very High	Medium	Low	High	Medium	-	-	High
Inappropriate aquatic tourism practices	Very High	Low	-	-	Medium	Low	High	High
Wastewater contamination	High	High	-	Low	High	Medium	Low	High
Desarrollo de infraestructura turística	Medium	High	High	High	-	-	-	High
Sedimentation	High	High	-	Low	High	-	-	High
Urban coastal development	-	-	High	High	High	-	-	High
Overfishing and inappropriate fishing practices	High	Medium	-	-	Medium	High	-	High
Agrochemicals	High	High	Low	Low	Medium	-	-	High
Navigation (anchor damage, oil spills, wounds from boats)	High	Low	Medium	Low	Medium	-	Medium	Medium
Transportation infrastructure	High	Medium	Medium	Medium	Low	-	-	Medium
Solid waste	-	-	High	-	-	-	Medium	Medium
Invasive species	High	-	Low	-	-	-	-	Medium
Cattle grazing	-	-	-	High	-	-	-	Medium
Shrimp aquaculture	-	Medium	Medium	Medium	Medium	-	-	Medium
Natural disasters	-	Medium	Medium	-	-	-	-	Medium
Mining	-	-	Low	-	Medium	-	-	Low
<b>Summary Target Rating</b>	<b>Very High</b>	<b>High</b>	<b>High</b>	<b>High</b>	<b>High</b>	<b>Medium</b>	<b>Medium</b>	<b>Very High</b>

# The *Open Standards* Help You... Focus Your Project

- Analyze the root causes of the threats, so your strategies address them





# The *Open Standards* Help You... Be Very Clear and Specific

- “SMART” goals and objectives

## ORIGINAL IDEA

Spawning aggregations  
“effectively conserved”

## GOAL

By 2018, all validated and ecologically functional SPAG sites will maintain the conditions necessary to preserve the species (composition, abundance, proportion of sexes) documented during validation.

# The *Open Standards* Help You... Be Very Clear and Specific

- “SMART” goals and objectives

## ORIGINAL IDEA

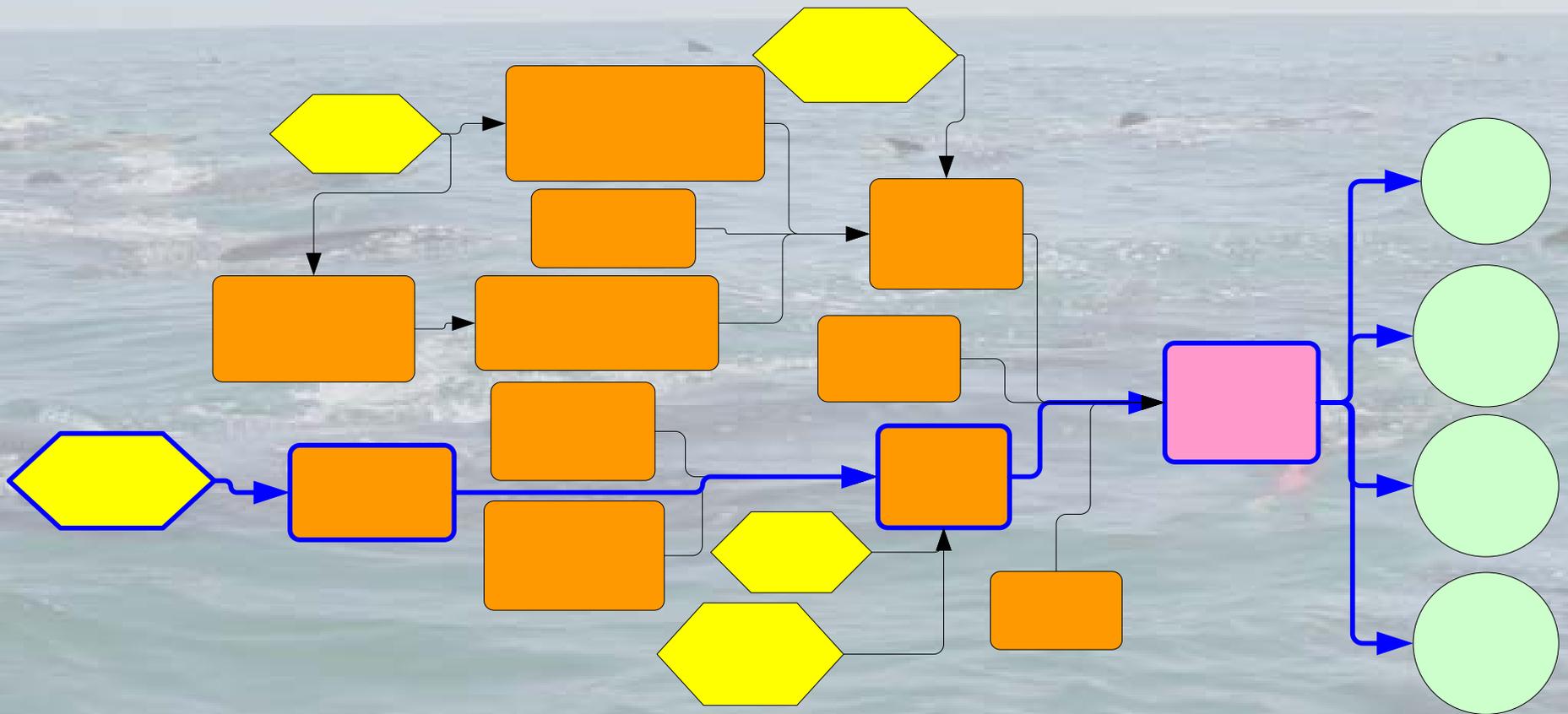
Greater respect for  
resource use  
regulations

## OBJECTIVE

By the end of 2013, there is  
a 50% decrease in the  
number of infractions\* of  
regulations in the 4 sites  
where small tourism  
businesses are  
implemented  
(baseline = 2010)

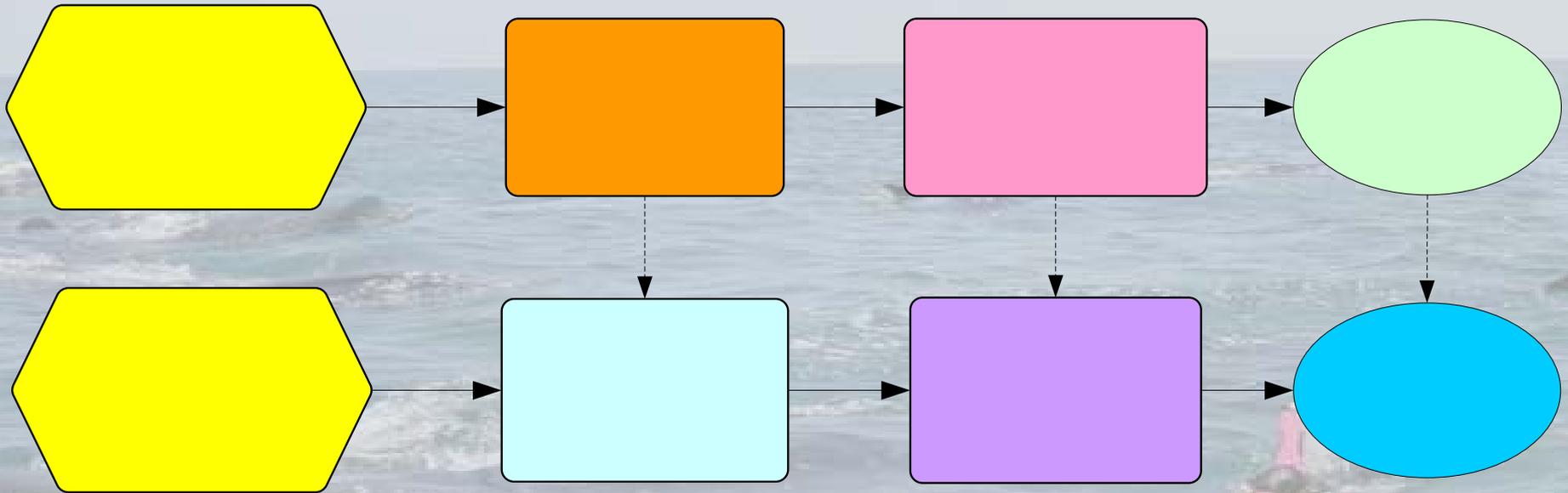
# The *Open Standards* Help You... Be Very Clear and Specific

- Lay out and test assumptions



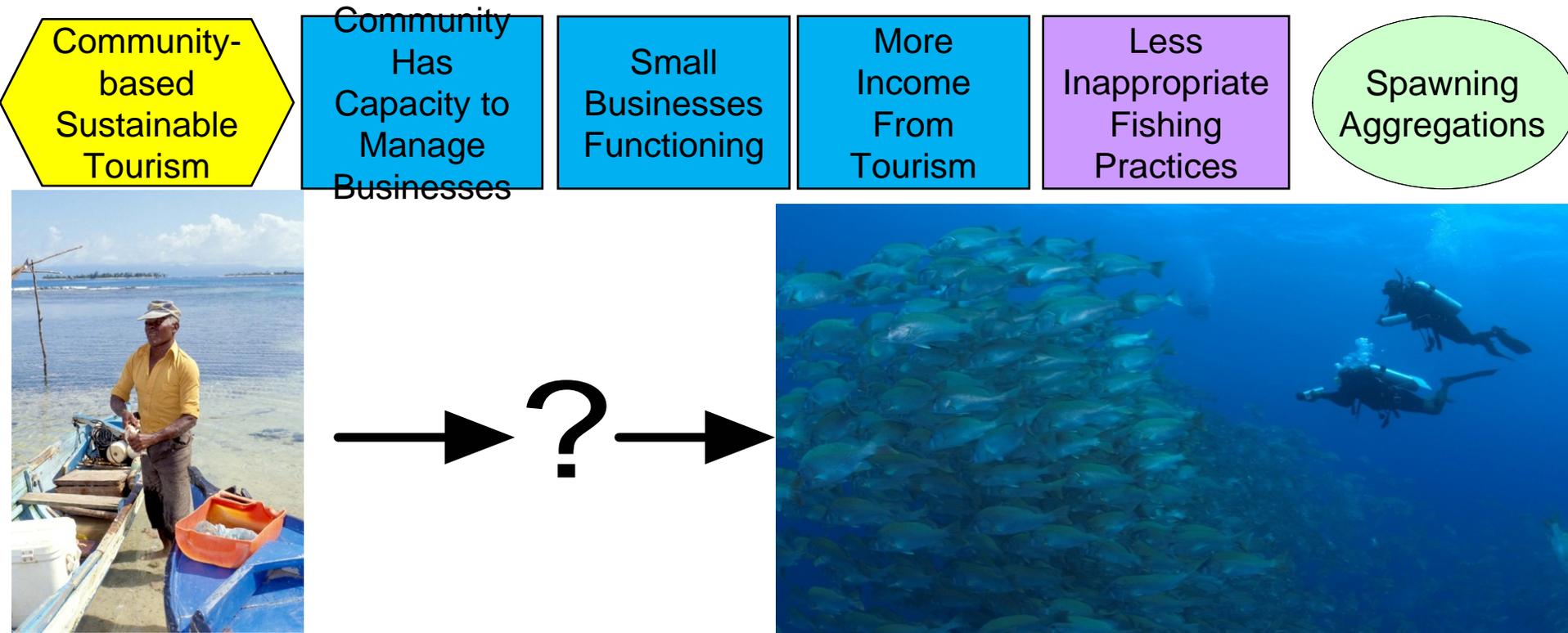
# The *Open Standards* Help You... Be Very Clear and Specific

- Lay out and test assumptions



# The *Open Standards* Help You... Be Very Clear and Specific

- Lay out and test assumptions



# The Open Standards Help You... Be Very Clear and Specific

**Objective:** By the end of 2013, at least 30% of the target population households are receiving income from tourism activities supported by the project.

**Indicator:** % of target population households receiving income from tourism activities supported by the project

**Objective:** By the end of 2013, there is a 50% decrease in the number of infractions\* of regulations in the 4 platform sites where small tourism businesses are implemented (baseline = 2010)

**Indicator:** # of infractions of regulations in 4 platform sites

Community-based Sustainable Tourism

Community Has Capacity to Manage Businesses

Small Businesses Functioning

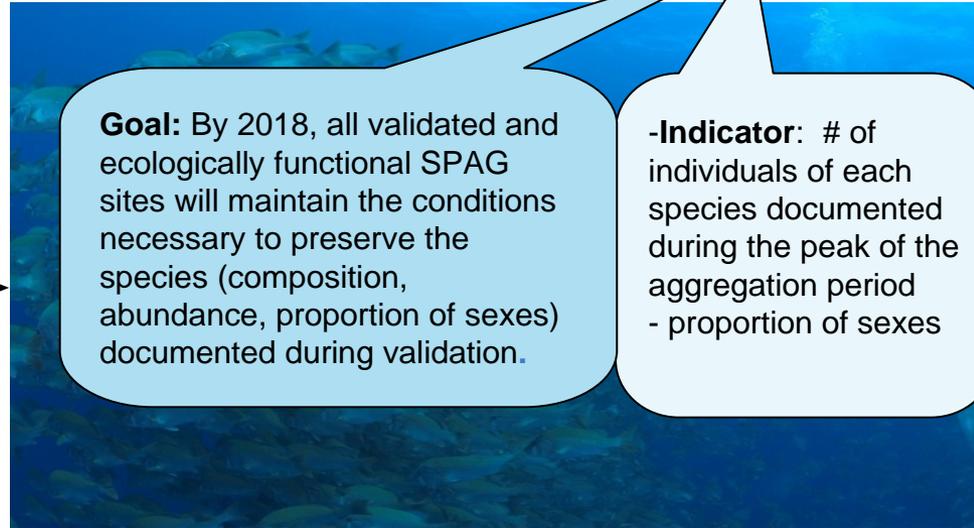
More Income From Tourism

Less Inappropriate Fishing Practices

Spawning Aggregations

**Goal:** By 2018, all validated and ecologically functional SPAG sites will maintain the conditions necessary to preserve the species (composition, abundance, proportion of sexes) documented during validation.

**-Indicator:** # of individuals of each species documented during the peak of the aggregation period - proportion of sexes



# The Open Standards Help You... Determine Resource Needs

- Develop budgets and workplans

Institution/Program/Project: Migratory Bird Initiative

Workplan Period: 2008 - 2009

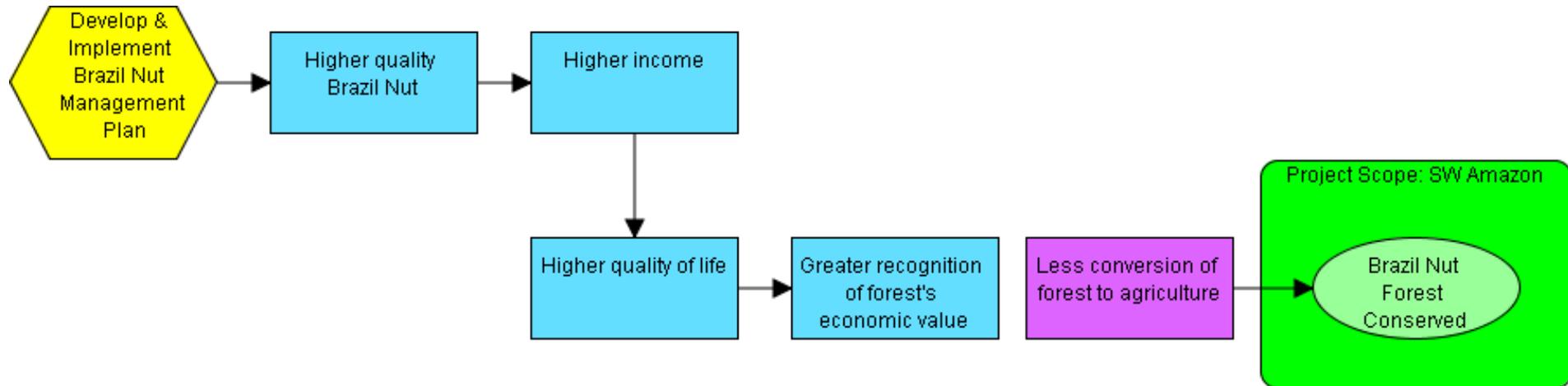
Considered:	<b>287</b>	labor days / year and	<b>8</b>	holidays =	279
	Incomplete or without planning				
	Normal Workload =	69.75 days/quarter + -	<b>5%</b>		66
	Exceeded workload =	69.75 days/qua	<b>5%</b>	to <b>25%</b>	73
	Highly exceeded workload =	69.75 days/quarter plus	<b>25%</b>	or more	
Modify red figures as needed					

Human Resources: Total Estimated Workload per Team Member

Personnel	Datos								
	Q1 2008	Q2 2008	Q3 2008	Q4 2008	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Total
Alejandro Castillo	3	113	129	97	94	118	126	109	1668
Paloma Valdivia	63	82	63	55	85	90	69	106	1695
Maira Juárez	1	43	30	31	22	28	17	25	459
Sofía López	69	134	90	102	91	128	58	109	1901
Sandra Reyes	15	102	92	10					219
Verónica Castañeda	112	339	247	200	164	158	181	194	3276
Sergio Pérez	90	270	246	126	82	86	101	114	1820

# The *Open Standards* Help You... Learn from Your Project

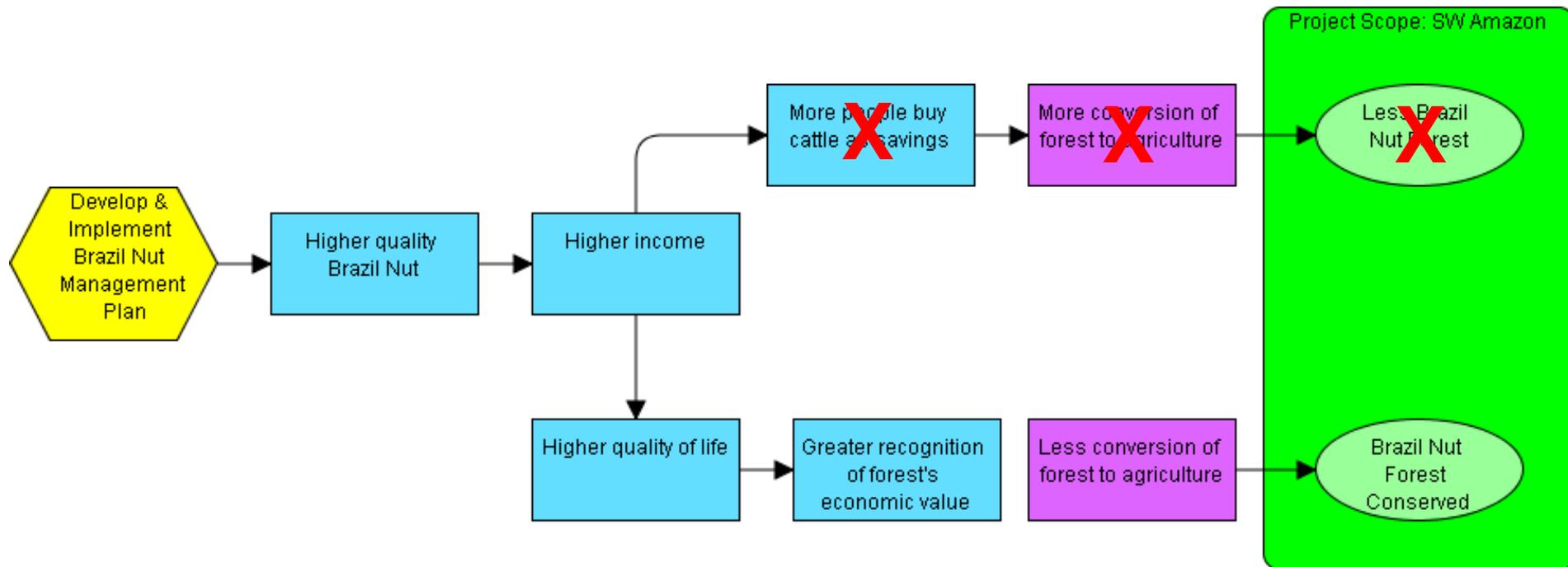
- Analyze project monitoring data & apply findings to improve current & future projects



*Adapted from WWF Southwest Amazon Ecoregion*

# The *Open Standards* Help You... Learn from Your Project

- Analyze project monitoring data & apply findings to improve current & future projects



*Adapted from WWF Southwest Amazon Ecoregion*

# The *Open Standards* Help You... Strengthen Proposals & Donor Reports

**SUB-OUTCOME 1.3: Manuripi Reserve (747,000 ha) in Northern Bolivia, effectively managed**

**Original Layout for Grant based on  
Outputs**

<b>Original Activities</b>	<b>Original Outputs</b>
----------------------------	-------------------------

Provide basic control infrastructure and equipment	Critical infrastructure and equipment in place and operational (11/07)
--	--

Provide support for protection running costs	Park staff hired, trained, and funded (11/07)
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# The *Open Standards* Help You... Strengthen Proposals & Donor Reports

**SUB-OUTCOME 1.3: Manuripi Reserve (747,000 ha) in Northern Bolivia, effectively managed**

Original Layout for Grant based on Outputs		New Layout based on Results	
Original Activities	Original Outputs	Strategies	Results
<p>Provide basic control infrastructure and equipment</p> <p>Provide support for protection running costs</p>	<p>Critical infrastructure and equipment in place and operational (11/07)</p> <p>Park staff hired, trained, and funded (11/07)</p>	<p>STRATEGY 2: State and community-based enforcement of the Reserve</p>	<p>By October 2007, 50% of locals living within the Reserve are aware of the management regulations set forth by the Reserve's Management Plan and the collective agreements made by the Management Committee.</p> <p>By October 2007, community members and national park guards enforce the Reserve's regulations (as agreed in the Steering Committee and set forth in the Management Plan) with all illegal users that they encounter during their surveillance efforts within the Manuripi Wildlife Reserve.</p>

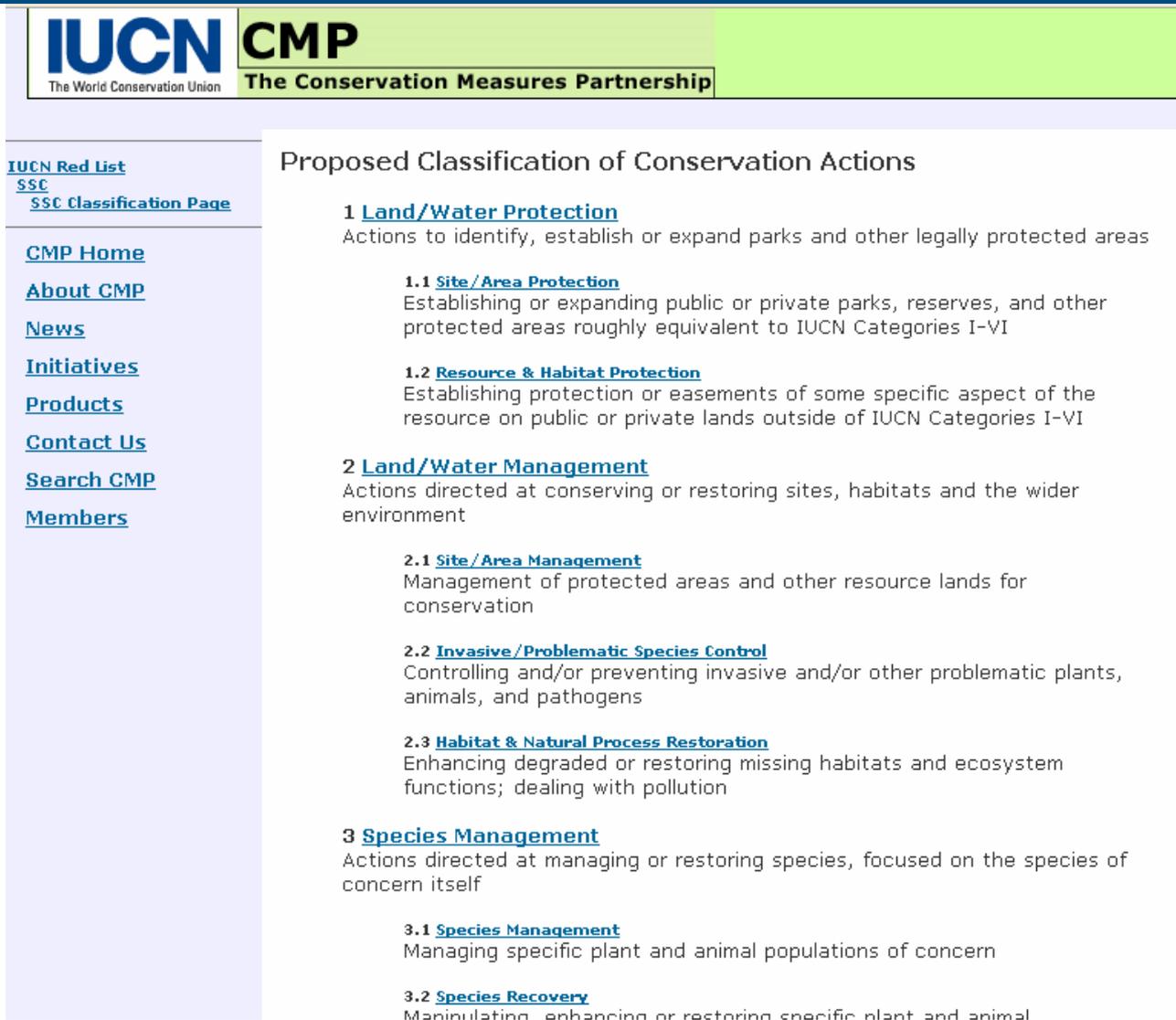
# The *Open Standards* Help You... Improve Other Conservation Efforts

- Share a common language

<b>CMP</b>	<b>AWF</b>	<b>CI</b>	<b>TNC</b>	<b>WCS</b>	<b>WWF</b>	<b>EWB</b>	<b>FOS</b>	<b>IUCN - WCPA</b>
<b>Goals</b>	Goals	Biodiversity conservation objectives	Goal	Goal		Goals & objectives	Goal	Outcome
<b>Objectives</b>		Milestones	Objectives	Targets	Conservation objectives	Outcomes	Objectives	Impacts
<b>Activities</b>	Intervention options	Conservation responses	Strategic actions	Interventions	Strategies & actions	Activities	Activity	

# The *Open Standards* Help You... Improve Other Conservation Efforts

- Share a common language



**IUCN** **CMP**  
The World Conservation Union The Conservation Measures Partnership

[IUCN Red List SSC](#)  
[SSC Classification Page](#)

[CMP Home](#)  
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## Proposed Classification of Conservation Actions

- 1 Land/Water Protection**  
Actions to identify, establish or expand parks and other legally protected areas
  - 1.1 Site/Area Protection**  
Establishing or expanding public or private parks, reserves, and other protected areas roughly equivalent to IUCN Categories I-VI
  - 1.2 Resource & Habitat Protection**  
Establishing protection or easements of some specific aspect of the resource on public or private lands outside of IUCN Categories I-VI
- 2 Land/Water Management**  
Actions directed at conserving or restoring sites, habitats and the wider environment
  - 2.1 Site/Area Management**  
Management of protected areas and other resource lands for conservation
  - 2.2 Invasive/Problematic Species Control**  
Controlling and/or preventing invasive and/or other problematic plants, animals, and pathogens
  - 2.3 Habitat & Natural Process Restoration**  
Enhancing degraded or restoring missing habitats and ecosystem functions; dealing with pollution
- 3 Species Management**  
Actions directed at managing or restoring species, focused on the species of concern itself
  - 3.1 Species Management**  
Managing specific plant and animal populations of concern
  - 3.2 Species Recovery**  
Manipulating, enhancing or restoring specific plant and animal

# This Presentation

- What is adaptive management?
- What are the Conservation Measures Partnership and the *Open Standards for the Practice of Conservation*?
- How can applying the Open Standards improve conservation projects?
- Miradi adaptive management software
- Training in adaptive management

# Miradi Software



**Adaptive Management Software  
for Conservation Projects**

**[www.Miradi.org](http://www.Miradi.org) or [info@Miradi.org](mailto:info@Miradi.org)**

# Overall Goal of Miradi

Develop a software program to help practitioners implement the CMP  
*Open Standards for the Practice of Conservation.*

# TNC's CAP (5S) Workbook Has Led to Adoption of Methodology

	A	B	C	D	E	F	G	
1	<b>Home</b>		<b>Conservation Action Planning Workbook</b> A tool for developing strategies, taking action, and measuring success Version 4. b © 2005 The Nature Conservancy			 <b>The Nature Conservancy</b> SAVING THE LAST GREAT PLACES ON EARTH		Basic Version
2	Welcome							
3	Adjust Screen Size							
4	Project Scope and Targets			Links			Switch to Full Version	
5	Project:	San Miguel/Dolores River		Instructions		Toolbar	?	
6	Ecoregion(s):	Colorado Plateau; Southern Rocky Mountains		Assess Target Viability			?	
	Select Ecoregion(s)			Identify Stresses and Sources of Stress			?	
7	Conservation Targets	1: San Miguel River System		Develop Strategies			?	
8		2: Lower Dolores River System		Describe Monitoring Plan			?	
9		3: CO Plateau Cliff and Canyon		Summary Tables and Other Worksheets			?	
10		4: PJ & Ponderosa Pine Woodland		Workbook Setup (Establecer libro de trabajo) (Organização do Programa)		Reset Menus and Screens		?
11		5: Montane-mixed shrubland/grassland mosaic		Approved to share within The Nature Conservancy?			Yes	
12		6: Desert Shrubland		Approved to share outside The Nature Conservancy?			Yes	
13		7: Sagebrush Shrubland		"Beta" version:		ConPrjMgmt_v4b.xls	25-Apr-05	
14		8: High elevation forest/alpine mosaic						
15	Contact name:	Terri Schulz and Mallory Dimmitt						
16	Title, Office:	Colorado Field Office						
17	Organization:	The Nature Conservancy						
18	Email Address:	<a href="mailto:tschulz@tnc.org">tschulz@tnc.org</a>						
19	Date:	December-04						

# CMP Partners with Benetech

**CMP**

The Conservation Measures Partnership

**Benetech**  
TECHNOLOGY SERVING HUMANITY

# “Turbo Tax” for Conservation

**Benetech**

The screenshot shows the TurboTax Basic 2003 software interface. At the top, the title bar reads "TurboTax Basic 2003" and the menu bar includes "File", "Edit", "View", "Forms", "EasyStep", "Tools", "Online", "Window", and "Help". Below the menu bar, a navigation bar shows "1. Personal Info" as the active step, with other steps like "2. Income", "3. Deductions", "4. Taxes/Credits", and "5. Misc." visible. A "Refund \$0" indicator is in the top right corner.

The main content area is titled "Which Return Do You Need to File?" and includes a sub-header "Select the type of return to prepare:". Three radio button options are listed:

- [My 2003 Income Tax Return](#)
- [An Extension of Time to File My 2003 Return](#)
- [An Amended Return for 2003 or a Prior Year](#)

A "Back" button with a double arrow is located below the options.

Below the main content is a preview window titled "Form 1040: Individual Tax Return". The preview shows:

Form <b>1040</b>	<b>U.S. Individual Income Tax Return</b>	<b>2003</b>
------------------	--	-------------

For the year January 1 - December 31, 2003, or other tax year beginning \_\_\_\_\_, 2003, ending \_\_\_\_\_, 20 \_\_\_\_.

Your First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_ Your Social Security No. \_\_\_\_\_

If Joint Return, Spouse's First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_ Spouse's Social Security No. \_\_\_\_\_

On the right side of the interface, there is a "Help & Info" section with a search box and an "ask" button. Below that are links for "Help & Info Center" and "Talk to a Tax Advisor". A "Common Questions" section lists several links, including "If I file an extension, how much extra time can I get to file my tax return?", "Does an extension give me more time to PAY my taxes?", and "For which prior years can I file an amended return?".

The Windows taskbar at the bottom shows the Start button, several open applications (3 Micros..., 4 Micros..., 2 Micros..., IUCN - Mo..., presentati..., TurboTax...), and the system tray with the time 11:26 PM.

# Step-by-Step Interview

Miradi - MarineExample-2.2.1

File Edit Actions View Step-by-Step Help

Threat Ratings Simple Threat Rating Mode

More Info Examples Workshop

Step 1C. Identify Critical Threats

Rank direct threats: 2) Rate the scope of the threat

Using the scale shown on the right, rate the [scope](#) of the threat on the target.

What is the scope of the threat on the target?

Very High

< Previous Next >

**Scope** - Most commonly defined spatially as the proportion of the target that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends. For ecosystems and ecological communities, measured as the proportion of the target's occurrence. For species, measured as the proportion of the target's population.

- **Very High:** The threat is likely to be pervasive in its scope, affecting the target across all or most (71-100%) of its occurrence/population.
- **High:** The threat is likely to be widespread in its scope, affecting the target across much (31-70%) of its occurrence/population.
- **Medium:** The threat is likely to be restricted in its scope, affecting the target across some (11-30%) of its occurrence/population.
- **Low:** The threat is likely to be very narrow in its scope, affecting the target across a small proportion (1-10%) of its occurrence/population.

TARGETS						
THREATS	Coral Reefs	Mangroves	Seabirds	Seagrass Beds	Sharks	Summary Threat Rating
Unsustainable Fishing By Locals	V V V Very High			V V M Very High		Very High
Introduced Predators (Rats)			V H Very High			High
Illegal Shark Finning by Mainland Boats					H V H High	Medium
Global Warming	V H H High					Medium
Sewage		M M L Low	M M M Medium	H L L Low		Low
Diver & Anchor Damage	M M M Medium					Low

Threat: Unsustainable Fishing By Locals

Target: Coral Reefs

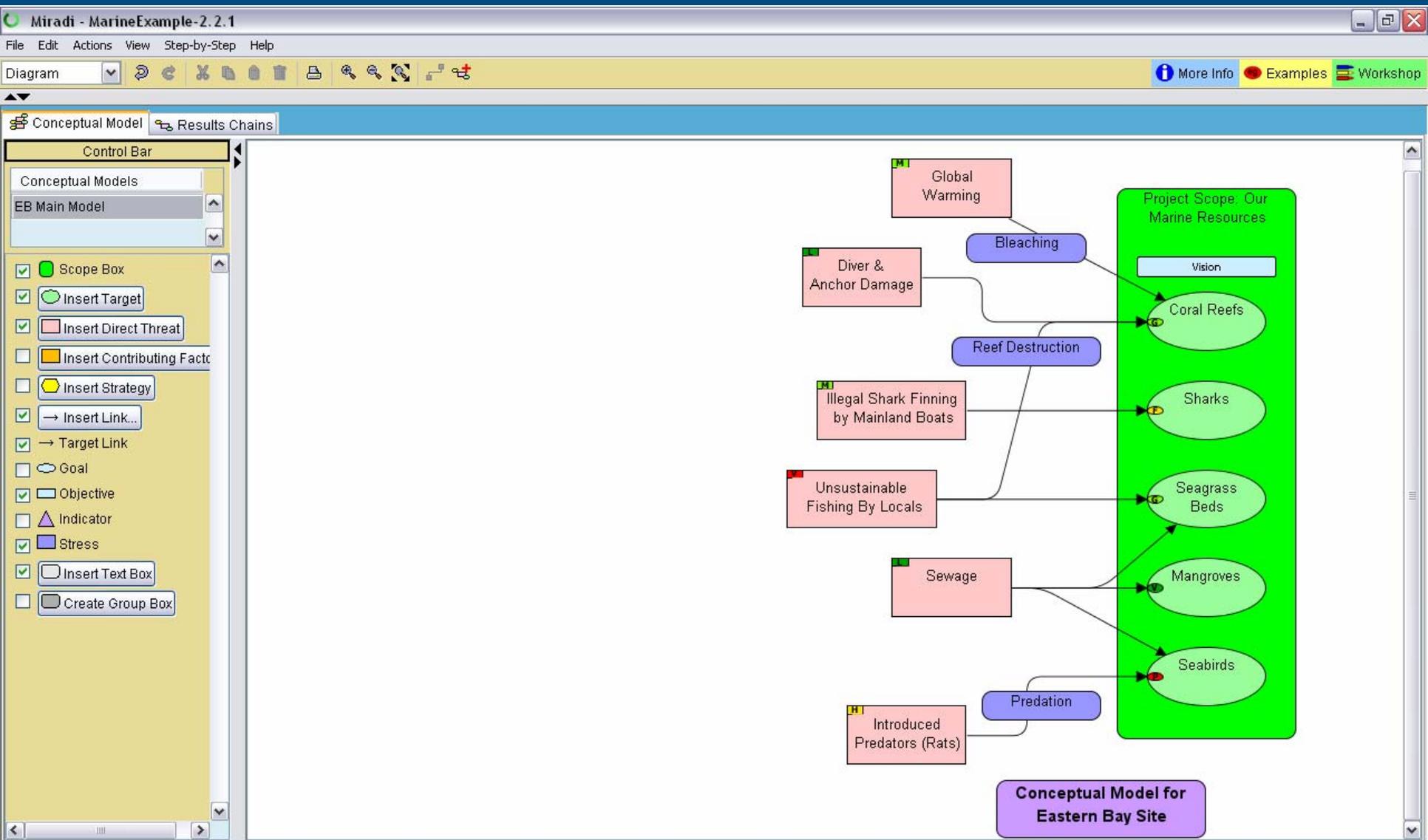
**Scope**  
Very High

**Severity**  
Very High

**Irreversibility**  
Very High

Comments: Blast fishing is decimating coral reefs

# Diagram View



# Miradi Has Sparked Global Interest

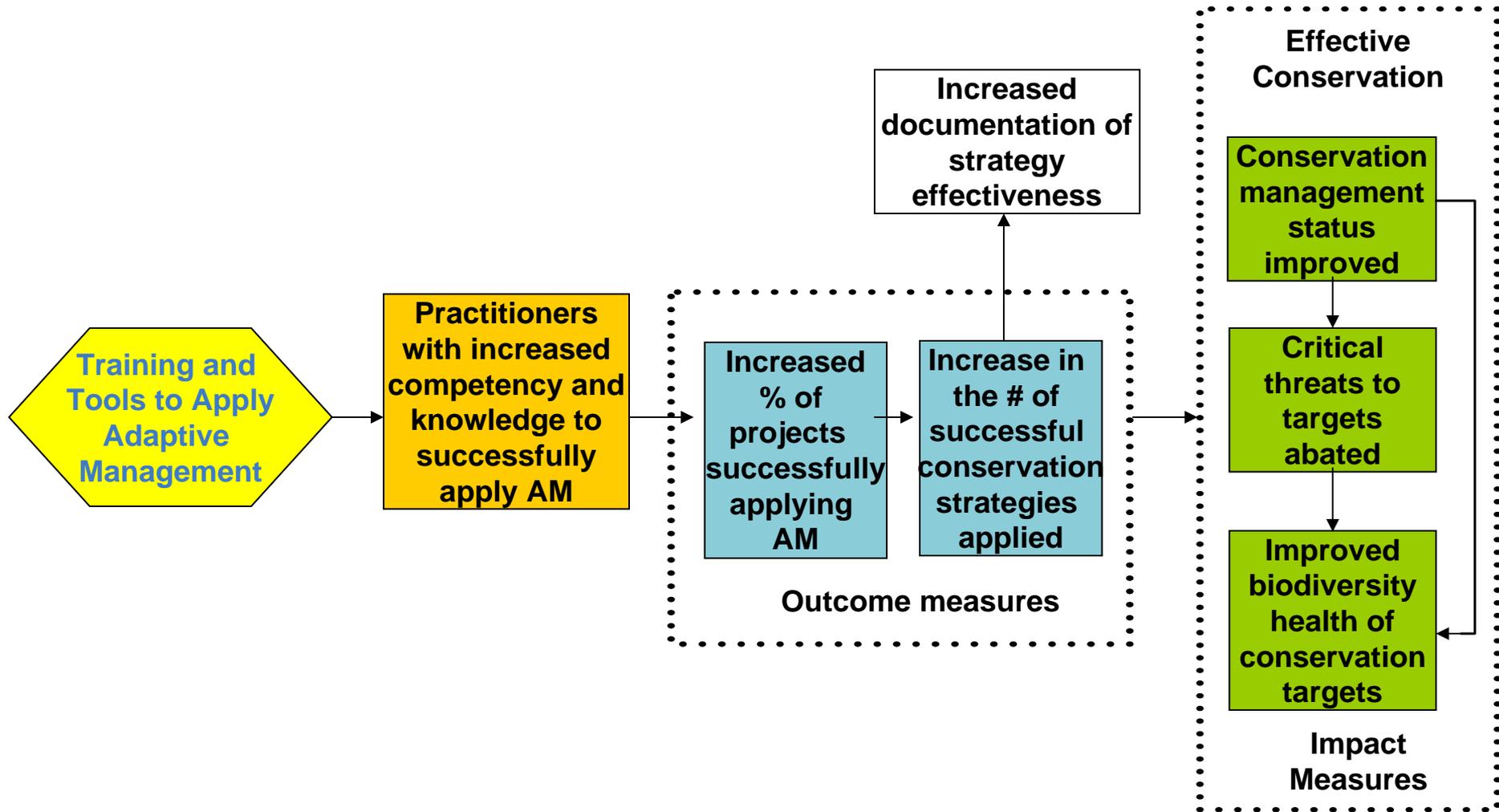
800+ registered users in >70 !! countries:

Argentina	Cambodia	Fiji	Laos	Norway	Sweden
Australia	Cameroon	Finland	Madagascar	Pakistan	Switzerland
Austria	Canada	France	Malaysia	Peru	Tanzania
Bahamas	Chile	Germany	Mauritius	Philippines	Thailand
Belgium	China	Greece	Mexico	Poland	Turkey
Belize	Columbia	Guatemala	Mongolia	Russia	Uganda
Belarus	Congo	Hong Kong	Mozambique	Senegal	UK
Bhutan	Costa Rica	Hungary	Namibia	Slovenia	USA
Bolivia	Cyprus	India	Netherlands	South Africa	Venezuela
Bosnia	Dominica	Indonesia	New Zealand	Spain	Vietnam
Botswana	Ecuador	Italy	Nepal	Suriname	Zimbabwe
Brazil	Egypt	Kenya	Nigeria	Sri Lanka	

# Training in Adaptive Management

- *FOS-UMD Adaptive Management for Conservation* – course for practitioners, offered downtown for 11 weeks in the fall
- *FOS Online Training* – Spring/Summer 2009
- *FOS In-Person Workshops for Project Teams* – in various locations

# Training in Adaptive Management



# Questions??

For more information:

[www.fosonline.org](http://www.fosonline.org)

[www.conservationmeasures.org](http://www.conservationmeasures.org)

[www.Miradi.org](http://www.Miradi.org)

[www.umd.edu/CONS](http://www.umd.edu/CONS)