Monitoring for Conservation Planning and Management

Environmental Evaluators Forum

EPA Headquarters, USA

June 14 – 15, 2007

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Key Types of Decisions

- Prioritization (where to allocate scarce conservation resources)
- Evaluation (which conservation actions result in conservation outcomes under what circumstances)
- Intervention selection (understanding the dynamics of threats, actions and opportunities)

Status

Effectiveness

Context Assessment

What do we know about the status of biodiversity?

- **IUCN Red List -** Currently, ~15,589 species of plants and animals are threatened with extinction
  - ✓ **One in eight bird species**
  - ✓ **One in four mammal species**
  - ✓ **One in three amphibian species**
- **Millennium Ecosystem Assessment**
  - ✓ Substantial gaps in information about the status and trends of biodiversity at local, national, regional, and global scales.

A Practical Way Forward
Status Monitoring

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- *The NGO community united to support the Parties to the CBD in measuring the reduction in rate of biodiversity loss by 2010.*
- *We proposed a suite of scalable indicators that can apply at local, national, regional and global scales.*
- *The suite of indicators represents practical measures of biodiversity status and trends that can be applied in the near term.*
- *The NGO proposal was convergent with other documents before the Parties.*

Proposed Indicators NGOs could help deliver for CBD reporting on 2010 Target

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- *Red List Index*
- *Changes in habitat cover*
  - *Extent*
  - *Fragmentation*
- *Protected area coverage and category for important areas for biodiversity*

Targeting investments within Biodiversity Hotspots and High Biodiversity Wilderness Areas

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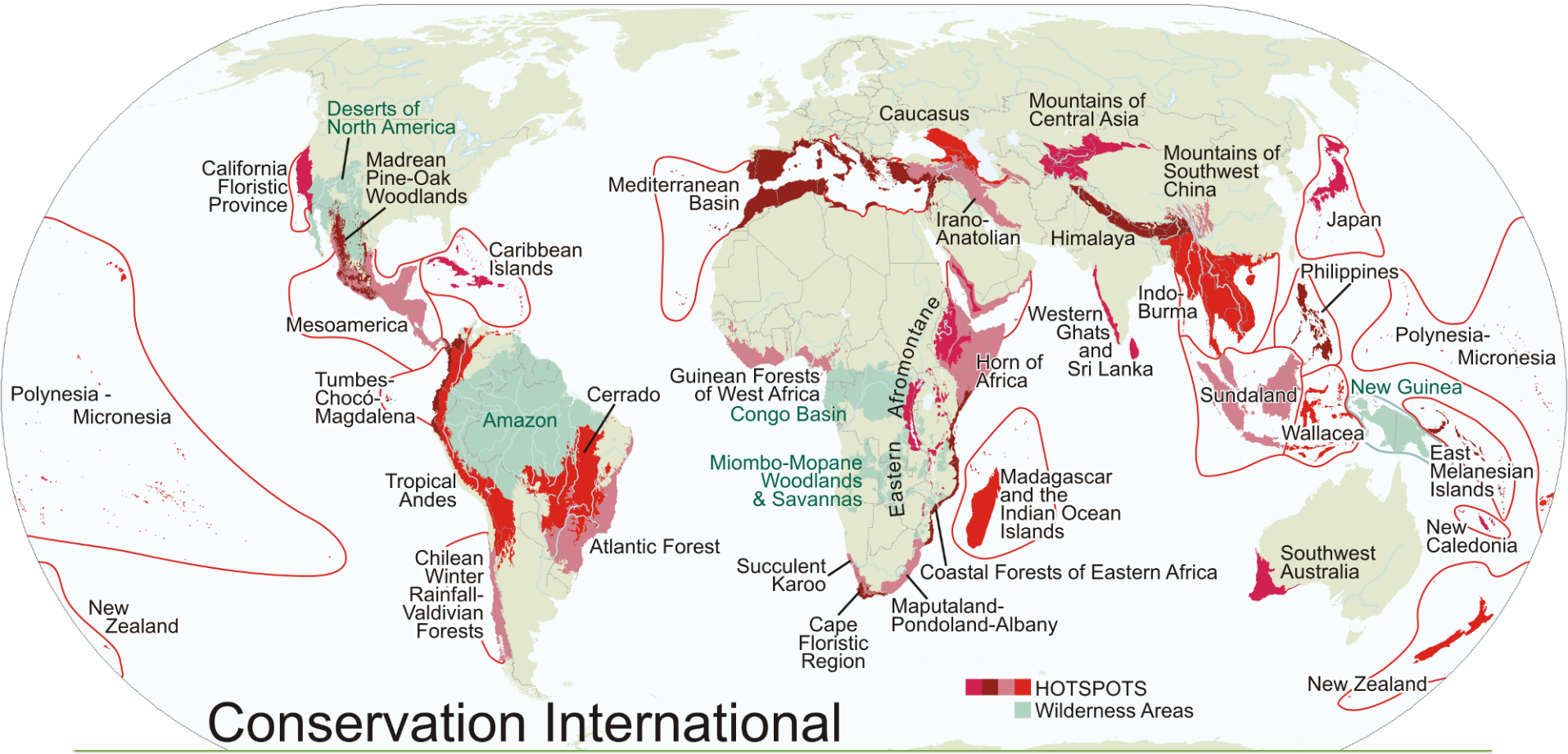

PRIORITIES: Defining conservation targets in Hotspots and Wilderness Areas

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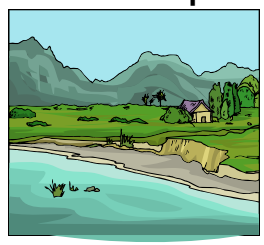
INCREASING SCALE OF ECOLOGICAL ORGANIZATION

Genes	Species	Sites	Sea/ Landscapes	Biosphere
				
	Avoid Species Extinctions	*Protect Key Biodiversity Areas*	*Consolidate Biodiversity Conservation Corridors*	

Partnerships in Identifying Targets

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- A globally standard process, but not carried out by CI in isolation
- Led within the region, as a collaboration between several partners, with input from many local experts. In many regions, process led by non-CI partners.
- Partner involvement at each step:
  - Data-sharing to strengthen targets identified
  - Peer-review of preliminary targets and refinement
  - Implementing conservation projects
  - Monitoring: gathering data for indicators, identifying research priorities, measuring success of conservation actions, refining targets

Collaboration in Monitoring

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Biodiversity monitoring platforms are systematized by:

Identifying key stakeholders with defined technical roles & responsibilities

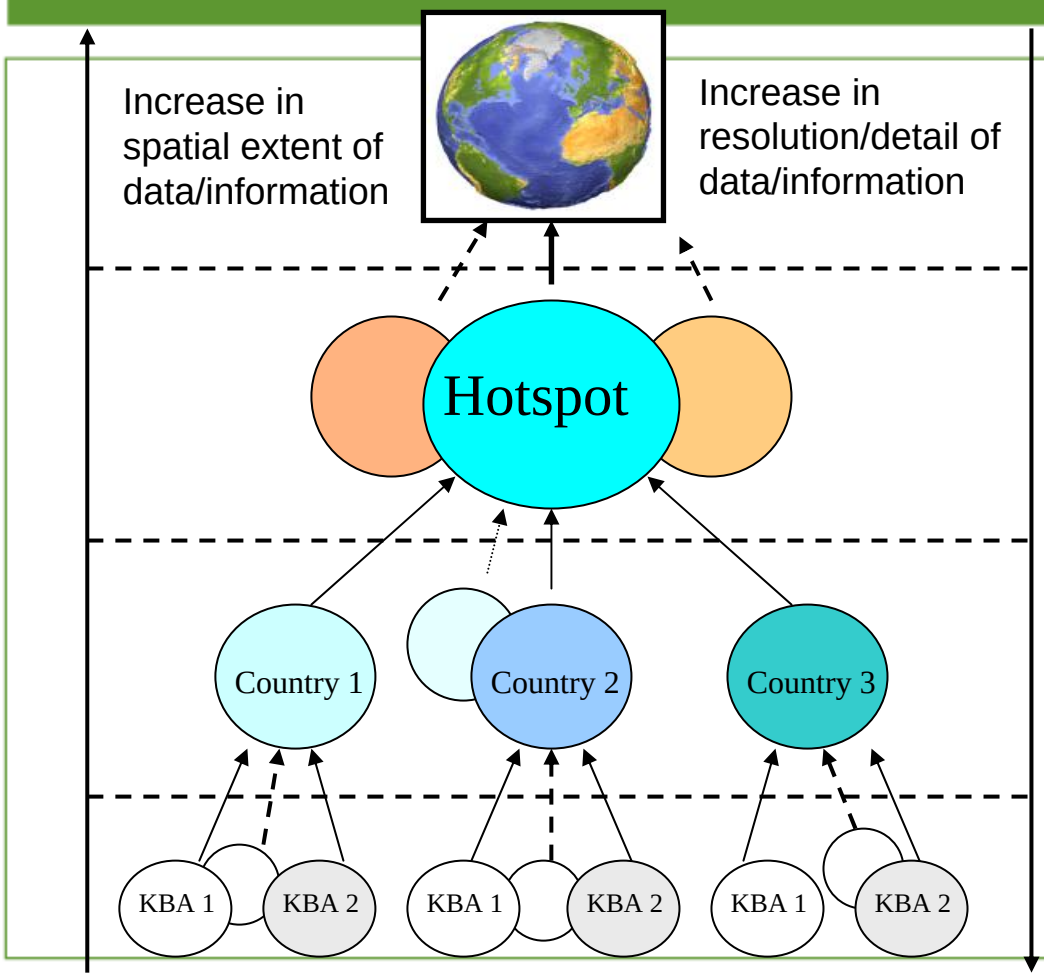
Further standardizing complementary methodologies

Building centralized & compatible data housing and analysis infrastructures

Developing collaborative dissemination efforts (workshops, publications)

Collaborative fundraising strategies directed at biodiversity conservation targets

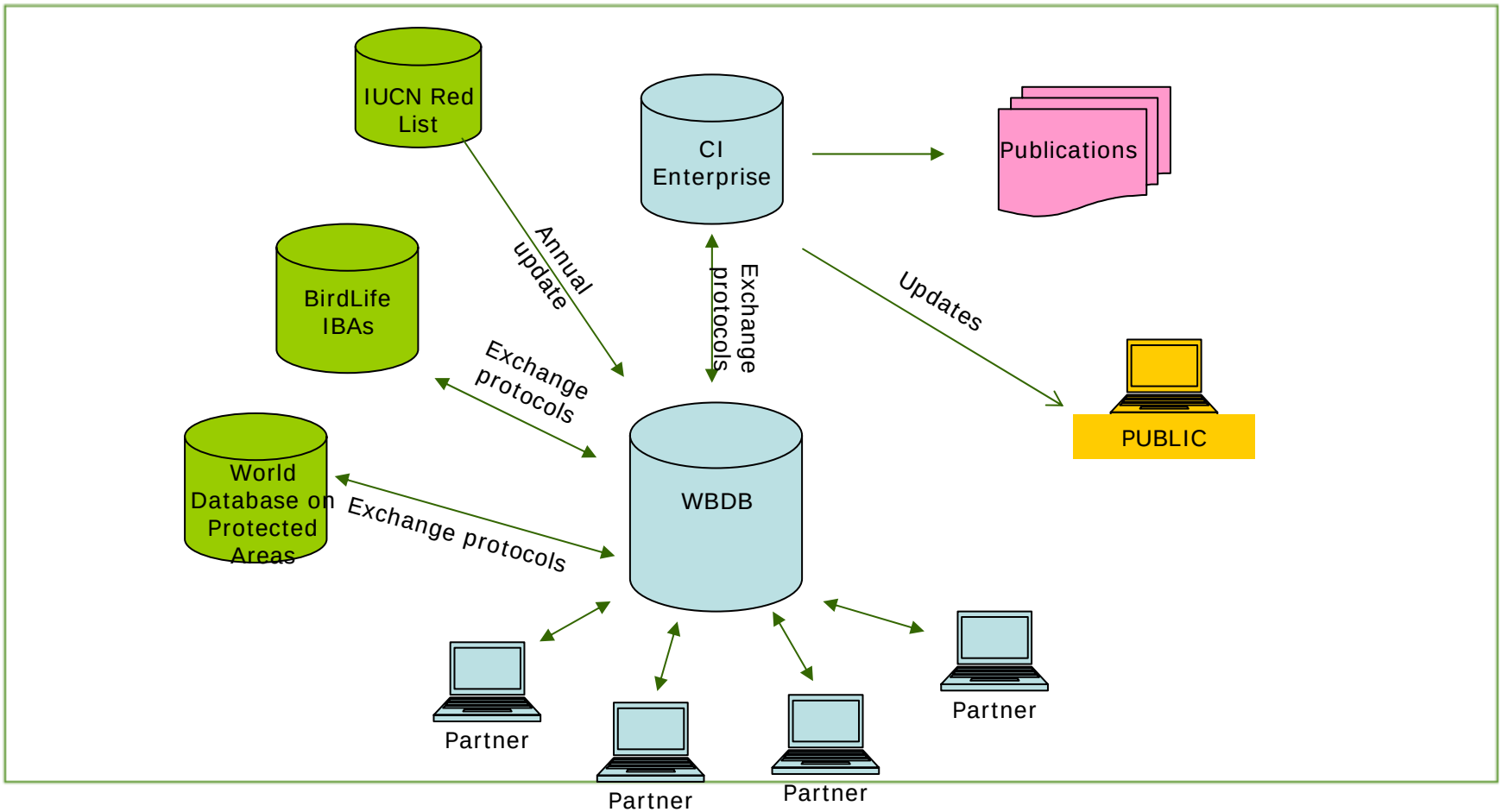
Scales of monitoring and reporting



Regional trends identify gaps in conservation priorities at finer scales as well informs decision making

Standard & compatible local data required to manage adaptively and facilitate reporting regional and global trends.

Database Interactions



MONITORING: Status and Trends in Biodiversity within Hotspots and HBWAs

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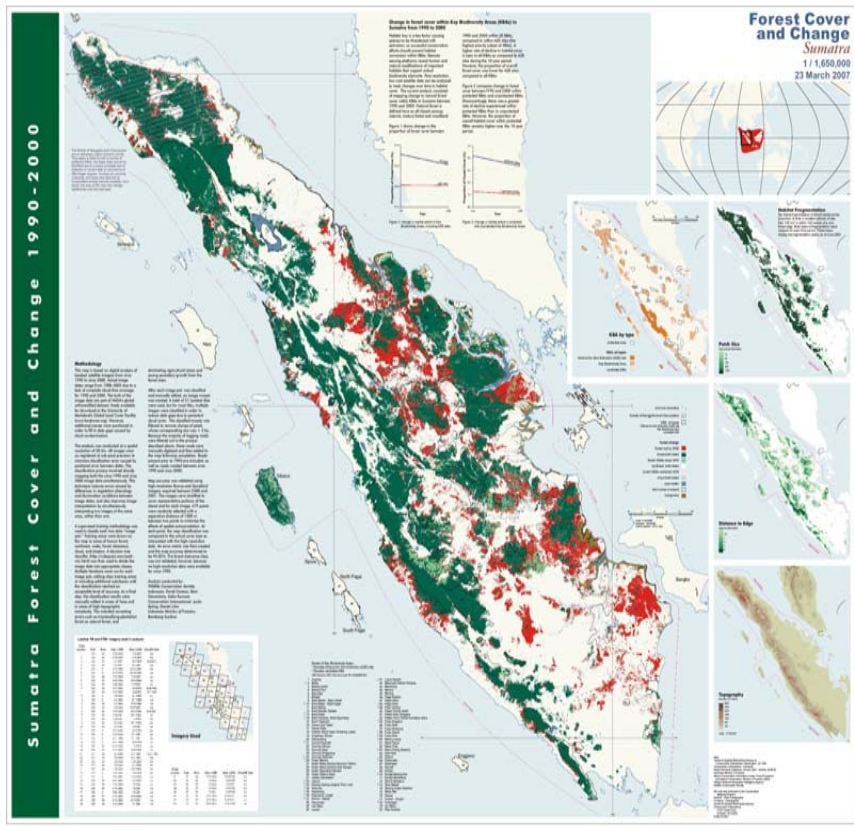
Strengthening the relationship between local data collection and large-scale data representation through standardized regional biodiversity monitoring



Monitoring progress towards safeguarding conservation targets

Tracks the degree and direction of broad scale trends in biodiversity at three **'levels**' of ecological organization

1) Species, 2) Sites, 3) Land and Seascapes

Acquires and aggregates biodiversity information to report at national, regional and global spatial scales.

Outcomes monitoring provides *'breadth'* in data outputs

SPECIES TARGETS: Change in IUCN Red List status of species

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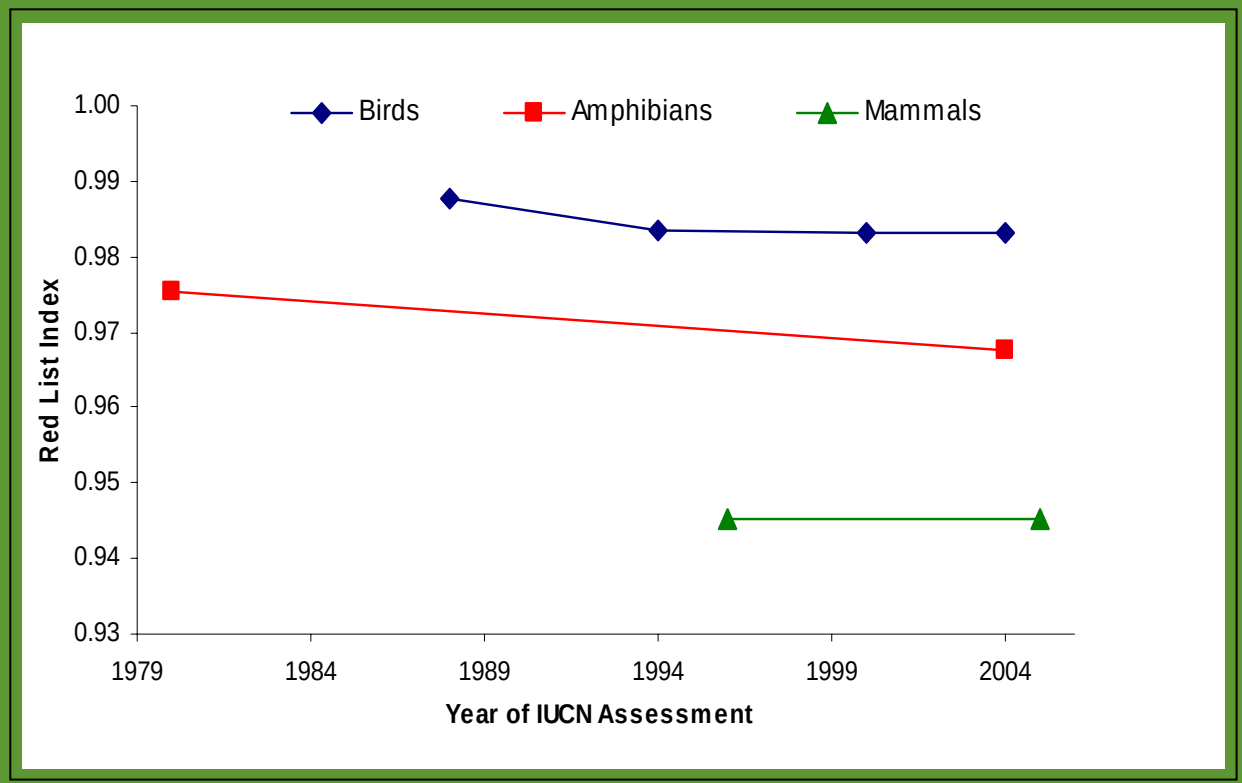
RED LIST INDEX

Measures the relative rate at which the number of species in each IUCN Red list category change by tracking genuine change in extinction risk between Red list assessments



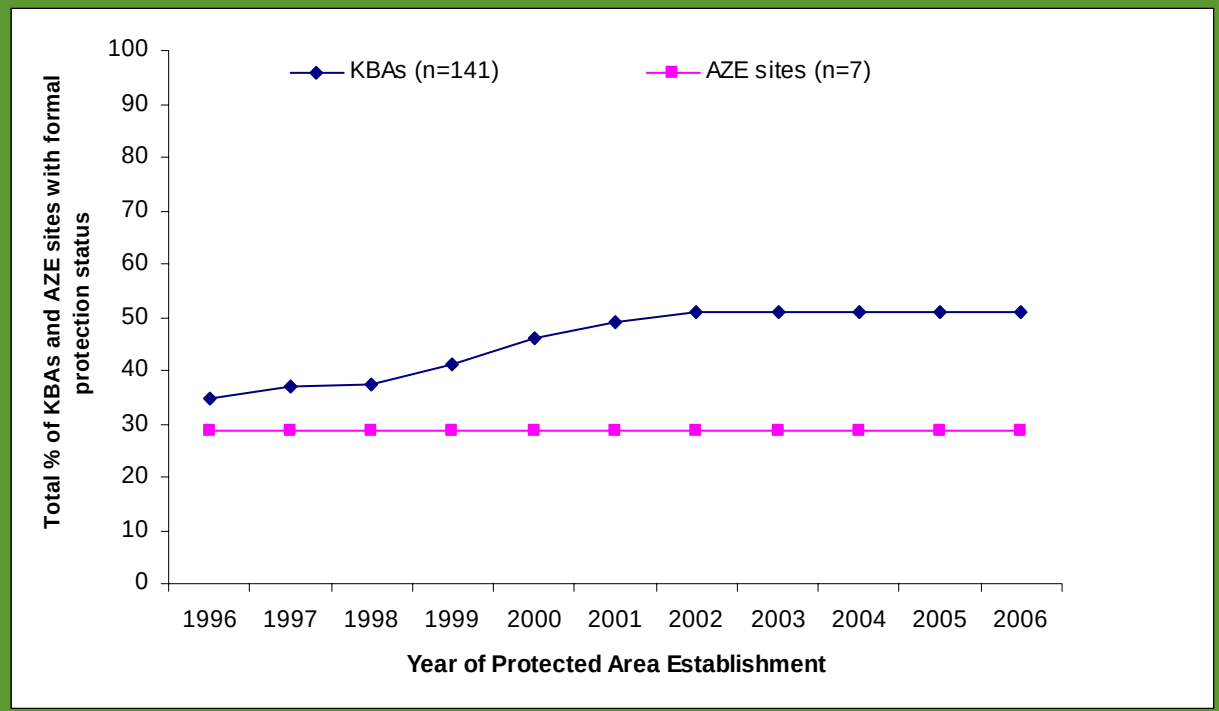
Change in the threatened status of species in Madagascar

SITE TARGETS: Change in number of Key Biodiversity Areas with protection Status, including Alliance for Zero Extinction Sites

72 of 141 KBAs, or 51% of KBAs, benefit from official safeguard status in the Southwest China Hotspot.

28% of AZE (Alliance for Zero Extinction) sites, *Gaoligong Shan Nature Reserve and Wang Lang Nature Reserve*.

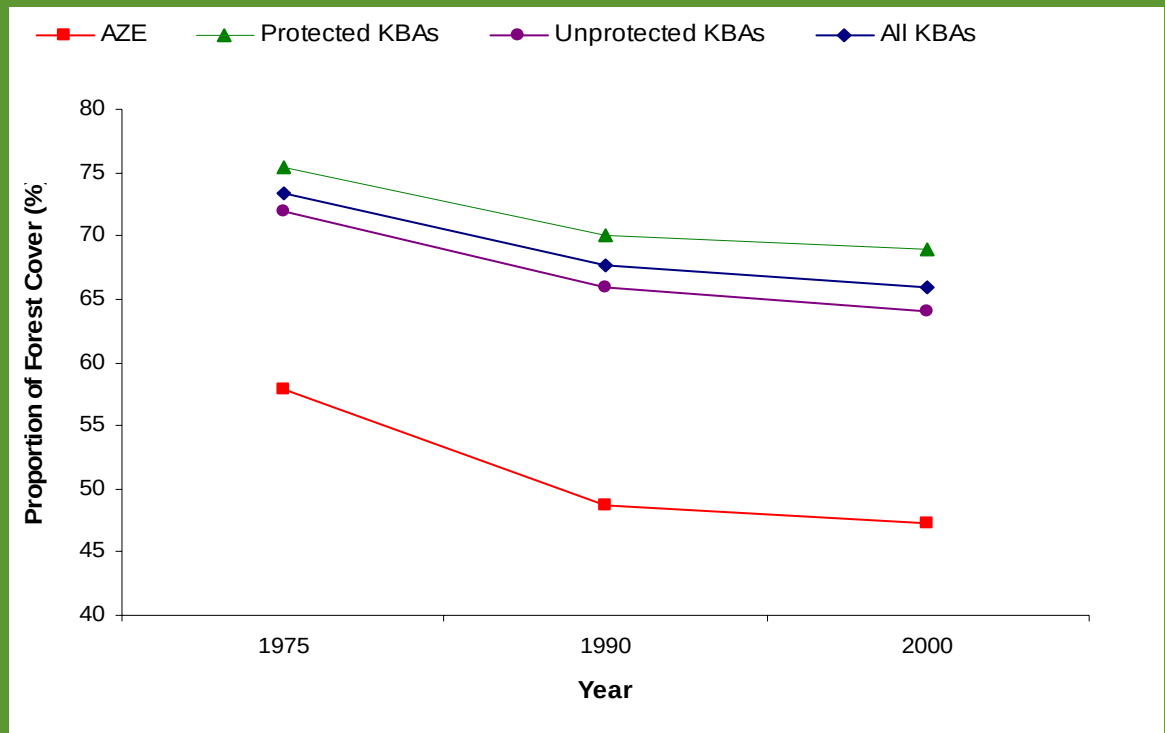
A total of 69 KBAs presently lack formal protection status.



Change in % KBAs and AZE sites with legal protection status in the Southwest China Hotspot

SITE TARGETS: Change in forest cover extent in Key Biodiversity Areas, including AZE sites

Fine-resolution, low-cost satellite data can be analyzed to track habitat change in sites of global biodiversity significance.



Change in % of forest cover extent within KBAs and AZE sites between 1975 and 2000 in Madagascar.

Madagascar

Forest cover for 1975, 1990 & 2000
with currently described Key Biodiversity Areas

Key Biodiversity Areas
with protected status

Madagascar

Change in habitat extent in Key Biodiversity Areas

Change in protection status of Key Biodiversity Areas

Key Biodiversity Areas, including AZE sites

Forest zones

Location of Madagascar

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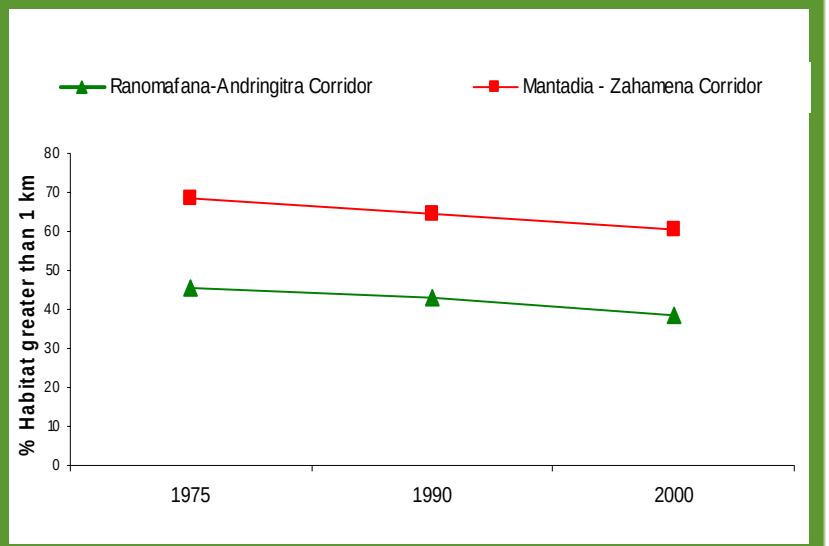
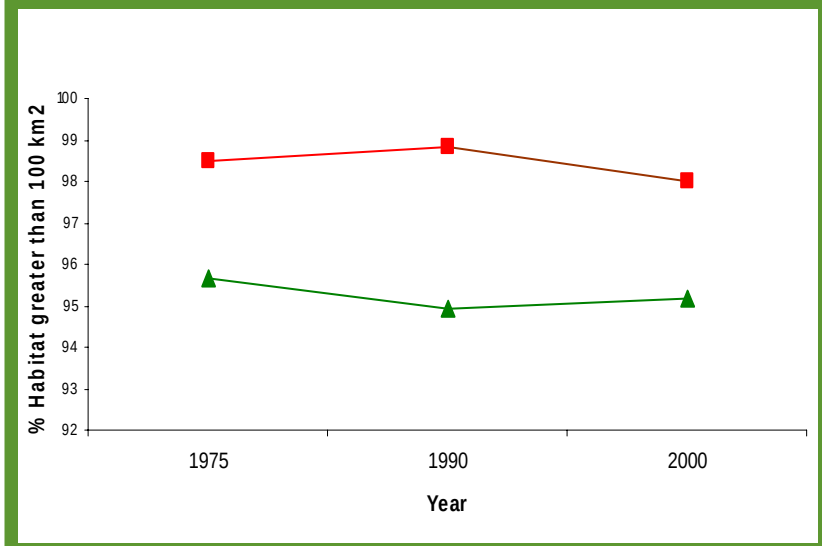
CENTER FOR APPLIED BIODIVERSITY SCIENCE

Landscape TARGETS: Change in forest fragmentation



Change in the proportion of habitat located more than 1 km from non-habitat edge in Madagascar



Change in the proportion of habitat in isolated patches greater than100 km² in Madagascar.

Utility of Status Monitoring

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REPORTING:

Report commitment to safeguarding species, sites and landscapes of global biodiversity significance.

Evaluate progress and contributions towards the Convention on Biological Diversity 2010 target of significantly reducing the rate of biodiversity loss.

Utility of Status Monitoring

DECISION MAKING:

Influence government level policy and legislation decision making

Enable adaptive management for biodiversity conservation through refinement of conservation strategies at the regional scale.

Act as a biodiversity information platform to guide investment towards priority species, sites and landscapes.

Key Types of Decisions

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- Evaluation (which conservation actions result in conservation outcomes under what circumstances)
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Effectiveness Monitoring

Focus is on evaluating EFFECTIVENESS of a given intervention

- Linked to changes in status of conservation target at scale of intervention
- Abatement of threats
- Degree of implementation

Adaptive Management

Report at the intervention scale

Roll up to evaluate intervention type

Nesting of Status and Effectiveness monitoring

Status Monitoring	Effectiveness Monitoring
National, Regional and Global trends	Individual investment success
Inform decision making at institutional, regional, national and investment portfolio levels	Inform decision making and adaptive management for individual interventions or intervention types
Support institutional, portfolio, multi-lateral and global reporting efforts	Support intervention reporting efforts
Help refine regional conservation strategies	Help refine intervention planning strategies and identify appropriate interventions

Added Value of nested approach

- Linking intervention with changes in status of conservation targets
- Adaptive management at scale of intervention
- Understand how interventions work (when and where)
- Validate assumptions in conservation action
- Ability to report success of individual investment

Remaining Gaps - Technical

- Terrestrial habitat types other than forest cover
- Measures of marine habitat extent and fragmentation (working on ecological integrity index)
- Methods to aggregate measurement of threats / pressures

Additional Gaps

- **Cultural**
  - ✓ Focus is on doing rather than knowing what works best under what circumstances because of funding climate
  - ✓ Perception that monitoring is expensive (resource constraints)
- **Capacity**
  - ✓ Skill and knowledge
  - ✓ Time
  - ✓ Funding

Thank you!

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Questions?