Studying Communities and Forest Resources

Elinor Ostrom
Indiana University
Arizona State University

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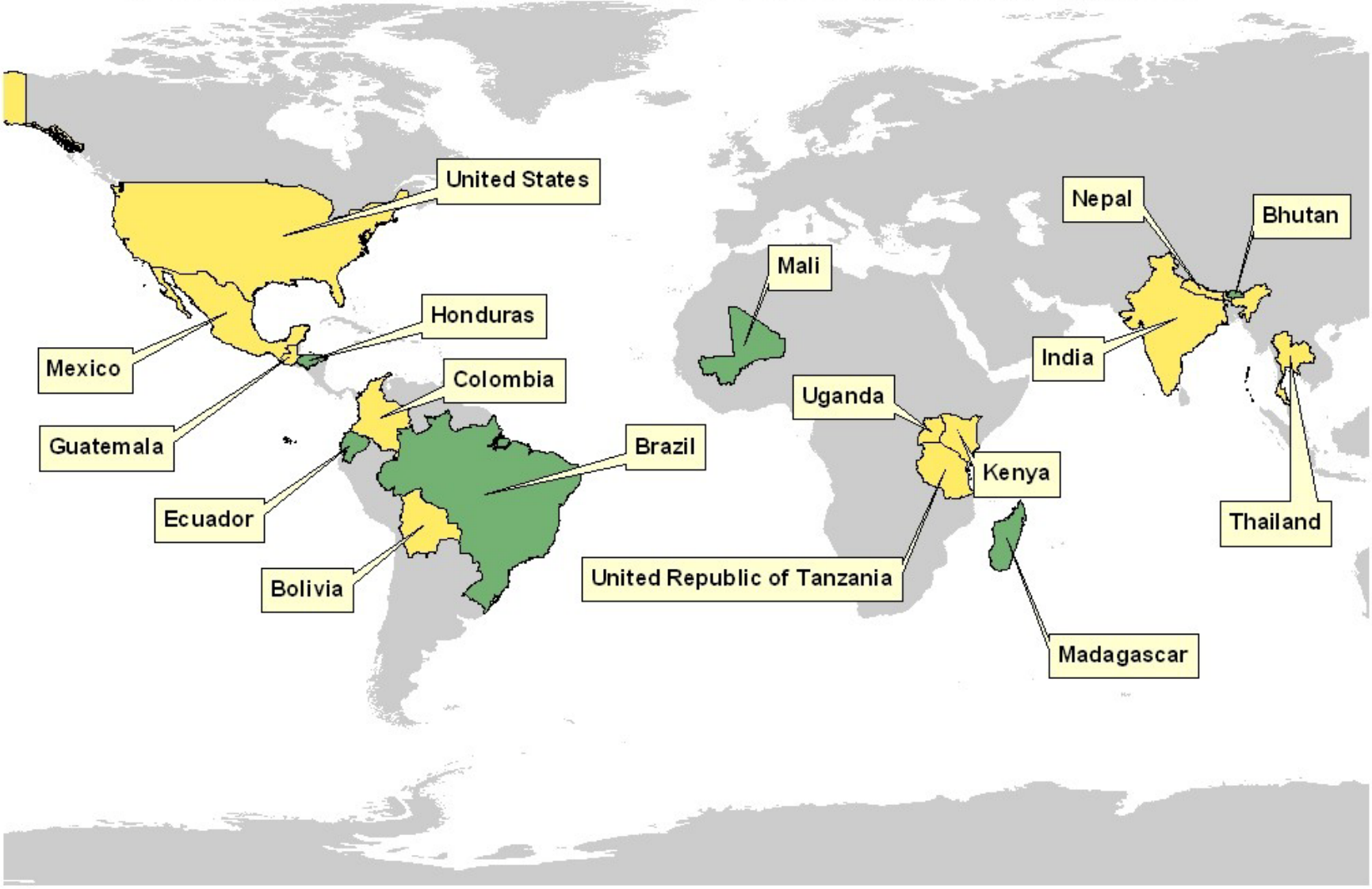
A Return Visit

- After many years, very nice for me to return to Nepal, and to ICIMOD, and have an opportunity to share a few of the developments of our International Forestry Resources and Institutions (IFRI) research program.
- IFRI is a long-term, multi-country, interdisciplinary research network study impact of diverse institutions of forest conditions

IFRI's Central Questions

- How do alternative systems of governance and tenure affect social and ecological conditions?
- What conditions favor collective action for the provision of resource management?
- How do people respond to changing ecological and social conditions?
- How do diverse actors – user groups, local associations, governments, interact & jointly affect forest conditions

Countries with IFRI Research Sites



In Nepal – Evidence on Collective Action, Heterogeneity, and Forest Conditions

Study by Varughese and E. Ostrom on 18 forests in the middle hills region of central and eastern Nepal

A Strong Association of Collective Activity with Forest Condition as Perceived by Users

Forest Condition	Collective Activity			Total
	High	Moderate	Low or None	
Improving	83% (5)	17% (1)	0	100% (6)
Stable	0	60% (3)	40% (2)	100% (5)
Worsening	0	14% (1)	86% (6)	100% (7)
Total	5	5	8	18

tau = 0.80

Source: **Varughese and Ostrom (2001: 756).**

Heterogeneity and Collective Action

- Three measures of heterogeneity
  - Locational differences
  - Wealth
  - Ethnicity
- No statistical relationship between location and ethnic heterogeneity with collective action
- A weak relationship between wealth heterogeneity and collective action

Study of Eight Forests in One Watershed in Nepal, by Ambika Gautam

Size of Group — Impact on Forests

Dependent Variable	Mean Values for Forest Plots Managed by Different Size of User Groups				P Value
	≤100	101-200	201-300	>300	
N	68	30	93	40	.003
Average DBH (cm)	14.9	16.2	15.1	13.8	.000
Average height (m)	8.7	7.2	8.5	6.7	.001
Number of trees	16.3	9.7	11.2	9.3	.011
Number of species	10.7	12.4	11.6	10.8	.007+

Heterogeneity of User Group – Mixed Impact on Forest Conditions

Dependent Variable	Heterogeneity Class		P Value
	Low (A = <.42)	High (A = ≥.42)	
N	91	140	
Average DBH (cm)	15.2	14.8	.350
Average height (m)	8.4	7.8	.089
Number of trees	14.2	10.7	.009
Number of species	11.1	11.4	.353

Note: Average ethnic heterogeneity for the eight user groups was 0.42.

Source: Gautam (2002: Table 7.13). (2-tailed, 0.05 level)

Is Formal Designation as a Protected Forest Associated with Higher Vegetation Density?

- **Tough question to answer across ecological zones since forest mensuration data is not meaningful across zones**
- **The forester or biologist who leads an IFRI team in each site is asked to evaluate forest density AFTER completing a random sample of forest plots in a forest**
- **Asked to evaluate vegetation density of this forest compared to other forests in this region**

Comparison of Forester's Field Evaluation of Vegetation Densities in 76 Parks and 87 Non-parks

	Vegetation density				
	Very sparse	Some-what sparse	About average	Some what Abun-dant	Very Abun-dant
Officially designated parks (N = 76)	13%	21%	36%	26%	4%
Non-parks (N = 87)	6%	22%	43%	26%	3%

Kolmogorov-Smirnov Z score = 0.472, p = .979. No significant difference.

***Source*: Adapted from Hayes and Ostrom, 2005, p. 607.**

If Formal Designation Does Not Make a Difference – What Does?

- **We have found that monitoring by users themselves is consistently important**
  - **Cross-sectional study of 178 Forest User Groups (Gibson, Williams & Ostrom, 2005)**
  - **Group interviews asked users about regularity of their own monitoring the rule conformance of other users**
- **Strong statistical relationship between regular monitoring and forest density: controlling for formal organization, dependence on forests, & social capital**

Impact of Formally Designated Tenure and Forest Monitoring on Changes in Forest Condition: Assessment using ANOVA

Independent Variables	Change in DBH	Change in Basal Area	Change in Stem Count
Ownership[a]	F = 0.89	F = 2.52	F = 1.00
Involvement of User Groups in Monitoring Rules[b]	F = 0.28	**F = 10.55****	**F = 4.66***

[A] Government, community, private

[b] At least one user group is involved in regular monitoring of rules of forest use

•Significant at .05 ** Significant at .01

•Ostrom & Nagendra, 2006, *PNAS*

Study 100 IFRI forests in 14 countries

- Multi-variable analysis using variables in the SES framework
- Coleman & Steed, & Agrawal & Chhatre found that when local user groups have right to harvest from the forest, they are more likely to engage in monitoring
- This finding seems counterintuitive to many policy analysts -- giving the right to harvest from a forest may actually improve forest conditions!!!
- But those who have long-term rights do monitor to be sure that most users are cooperating
- Keeping local users out of forests is NOT a panacea!!!!

There are NO Panaceas!!!

- Need to match forest governance arrangements to the local ecology, social setting, traditions, economy, and interests of forest users
- For more information about IFRI, see: http://www.sitemaker.umich.edu/ifri/
- Questions?