

COOPERATION & CONFLICT BETWEEN LARGE & SMALL SCALE FISHERIES

A Southeast Asian Example

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BASIC PREMISES

- **SOUTHEAST ASIANS HAVE HEAVY RELIANCE ON FISH FOR DIETARY PROTEIN AND INCOME GENERATION**
- **POPULATION GROWTH, LIMITED LAND & ECONOMIC OPPORTUNITY, AND OPEN ACCESS MARINE RESOURCES RESULTS IN INCREASED DEMAND FOR FISH AND INCREASING NUMBERS OF FISHERS.**
- **THIS RESULTS IN DECREASED FISH POPULATIONS**



**RAPID
POPULATION
GROWTH**

**LIMITED
ECONOMIC
OPPORTUNITIES**

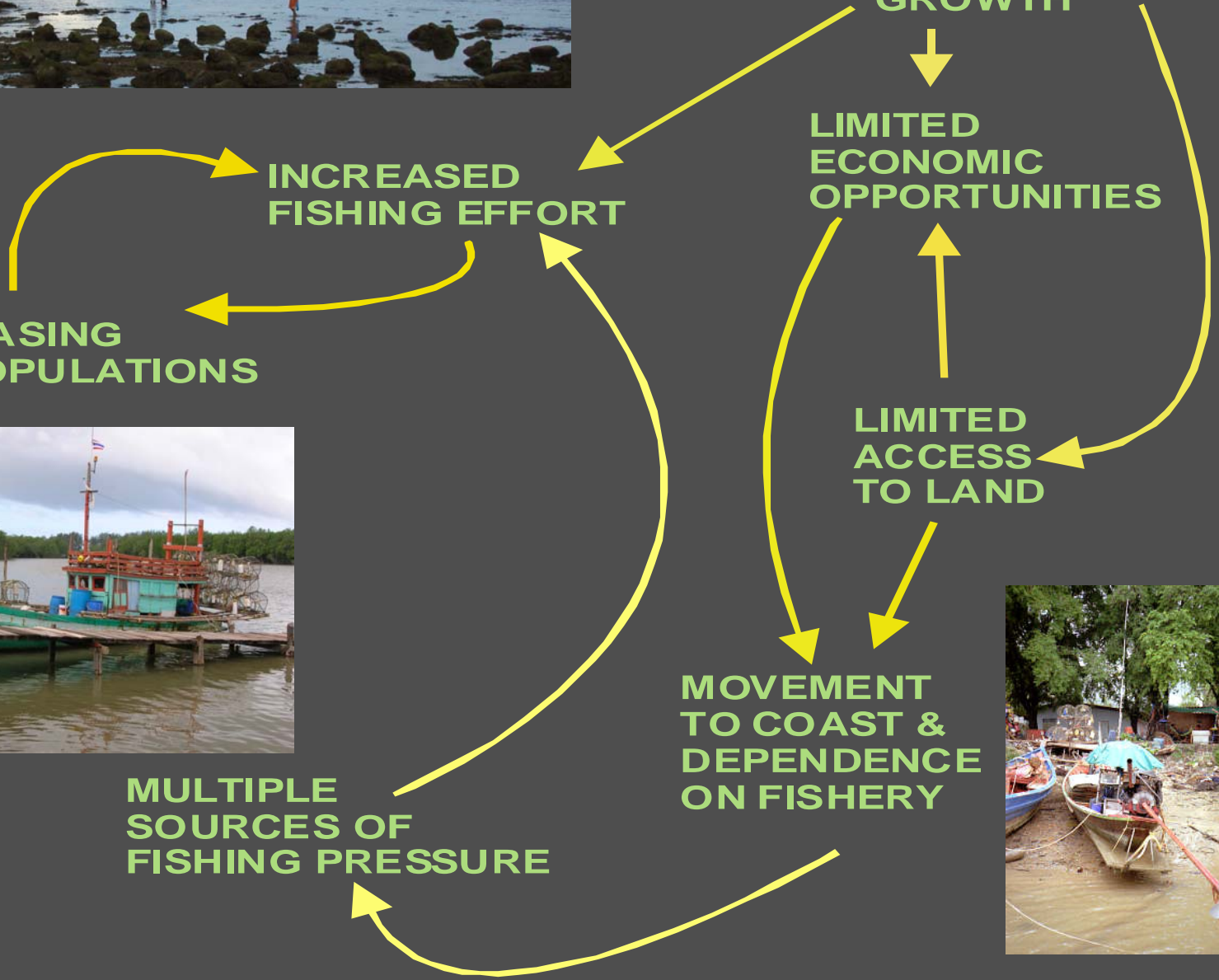
**INCREASED
FISHING
EFFORT**

**DECREASING
FISH
POPULATIONS**

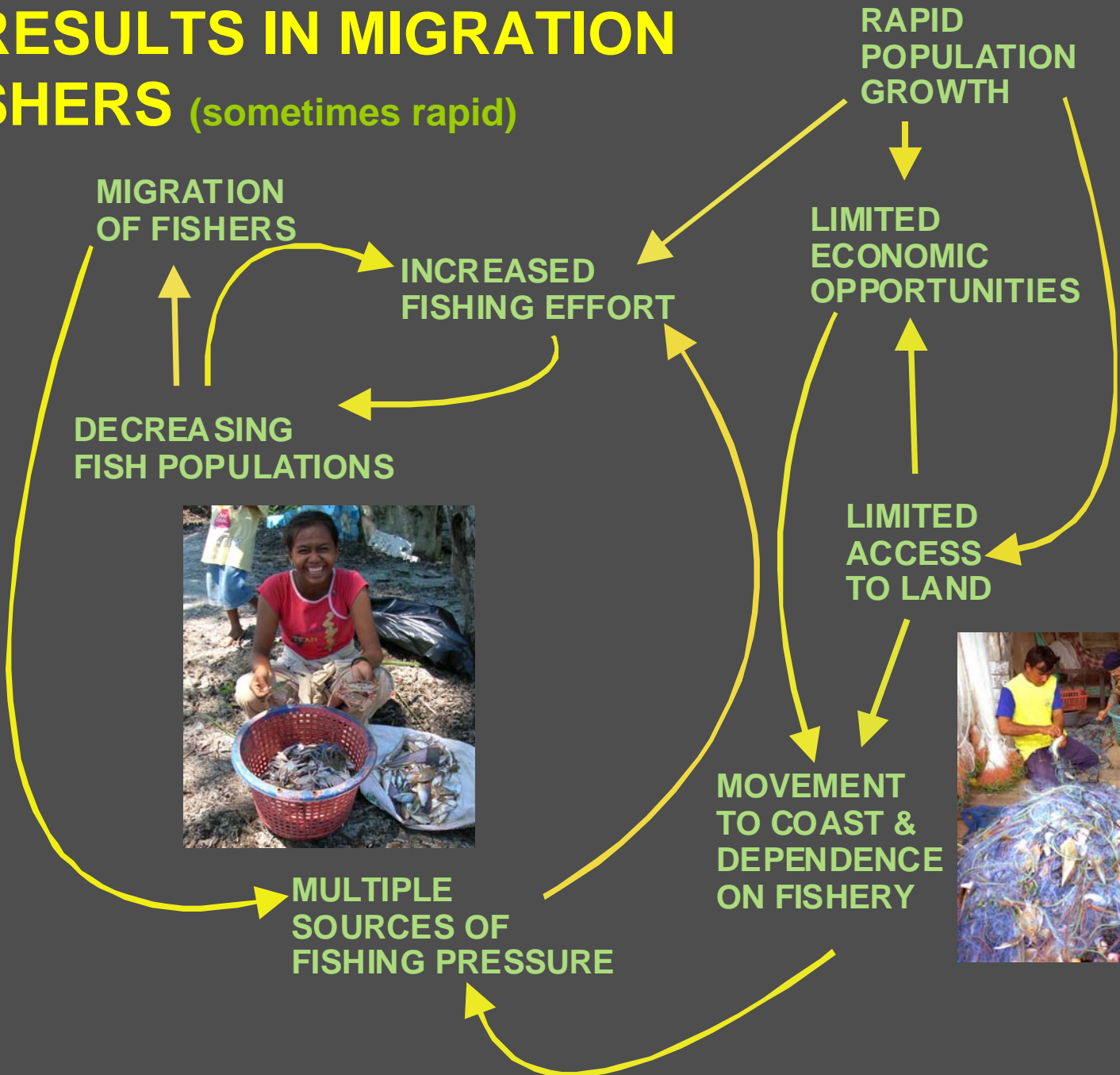
**LIMITED
ACCESS
TO LAND**

**MOVEMENT
TO COAST &
DEPENDENCE
ON FISHERY**

**MULTIPLE
SOURCES
OF
FISHING
PRESSURE**



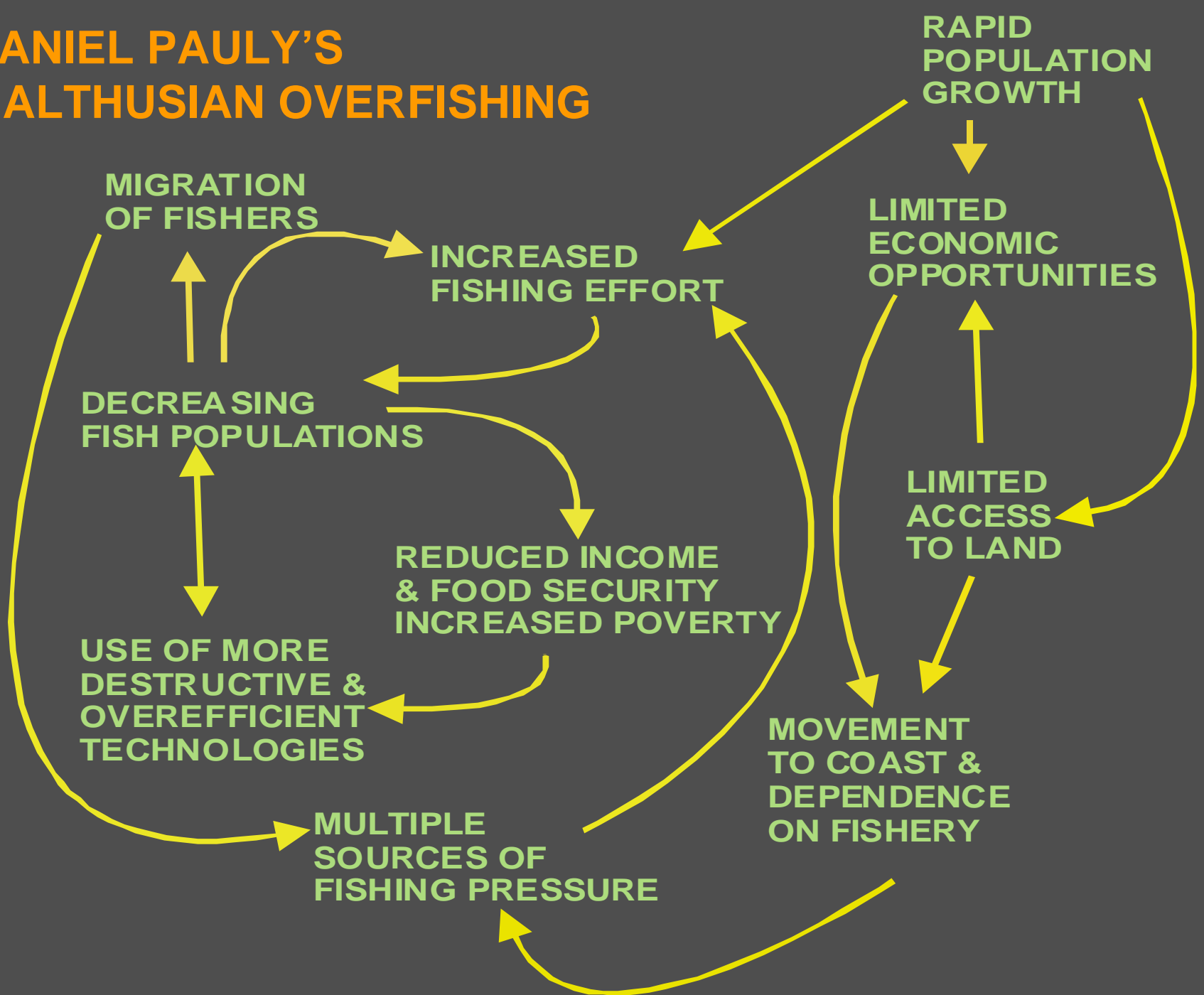
THIS RESULTS IN MIGRATION OF FISHERS (sometimes rapid)



FISH POPULATIONS CONTINUE TO DECREASE, RESULTING IN:

- **REDUCED INCOMES**
- **REDUCED FOOD SECURITY** (in my coastal sample 38% children underweight vs 28% throughout the Philippines; significantly correlated with % fishing families ($r=.37$, $p=.02$).)
- **INCREASED POVERTY LEVELS**
- **LEADING TO USE OF MORE EFFICIENT AND/OR DESTRUCTIVE FISHING TECHNOLOGIES**
- **LEADING TO EVEN GREATER REDUCTIONS IN FISH POPULATIONS**

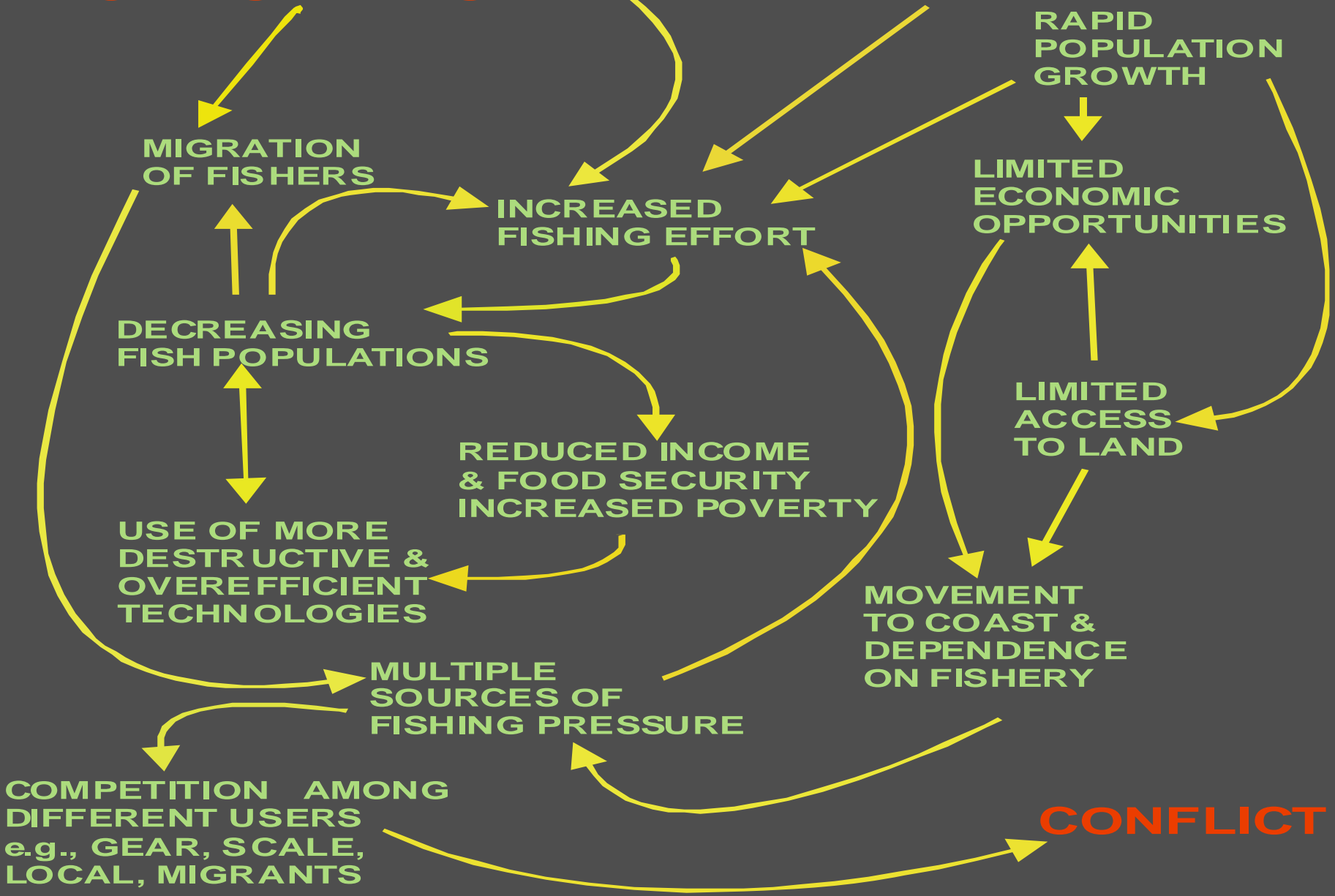
DANIEL PAULY'S MALTHUSIAN OVERFISHING



- **INTERNATIONAL DEMAND FOR FISHERIES PRODUCTS RESULTS IN EVEN MORE PRESSURE ON THE RESOURCE**
- **LOCAL FISHERS RESPOND TO INTERNATIONAL DEMAND—GLOBALIZATION OF MARKETS**
- **LARGER INDUSTRIAL FLEETS SPREAD WORLDWIDE—GLOBALIZATION OF EFFORT!**
- **OTHERS USE EVER MORE EFFICIENT AND/OR DESTRUCTIVE GEAR TYPES**
- **COMPETITION INCREASES BETWEEN FISHERS USING DIFFERENT GEAR TYPES, MIGRANTS VERSUS LOCALS, SMALL SCALE VERSUS COMMERCIAL.**
- **INCREASING PRICE FOR RICE LEADS TO EVEN MORE FISHING PRESSURE TO BUY RICE.....**
- **CONFLICT AND FISHWARS**

GLOBALIZATION OF FISHERIES

INCREASES IN COST OF RICE



CONFLICT

CONFLICT AVOIDANCE OR RESOLUTION

- **TOP DOWN FISHERIES MANAGEMENT**
- **CO-MANAGEMENT**
- **COOPERATION BETWEEN VARIOUS
USERS**

**TOP DOWN
MANAGEMENT**

**TRAWL BAN
IN JAVA SEA**

**LARGE BOATS
BANNED FROM
INSHORE AREAS**



CONFLICT

CO-MANAGEMENT

**REDUCTION
OF CONFLICT**



**SALE OF BY-
CATCH**

SHARE FADS

**MORAL
ECONOMY**

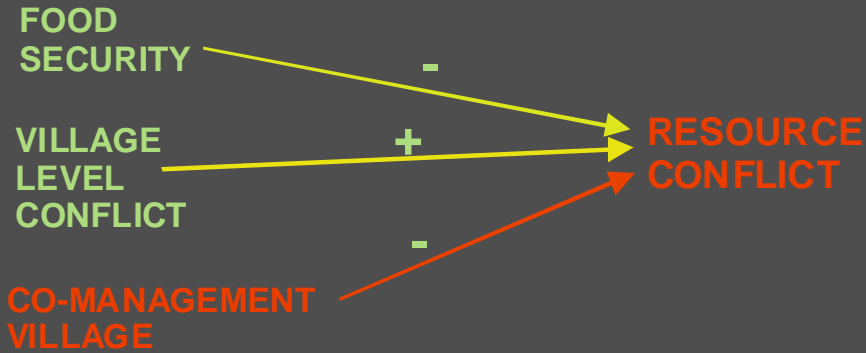
COOPERATION

SOME RESEARCH

ROBERT POMEROY, JOHN PARKS, R POLLNAC,
TAMMY CAMPSON, ET AL 2007.

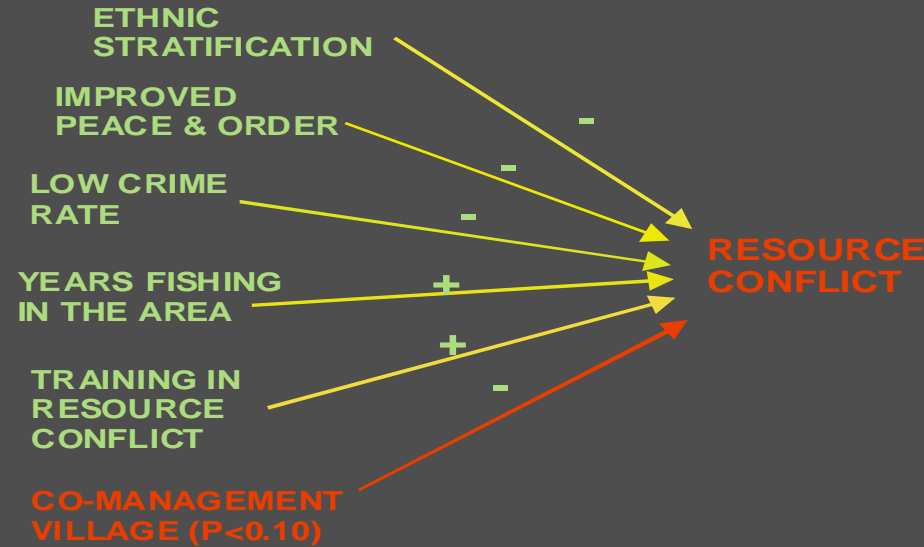
- **LOCATIONS:** Viet Nam, Thailand, Philippines, Indonesia
- **THE VARIABLES (18 total):**
 - 1. demographic characteristics,
 - 2. social stratification,
 - 3. security issues and civil tension,
 - 4. resource condition and harvest activity,
 - 5. community and resource conflict and resolution,
 - 6. marine resource governance and tenurial arrangements, and
 - 7. community organization

VIETNAM



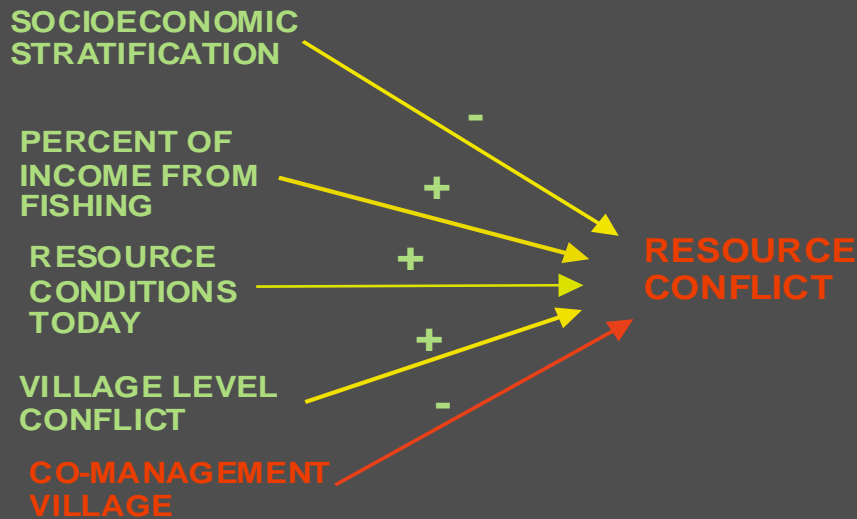
TOTAL MODEL NAGELKERKE $R^2 = 0.52$

THAILAND



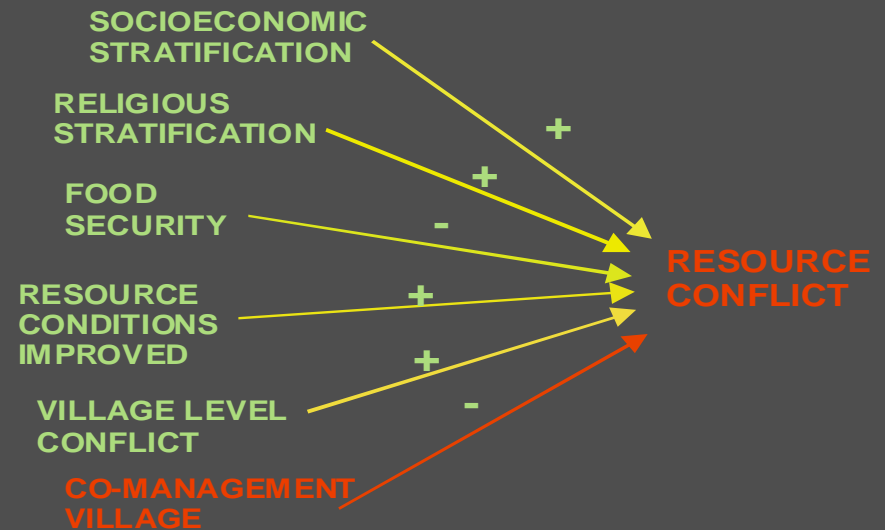
TOTAL MODEL NAGELKERKE $R^2 = 0.64$

INDONESIA



TOTAL MODEL NAGELKERKE $R^2 = 0.72$

PHILIPPINES



TOTAL MODEL NAGELKERKE $R^2 = 0.57$

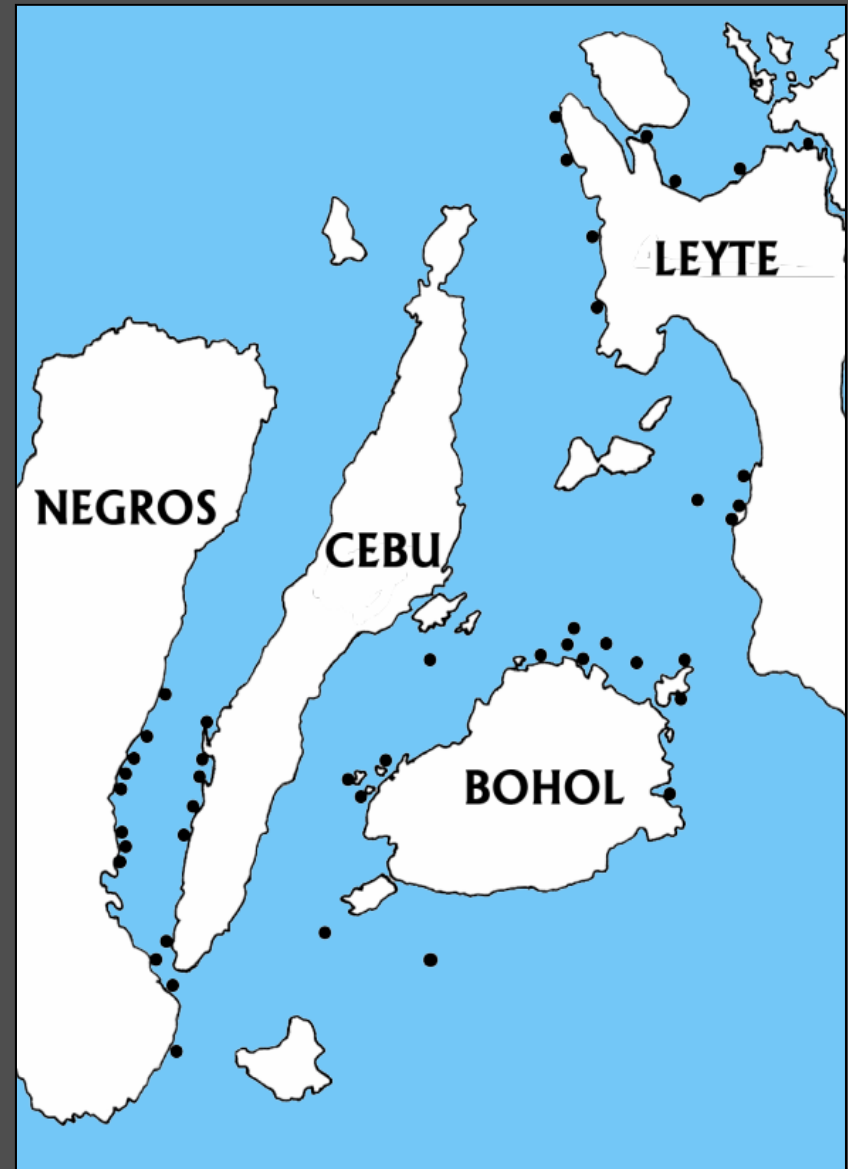
BUT, HOW DOES POPULATION IMPACT MANAGEMENT SUCCESS?

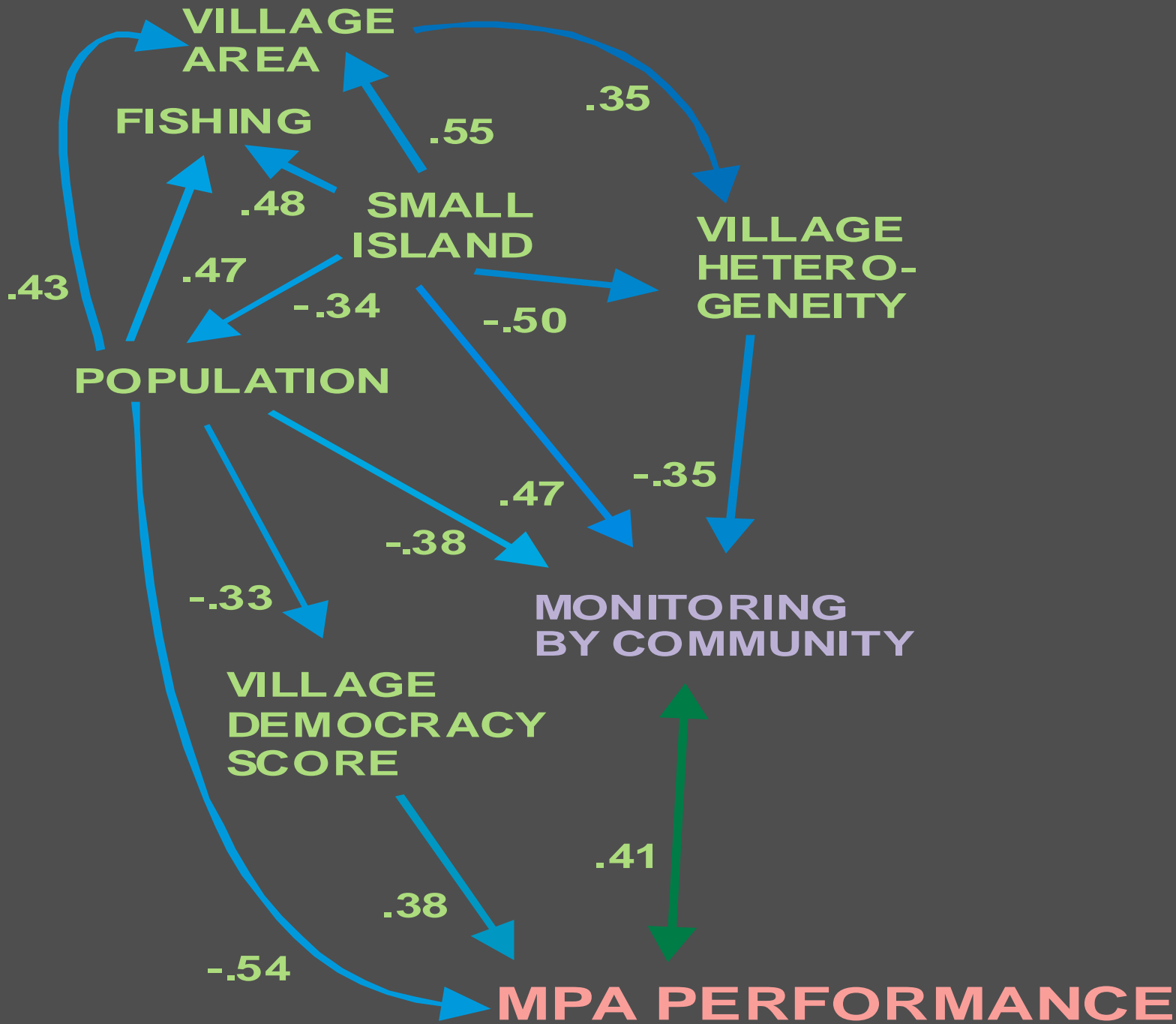
DATA MINING

- **RE-ANALYSIS OF OLDER (2000) DATA FOCUSING ON VARIABLES ASSOCIATED WITH SCALING UP TO ECOSYSTEM MANAGEMENT.**
- **POPULATION IS ONE SUCH VARIABLE—THE LARGER THE RESOURCE MANAGEMENT AREA, THE LARGER THE ASSOCIATED POPULATION.**
- **RESEARCH ON COMMUNITY BASED MPA SUCCESS IN THE PHILIPPINES.**

The Sample (45 MPAs)

- 14 MPAs in Bohol
- 12 in Leyte
- 8 in Cebu
- 11 in Negros Oriental





ARE WE CAUGHT IN AN ENDLESS CYCLE OF NEGATIVE FEEDBACK?

- INCREASE EFFORTS TO FIND WAYS TO IMPROVE COOPERATION IN LARGER POPULATIONS TO FACILITATE CO-MANAGEMENT.
- COMBINE CO-MANAGEMENT WITH APPROPRIATE ASPECTS OF LOCALLY DEVELOPED CONFLICT RESOLUTION TECHNIQUES.
- POPULATION CONTROL.....



