



Socioeconomic News

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Newsletter of the Socioeconomic Section of the American Fisheries Society

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Officers

President

John Whitehead
Department of Economics
Appalachian State University
Boone, NC 28602
(828) 262-6121
whiteheadjc@appstate.edu

President-elect

Troy W. Hartley
Dept. Resource Econ. & Development
University of New Hampshire
Durham, NH 03824
(603) 862-1729
Troy.hartley@unh.edu

Secretary-Treasurer

Peter Fricke
NOAA/NMFS
(301) 713-2338
peter.fricke@noaa.gov

Past President

Ray Rhodes
South Carolina Dept. of Natural Resources
(843) 953-9384
rhodes@mrd.dnr.state.sc.us

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From the President's Desk

Greetings!

Disregarding the slew of e-mails that you received this past winter, spring and summer as proud members of the SES e-mail list, it has been a long time since we spoke. And a lot has happened. Which is partly why this newsletter is late (the other part is sloth – I'll let you decide the weights to attach to the sloth and busy factors).

First of all, in a very close election, Troy Hartley is the president-elect of the AFS Socioeconomics Section. If you read the ballot that was mailed this spring you know that Troy is Assistant Research Professor and Associate Director, Northeast Consortium, all at the University of New Hampshire. His election strengthens our growing ties with Sea and Land Grant Extension and drags the Socioeconomics Section Presidency out of the southeastern US for the first time in 10 years. [Also, this means that I have one year to act like this is the greatest job so that he won't back out and install me, in a vicious mandate, as president for life.] All joking aside, I look forward to working with Troy this year as we consider ways of strengthening the Socioeconomics Section and making it a more vital part of the AFS. Congratulations to Troy and thanks to Brian Czech for his willingness to serve the Socioeconomics Section.

Second, this past year the AFS Governing Board, in response to a proposal from the Water Quality Section, ordered a study report on economic growth and fish conservation from the Resource Policy Committee. The RPC formed a subcommittee of RPC, WQS and SES members. Leroy Hushak, Frank Lupi and myself have been representing the Socioeconomics Section on subcommittee. We've been hard at work fortifying the wickedness that is neoclassical economics. As a result, it is an understatement to say that the committee members from the WQS and the SES didn't find much to agree upon. My impression is that the committee members from the RPC didn't know what to think about the ugly process. The result so far is a draft study report written by the RPC and WQS members with a rebuttal from the SES. Check out our

appraisal of the draft study report in this newsletter. And, in case you missed it, a summary of our work appears in the August 2006 issue of Fisheries.

Speaking of Sea and Land Grant Extension, for the second time in three years the SES is co-sponsoring a symposium at the AFS Annual Meeting. This year in Lake Placid we have organized the “Balancing stakeholder interactions: responding to social, economic and environmental change in the fishery” symposium. We have scheduled a full day of talks and posters during the afternoon of Tuesday the 12th and the morning and afternoon of Wednesday the 13th. Highlights include presentations from our own Herb Holloway (“the Louisiana Shrimp Industry”) and Troy Hartley (“Coastal Communities Managing Change”). Many thanks to Terry Smith of Sea Grant who did most - like 99% - of the work.

Speaking of late newsletters, it makes sense, at least to me, to change the newsletter schedule from Spring (April) and Fall (October) to Summer (August) and Winter (February). This will facilitate provision of full information in advance of the annual meeting and avoid the dread of putting a newsletter together sometime after the AFS annual meeting (I’m exhausted!) and before the holidays (I’m exhausted!). Any objections?

Maybe we’ll vote on the newsletter schedule and other important matters at the annual meeting of the SES on Sunday the 9th from 12 noon to 2 pm in the Olympic 3 room in the Crowne Plaza (I think, make sure that you check your program for the exact date, time and location) in Lake Placid. Bring your appetite because this year, in a first during my reign of (t)error, we’re springing for lunch! On the meeting agenda are important discussions about the 2006 Weithman Award, an introduction to the new President-elect, a vote on the newsletter schedule, economic growth, planning for the 2007 meetings in San Francisco and much more (old business and new).

Finally, don’t miss the plenary session at the annual meeting, which features SES member and past-president Bonnie McCay. She’ll be speaking on “The Livelihood of Fishing: A Historical and Cross-Cultural Perspective.” Sounds great.

See you in Lake Placid after your two to three airplane rides and 2.5 hour bus ride!

John W.

THE OFFICIAL STATE FISH OF NEW YORK



-- Brook trout
USFWS/Duane Raver

Plenary Session: "The Livelihood of Fishing: A Historical and Cross-Cultural Perspective"

Dr. Bonnie McCay

2006 AFS Annual Meeting • September 10-14, 2006 • Lake Placid, New York

Dr. Bonnie McCay is a Board of Governors Distinguished Service Professor at Rutgers, the State University of New Jersey.

An anthropologist by training, she teaches in the Department of Human Ecology and works with graduate students in Anthropology, Geography, and Ecology. Her research has focused on commercial fishing communities and institutions such as fishing cooperatives in the North Atlantic region, particularly Newfoundland, Nova Scotia, and New Jersey. She recently began research with fishing cooperatives in Mexico.

A major theme of her work is the role of local communities and fisher groups in managing common property resources, and her books include "The Question of the Commons" (co-edited with J. Acheson), "Oyster Wars and the Public Trust," "Market, State, and Community" (with R. Apostle and others), "Enclosing the Commons" (with R. Apostle and K. Mikalsen), and a forthcoming collection, "Against the Grain" (co-edited with B. Walters, P. West, and S. Lees).

Dr. McCay has been a member of the American Fisheries Society for many years and served as president of the Socio-economic Section. She has also held offices in and is a fellow of the American Association for the Advancement of Science and the American Anthropological Association.

Socioeconomics Section submissions for the Fourth Annual AFS Fishy Trivia Contest at the Outdoor Writers Association of America meeting:

1. A recently proposed fishery regulation states that it shall be unlawful to shout _____ for the purpose of trapping fishery social scientists.

- a. research contract
- b. I need a policy consultant
- c. all you can eat seafood buffet
- d. a biologist is managing a fishery
- e. none of the above*

2. Fisheries economists suggest that fisheries managers should have a goal of:

- a. optimal sustainable yield*
- b. maximum sustainable yield
- c. at least 2 economists for each sociologist employed at NMFS
- d. at least 3 economists for each anthropologist employed at NMFS
- e. none of the above

The correct answer for each is marked with a *. Question number 2 was chosen for the contest!

Draft Comments on The RPC/WQS Work Group's

"Draft Study Report and Policy Statement on Economic Growth and Fisheries"

John Whitehead¹, Leroy Hushak, Frank Lupi
AFS Socioeconomics Section Committee on Economic Growth and Fisheries

The "Draft Study Report and Policy Statement on Economic Growth and Fisheries" (hereafter, Study Report), authored by the 2006 Joint Work Group on Economic Growth and Fisheries (hereafter, Work Group), identifies major fish conservation issues and problems in the U.S. and the world. The report identifies macroeconomic growth as an important problem and identifies one preferred alternative to the goal of macroeconomic² growth: a zero growth, steady state economy.

While we agree that fisheries face many problems, we disagree that a steady-state economy would solve them. Our comments address five main themes: (1) the false dichotomy between economic development and economic growth, (2) the practical problems associated with contractionary macroeconomic policy, (3) the potential for unintended, negative consequences, (4) a confusion between microeconomic and macroeconomic evidence and (5) the lack of empirical macroeconomic evidence offered (and alternative evidence that calls into question the correlation between per capita GDP and fish conservation).^{3,4} We conclude with an alternative policy suggestion designed to improve fish conservation without gross negative impacts on the rest of the economy.⁵

1. The False Dichotomy between Economic Development and Economic Growth

The focus on the narrow concern of economic growth and not the broader concern of economic development is justified by a false dichotomy.⁶ The Study Report defines economic

¹ The authors are economists employed by various state university systems. Each author is a big fan of fish conservation and, as partial evidence, has been a member of the AFS Socioeconomics Section for a number of years. Contact: whiteheadjc@appstate.edu.

² Among economists macroeconomic growth is used synonymously with economic growth. The Study Report at various times confuses macroeconomic growth with growth of individual sectors of the economy. Hence, we use the term macroeconomic growth whenever it is important to be explicit that we are referring to an increase in Gross Domestic Product, National Income or other measure of aggregate economic performance.

³ In our review of the TWS 03-1 document we identified a number of technical economic problems. Many of these concerns carry over to the Study Report. In order to avoid distraction from our main concerns and avoid a point-by-point debate, we abstain from providing them here. These comments are available at the SES website: http://www.fisheries.org/socioecon/docs/SES_comments_TR_03-1.pdf.

⁴ The Study Report confuses the decomposition of GDP into its components, per capita GDP and population, by equating per capita GDP with per capita consumption. Consumption spending is about two-thirds of GDP and positively correlated. In the National Income and Product Accounts, GDP is composed of consumption spending, investing spending, government spending and net exports. According to the national income accounting identity, GDP is equivalent to income, which is composed of consumption spending, savings and tax payments.

⁵ See also: John Whitehead, Doug Lipton, Frank Lupi, and Rob Southwick, "Economic Growth and Environmental Protection: A Clarification about Neoclassical Economics," Fisheries, April 2005.

⁶ The AFS Governing Board directed the RPC to put together a work group consisting of members of the Water Quality Section (WQS) and the Socioeconomics Section (SES). This Work Group was to focus on the broad topic of economic development and fisheries, not the more narrow topic of economic growth and fisheries. In the first conference call of the Work Group, which at that time included appointed representatives of the RPC and the WQS,

development as “qualitative change, realization of potential, evolution toward an improved, but not larger, structure or system” and economic growth as “increase in the real level of national product, income, and expenditure.”

These definitions ignore the relationship between growth and development. Consider the relationship between development and growth as explained by Tom Tietenberg, author of the leading text in environmental economics (Tietenberg, p. 528, 2005):

Herman Daly’s useful distinction between growth and development is employed here. Development refers to a qualitative increase in well-being, while growth refers to an expansion in physical output of goods and services. They are related, but by no means synonymous, concepts. It is conceptually possible to have growth without development and development without growth, but historically the two have been inextricably entwined. See Daly and Cobb (1989).

Economic growth is one component of economic development. These are not, necessarily, competing objectives.

This false dichotomy obscures the fact that the solutions to fisheries problems are local or regional in nature whereas the macroeconomic goal of economic growth is a national goal. Local and regional problems may best be solved with microeconomic policies (i.e., policies that affect markets and their failures). As the Study Report makes clear, economic growth affects all environmental problems. The environmental Kuznets curve literature indicates that economic growth is positively correlated with some aspects of environmental quality and negatively correlated with others.

The Study Report assumes causality between macroeconomic growth and environmental degradation. We accept that macroeconomic growth and environmental quality are correlated, but not necessarily that the correlation is always negative.

2. Practical Problems with Contractionary Macroeconomic Policy

Achieving a goal of zero economic growth would require a policy of contractionary macroeconomic policy. The two major macro policy instruments currently used in the United States are monetary policy (i.e., changes in the Federal Funds interest rate accomplished by the Federal Reserve system, the “Fed,” buying and selling of Treasury bills) and fiscal policy (government expenditures and taxes controlled by the President and Congress). The Study Report describes these policy instruments without an emphasis on their potential limitations and implementation problems.

Monetary policy is a very blunt policy instrument. Changes in short term interest rates are used mainly to control inflation with secondary goals of achieving economic growth and full employment. In order to influence the inflation rate the Federal Reserve can control short term interest rates (i.e., the so-called federal funds rate) by buying and selling short-term Treasury

but not the SES, the Work Group decided against pursuing the original directive from the AFS Governing Board and determined that economic growth was the appropriate focus since it was the issue identified in the Water Quality Section’s initial proposal. When the SES was invited to join the Work Group, after two conference calls and major, and apparently, irreversible decisions were made, we argued that the focus of the work should shift back to economic development and fisheries conservation.

bills, but long-term interest rates are only indirectly controlled. Long-term interest rates (e.g., mortgage rates) have a greater effect on economic growth.⁷

Fiscal policy has its own problems. Fiscal policy is subject to significant lags and economic growth is subject to cycles. In a steady-state economy, by the time positive economic growth is measured and recognized by policy makers forces that might lead to moderations in growth might already be under way.⁸ Contractionary fiscal policy (increased tax rates and lower government spending) designed during this phase of the business cycle is likely to cause a recession.

Another concern is the effect of contractionary macro policy on measures of macroeconomic performance other than economic growth. Reductions in economic growth tend to be correlated with high unemployment and low inflation. High unemployment leads to a number of social ills that can be avoided with the job creation associated with macroeconomic growth. Low inflation can turn into deflation (a fall in the overall price level). Deflation is a major macroeconomic problem and one reason why the Federal Reserve drove short term interest rates to such absurdly low levels during the early part of this century. Deflation can lead to recession because consumers get used to low prices and put off purchases indefinitely. It is difficult to break free of a deflationary spiral (e.g., consider the economy of Japan during the 1990s).

3. Negative Unintended Consequences of Zero Economic Growth

While one can use monetary policy when attempting to control inflation and avoid deflation, and fiscal policy to increase or decrease economic growth, the links to the environment of these macroeconomic policies are tenuous at best. Indeed, the pursuit of zero macroeconomic growth with contractionary macroeconomic policy could cause the perverse result of degradation in the environment.

Consider a society that produces goods and services with three inputs: labor, physical capital (i.e., machines, factories) and natural capital (e.g., fisheries, forests, energy, etc). Each of these inputs can substitute for the others to some extent. Contractionary macro policy that reduces overall macroeconomic growth could lead to a degradation of natural capital. Higher interest rates would reduce the use of physical capital as the cost of loanable funds rise and business firms borrow less. Also, higher income taxes could reduce the supply of labor increasing wage rates. In order to increase output, business firms and individuals might substitute more intensive use of natural capital. In other words, the relatively less expensive energy, forestry and fishery resources could substitute for the relatively more expensive labor and physical capital.

⁷ The Fed is limited in its ability to control the macroeconomy. A prime example of the limited ability of the Fed to control interest rates is the January 2006 inversion of the “yield curve” (the yield curve is the relationship between interest rates and their term to maturity). The Federal Reserve raised short term interest rates from 2.25% to 4.25% during 2005. Long term interest rates (e.g., mortgage rates) stayed constant, and even fell slightly below short-term rates, over the same period.

⁸ GDP is measured quarterly. The first measurement of GDP is released by the Bureau of Economic Analysis one month after the end of a quarter. This number is revised once the following month and again three months after the end of a quarter to produce the final estimate of quarterly GDP.

The Study Report does not consider the possibility that a steady-state economy could have a negative environmental outcome.

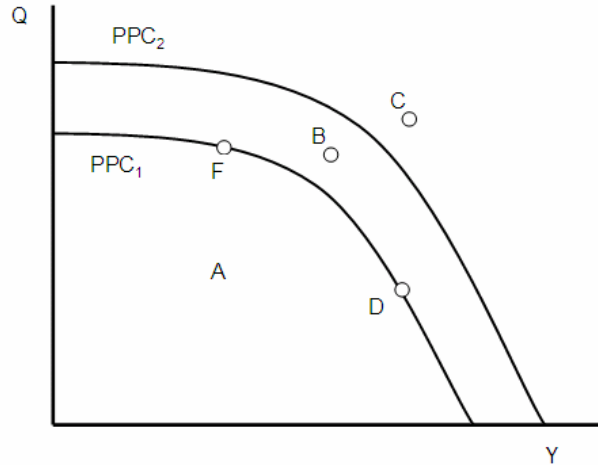
4. A Confusion Between Microeconomic and Macroeconomic Empirical Evidence

The Study Report confuses the concepts of macroeconomic growth and microeconomic activity. Macroeconomic growth is the product of population growth and per capita gross domestic product (GDP) growth, or per capita national income, according to the national income accounting identity. GDP is a measure of aggregate (i.e., macro) economic performance.

The Study Report, Czech, Krausman and Devers (2000), Trauger et al. (2003) and Reed and Czech (2005) show that microeconomic activity, not macroeconomic growth, contributes to the listing of threatened and endangered fish species (see Tables 1 and 2 in the Study Report). The most important microeconomic factors that negatively impact fish conservation are surface water diversions, invasive species, pollution and agriculture.

The analysis in the Study Report confuses the microeconomic allocation of resources and macroeconomic growth. This analysis is well known and presented in all standard college principles of economics textbooks (see Mankiw2006). Consider the production possibilities curve (PPC) in Figure 1. The PPC is a simple model of an economy that illustrates the feasible and infeasible production of goods and services given the scarcity of resources such as land, physical capital and natural capital.

Figure 1. Production Possibilities Curve



In Figure 1, society produces both goods and services (Y) and environmental quality (Q). The negative slope along the PPC illustrates the tradeoff between microeconomic activity and environmental quality. Given the scarcity of resources society can initially produce combinations of goods and services and environmental quality along PPC₁. Given PPC₁, point A represents an inefficient combination of resources (i.e., some resources are being wasted). Points B and C represent combinations of goods and services and environmental quality that cannot be achieved given the amount of resources available.

A movement along the PPC_1 indicates that a country/society is reallocating factors of production (e.g., labor, capital) among various market (Y) and non-market (Q) goods and services. According to the empirical analysis presented in the Study Report, delisting of TES could be accomplished by reallocating scarce resources away from agriculture and towards the environmental quality sector of the economy (e.g., from point D to point F). A microeconomic policy to achieve this might be to eliminate agricultural subsidies.

Macroeconomic growth occurs when the PPC shifts outward (e.g., from PPC_1 to PPC_2). A shift of the curve is fundamentally different from a movement along the curve. Macroeconomic growth (a shift of the curve) could occur at the same time that the agricultural sector of the economy is diminishing (a movement along the curve away from agriculture and towards services) leading to improved fish conservation.

5. A Lack of Empirical Macroeconomic Evidence

The Study Report cites a bivariate regression of Endangered Species Act listed species on GDP from 1972-2003 as empirical evidence of the correlation between macroeconomic growth and fish conservation (Czech, Krausman and Devers, 2000; Trauger et al. 2003). Reed and Czech (2005) provide similar evidence for fish species. The positive correlation between GDP and listings represents the only empirical evidence advanced in the Study Report to support the ecology-based theoretical relationship between macroeconomic growth and fish conservation.

We find this empirical evidence weak for several reasons. First, as the study report is clear to state, correlation does not imply causality. The economic theory of government decisions suggests that the causality is the opposite direction of the causality implicit in the Study Report. Consider the notion that protection of threatened and endangered species is a “normal” good. As income rises the demand for the normal goods also rises.⁹ Under this assumption, as GDP per capita rises in the United States, the demand for protection of threatened and endangered species also rises. Since listing of a species is the first step towards its protection, the public demand for species listings will rise with GDP per capita. As the public demand for species listings rises, the government will respond by listing more species.

Second, the time-series econometric model confuses stock and flow variables. Stocks are variables that can accumulate. Flows represent rates of change in variables. The dependent variable, the cumulative number of species listed, is a stock variable. The independent variable, gross domestic product, is a flow measure of wealth accumulation. Further, the number of listed species under the ESA is determined by a number of reasons, including government budget constraints. Limited government resources devoted to listing decisions force the cumulative number of species listed to increase over time (Brown and Shogren, 1998).

Third, species listing decisions are not perfect measures of endangered status (Brown and Shogren, 1998). For example, listing decisions reflect the preference for charismatic macrofauna over science (Metrick and Weitzman, 1996), and the importance of interest group politics (Ando, 2003). These additional factors are not considered as independent variables in the bivariate time-

⁹ As income rises the demand for inferior goods falls. See Chambers and Whitehead (2003) for some evidence that the demand for wolf protection in Minnesota is a normal good.

series model. Econometrically, omitted variable bias can lead to statistically significant, unexpected signs on the coefficients.

We estimate models similar to those presented in the Study Report, Czech, Krausman and Devers (2000), Trauger et al. 2003 and Reed and Czech (2005) considering the differences between stock and flow variables (see Appendix). Using similar time-series data we find no empirical macroeconomic evidence to support the ecological theory of conflict between economic growth and fish conservation. We also present an empirical analysis of the effects of macroeconomic growth on threatened and endangered species listings using cross-section data. Again, we find no empirical macroeconomic evidence to support the conflict between economic growth and fish conservation.

Another Alternative

The divergent goals of maximum economic growth and zero economic growth is a false choice. There is much middle ground. The ecological economics literature suggests that a goal of *sustainable development* is an alternative to zero economic growth. One definition of sustainable development from the ecological economics literature is to achieve a level of human welfare for the current generation without sacrificing human welfare for future generations.

Again, consider a society that produces goods and services with three inputs: labor, physical capital (i.e., machines, factories) and natural capital (e.g., fisheries, forests, energy, etc). Each of these inputs can substitute for the others to some extent according to ecological economists who advocate “weak” sustainability. Those who advocate “strong” sustainability worry about the limitations in substitutability between physical and natural capital. A policy of strong sustainability would focus on the use of natural capital so that it does not decline over time. A policy of weak sustainability focuses on non-declining capital, the sum of physical and natural capital.

Government intervention in the form of *microeconomic* policies would be required to achieve either sustainability goal. For example, the valuation of non-market natural resources must be incorporated into land-use decisions (e.g., requiring landowners to make decisions considering the environmental costs of development with development bonds), property rights must be explicitly assigned where they are not (e.g., fisheries), short-term economic decisions must be made to consider long-term impacts (e.g., long-term cumulative impact fees), and, as stated before, prohibitions on economic development when environmental irreversibility (e.g., extinction) is faced.

The field of environmental economics promotes concepts and tools to address these issues: emissions taxes, individual transferable quotas, tradeable emissions permits, etc. As the Study Report describes, increased use of these policy instruments will directly improve fish conservation. Indirectly, they will lead to reductions in economic growth rates, but not necessarily reductions in economic satisfaction, i.e, real economic development and human welfare.¹⁰

¹⁰ Individuals would remain free to use their own creative devices to maximize their well-being, including earning profits if that is their choice. One outcome of sustainable development policies might be a movement to a more service-oriented economy with less sprawl (especially if we throw higher gas taxes or a carbon tax into the mix).

A goal of sustainable development is currently difficult to implement because measures of sustainability are currently under development. However, economists have long been aware that GDP does not do a good job of measuring many activities that contribute to economic well-being such as child-rearing, leisure activities, and the enjoyment of environmental amenities. Environmental macroeconomists have been busy trying to correct these problems in the measurement of economic well-being. One of the thrusts of this research is to incorporate the value of the environment and the cost of natural resource use in “green GDP.”

As only one example of this effort, the Genuine Progress Indicator¹¹ (GPI) incorporates the cost of pollution abatement and water pollution, among other adjustments, into GDP. While GDP has increased over time, suggesting an increase in human welfare, the GPI peaked in the late 1970s and has declined since indicating a decrease in human welfare.

Pursuing economic development as measured by green GDP indices such as the GPI is a middle alternative to the divergent goals of economic growth and the steady state economy. With GPI (or some other measure of green GDP) growth as the macroeconomic goal, sustainable development can be pursued with an explicit focus on environmental quality and fish conservation.

Conclusions

From an economic perspective a zero economic growth recommendation must be justified in two ways. First, is there empirical evidence that macroeconomic growth and fish conservation are not spuriously correlated? We find no evidence. Second, are the benefits of macroeconomic growth (e.g., lower poverty, higher standards of living, the enjoyment of child-rearing) lower than the costs of negatively impacted fish conservation listings? The Study Report does not address this issue.

Macroeconomic growth is ultimately the collective outcome of individual decisions. These individual decisions are only indirectly affected by macroeconomic policy. Furthermore, poor microeconomic incentives lead to degradation of fisheries regardless of macroeconomic policies. There is a wide range of microeconomic policies that can be brought to bear on fish conservation that have not been fully attempted.

There are a number of proactive microeconomic efforts to improve water quality and in most cases to improve fisheries habitat. For example, efforts to clean up Great Lakes areas of concern and other contaminated sites, some of which are referred to as brownfields, Section 312 of the Water Resources Development Act which recognizes water quality and habitat improvement as priority benefits of harbor dredging, and efforts to develop the case for removing low-head dams all lead to improved fisheries habitat. The relatively recent shift to a focus on watersheds to improve water quality is a major step forward. What would happen to public support for these and other efforts under a contractionary macro policy? In our judgment, public funds to support programs such as these will likely decline if not disappear.

In terms of an AFS policy statement, it may be more productive to identify a specific problem and then articulate policies that can directly ameliorate the problem. If the issue is that certain microeconomic activities can impair or endanger fisheries, then why not focus on specific

¹¹ See: <http://www.redefiningprogress.org/projects/gpi/>

tools that can address those issues?

Macro policy instruments are blunt, affecting all sectors of the economy. Microeconomic policies that would improve fisheries are consistent with a macroeconomic policy of sustainable development. These policies include properly pricing resources in markets, where pricing policies in some cases may require regulatory or command policies if those are the only feasible or acceptable policies, and assignment of property rights. We also recognize that a “Safe Minimum Standard of Conservation” is necessary in some cases. An absolute regulation may be required to insure the survival of a particular fish species.

The AFS should strive to ensure that fisheries professionals are engaged in the public debate regarding economic activity and the costs that it imposes on fisheries and the environment. In particular, the public needs to be educated regarding the value of fisheries and fisheries habitat and the types of policies that need to be adopted to ensure that society receives the maximum social value from our fisheries resources. To change economic policy, we must educate the public and government leaders about the costs of degrading fisheries and the environment, and how ordinary consumer choices may lead to these costs. When more people agree with these concerns, economic policy and individual consumption behavior will change.

The Study Report implicitly advocates a major change to macroeconomic policy (i.e., a steady state economic with zero growth). The problems raised are real, but the proposed solution is extreme. The AFS should focus on policies that educate economic experts, government leaders and the public about the negatives associated with unregulated economic activity. The AFS should argue that society should pursue more fisheries conservation, not by imposing strict controls on GDP, but by addressing and accounting for the increasing social costs of continued environmental degradation.

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Appendix: The Effects of Macroeconomic Growth on Threatened and Endangered Species

In this appendix we re-analyze the data presented in the Study Report and present alternative analyses of state-level cross-sectional data. We find no evidence that macroeconomic growth is negatively related to threatened and endangered species listings.

The time-series analysis is conducted with thirty years of annual data from 1973-2002 (Table 1). The cumulative number of threatened and endangered species (TES) is obtained from the U.S. Fish and Wildlife Service.¹² The annual number of TES is constructed from the cumulative data. The average annual TES listings is about 40. Annual gross domestic product data is obtained from the U.S. Bureau of Economic Analysis.¹³ Annual population data is obtained from the U.S. Census Bureau.¹⁴

Table 1. Time Series Data

<u>Variable</u>	<u>Mean</u>	<u>Std.Dev.</u>	<u>Minimum</u>	<u>Maximum</u>
Annual Threatened and Endangered Species Listings	39.97	30.66	0	126
Cumulative Threatened and Endangered Species Listings	504.13	414.91	7	1199
Gross Domestic Product (\$100,000s)	6737.48	1818.09	4311.20	10048.80
Per Capita Gross Domestic Product (\$1000s)	27.02	4.88	19.96	34.89
Population (1,000,000s)	245.54	22.15	211.91	287.99

Cases = 30

We first replicated the results summarize in the Study Report, Czech, Krausman and Devers (2000), Trauger et al. 2003 and Reed and Czech (2005). Using ordinary least squares regression analysis we find an $R^2 = .98$ when GDP is regressed on cumulative TES listings. We are confident that we are using similar data.

In Table 2 we present four macroeconomic models. We consider both the stock dependent variable of cumulative TES listings and the flow dependent variable of annual TES listings. Two models are estimated with each dependent variable. The first includes only annual GDP as the independent variable. The second decomposes annual GDP into per capita GDP and the population growth.¹⁵ Since the error terms are often correlated over time with time-series data we use a model that accounts for the serial correlation. Ordinary least squares results are qualitatively similar.

¹² http://www.fws.gov/endangered/stats/List_cy2002.PDF.

¹³ <http://www.bea.gov/bea/dn/home/gdp.htm>.

¹⁴ <http://www.census.gov/popest/archives/>.

¹⁵ We also considered the flow variable population growth with little difference in results.

We find that GDP is positively correlated with cumulative TES listings. GDP per capita and population are also positively correlated with cumulative TES listings. But, as stated previously, cumulative TES listings are a stock variable and will increase over time by definition. In our annual TES listing models we find that neither GDP nor GDP per capita and population have any statistically significant impact on TES listings.

Table 2. Time Series Data Models*

	Threatened and Endangered Species Listings							
	Cumulative				Annual			
	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Constant	-804.02	-6.01			-0.021	0.00	175.90	0.82
Gross Domestic Product (\$100,000s)	0.19	11.33			0.006	1.38		
Per Capital Gross Domestic Product (\$1000s)			34.21	3.74			9.91	1.27
Change in Annual Population (1,000,000s)			8.77	4.28			-1.65	-0.97
ρ	0.94	14.45	0.95	15.95	0.37	2.13	0.30	1.70
Durbin-Watson		1.50		1.41		2.29		2.26

*AR(1) Model: $e(t) = \rho * e(t-1) + u(t)$

As an alternative model of the impact of economic growth on TES listings we consider cross-sectional data for the 48 mainland states.¹⁶ The dependent variable is the number of threatened and endangered species listed in each state (source: USFWS¹⁷). The dependent variables include the decomposed measures of regional economic growth in each state for 2004: State per capita personal income is obtained from the U.S. Bureau of Economic Analysis¹⁸ and state population data are obtained from U.S. Bureau of the Census¹⁹. Control variables are the land area and inland water area in each state, both of which are measured in thousands of square miles. In addition we include Census Region dummy variables to control for regional variation in TES listings (Table 3).²⁰

Correlations among these variables indicates that per capita income has little correlation with species listings ($r = .02$) but population is highly correlated ($r = .75$). In order to determine the impact of per capita income and population on species listings while holding other factors constant we estimate a multivariate regression model (Table 4). The ordinary least squares regression analysis reveals that increases in population increase the number of listed species. The most striking result is that *increases* in per capita income lead to *decreases* in the number of listed species. The independent variables explain almost all of the variation in the dependent variable, which is quite high for state level cross-sectional data.

¹⁶ Please note the following caveat. Any realistic model of the effect of measures of macroeconomic performance on endangered species listings is very complex. Linkages must be specified among species populations, habitats and a host of other variables. Since most species reside in ecosystems and not in the United States or individual U.S. states, any macroeconomic or regional model of the macroeconomic determinants of species listing is lacking in validity.

¹⁷ http://ecos.fws.gov/tess_public/StateListingAndOccurrence.do?state=all

¹⁸ <http://www.bea.gov/bea/newsrelarchive/2006/spi0306.xls>

¹⁹ <http://www.census.gov/popest/states/tables/NST-EST2005-01.xls>

²⁰ The Census Regions are New England (6 out of 48 states), Middle Atlantic (3), East North Central (5), West North Central (7), South Atlantic (8), East South Central (4), West South Central (4), Mountain (8) and Pacific (3).

One criticism of the cross-section results is that they don't measure regional (measured at the state-level) economic growth because they are a snapshot of time. As one potential way of addressing this, we consider the time period of 1972-2004 and consider regional economic growth and the change of TES listings over that time period. Since TES listings began in 1973 the state-level listings in 2005 also measure the change over this time period.

Table 3. Cross-Sectional Data

<u>Variable</u>	<u>Mean</u>	<u>Std.Dev.</u>	<u>Minimum</u>	<u>Maximum</u>
Threatened and Endangered Species Listed in State	42.54	46.50	9	308
Per Capita Personal Income (1000s, 2004)	31.91	4.61	24.52	45.32
Population (1,000,000s, 2004)	6.07	6.58	0.51	35.84
Per Capita Personal Income Growth (1000s, 1972-2004)	11.81	2.69	8.08	19.58
Population Growth (1000s, 1972-2004)	57.05	64.29	0.17	345.38
Land Area (1000s of square miles)	61.65	46.81	1.04	261.80
Inland Water Area (1000s of square miles)	12.39	24.50	0.36	121.59
Northeast Region	0.13	0.33	0	1
Middle Atlantic Region	0.06	0.24	0	1
East North Central Region	0.10	0.31	0	1
West North Central Region	0.15	0.36	0	1
East South Central Region	0.08	0.28	0	1
West South Central Region	0.08	0.28	0	1
Mountain Region	0.17	0.38	0	1
Pacific Region	0.06	0.24	0	1
South Atlantic Region	0.17	0.38	0	1

Cases = 48

We compute the state level change in state level per capita personal income and population from 1972 – 2004 and include these variables in another set of cross-section regression models. We find results similar to the cross-section results. Population growth from 1972 – 2004 is positively correlated with TES listings. Per capital personal income growth from 1972 – 2004 is negatively correlated with TES listings although the strength of the effect is weak ($p = .10$). Regardless of the weakness of the negative effect, a statistically significant positive coefficient would be necessary to support the policy suggestions described in the Study Report.

These results cast serious doubt on the time-series evidence presented in the Study Report. In fact, our cross-section empirical results suggest an opposite conclusion. Macroeconomic growth measured by increases in per capita state income would lead to a reduction in TES listings. In terms of the policy advocated in the Study Report, contractionary macroeconomic policy that would lead to lower per capita income might actually increase TES listings. Instead, our findings suggest that fish conservation policy should focus solely on population control.²¹

²¹ Returning to our caveat in footnote 16, these cross-section model results are only weak evidence about the effect of regional economic growth on fish conservation. Correlation does not indicate causality.

Table 4. Cross-Sectional Models*

<u>Variable</u>	Dependent Variable = Threatened and Endangered Species Listed in State			
	<u>Coeff.</u>	<u>t-ratio</u>	<u>Coeff.</u>	<u>t-ratio</u>
Constant	49.35	3.27	33.65	3.16
Per Capita Personal Income (1000s, 2004)	-1.18	-2.22		
Population (1,000,000s, 2004)	7.27	7.36		
Per Capita Personal Income Growth (1000s, 1972-2004)			-1.73	-1.70
Population Growth (1000s, 1972-2004)			0.72	7.19
Land Area (1000s of square miles)	-0.24	-2.63	-0.22	-2.30
Inland Water Area (1000s of square miles)	0.03	0.34	0.04	0.53
Northeast Region	-1.95	-0.30	-2.50	-0.34
Middle Atlantic Region	-66.50	-4.35	-70.73	-4.32
East North Central Region	-38.20	-4.77	-39.60	-4.49
West North Central Region	1.74	0.22	3.86	0.47
East South Central Region	35.09	2.31	39.64	2.61
West South Central Region	-7.76	-1.18	-4.96	-0.68
Mountain Region	27.04	2.53	22.97	2.24
Pacific Region	40.31	2.27	38.41	2.16
R2		0.88		0.88
F		22.53		21.93

*Ordinary Least Squares with White heteroscedasticity robust covariance matrix



AFS Lake Placid 2006 Symposium

Tuesday, September 12, 2007
Birch Room, Crowne Plaza

SYMPOSIUM TITLE:

Balancing stakeholder interactions: responding to social, economic and environmental change in the fishery

CONTACT:

Provide names, addresses, telephone and fax numbers, and e-mail addresses for all organizers. Indicate by an asterisk the name of the main contact person.

Name:	Terry Smith	Work Phone:	301-713-2435
Address:	NOAA, National Sea Grant College Program	Fax:	301-713-0799
	1315 East-West Highway Silver Spring, MD 20910	e-mail:	Terry.Smith@noaa.gov

DESCRIPTION:

Recent events like hurricanes in the Gulf of Mexico and tsunamis in southeast Asia have had dramatic impacts not only on society and the environment, but also in raising questions about the way we respond to such natural disasters, how impacts can be mitigated, and how future events can be better anticipated. The fisheries science community has begun to consider the human dimension of the response, in part, through communication with, and outreach to the community that values fish, fisheries and the fisheries environment. As the AFS 2006 theme states, the real issue is "Fish in the Balance", that is, the analysis of and communication about the tradeoffs that emerge when one contemplates rebuilding fisheries, fisheries infrastructure and the society that depends on viable fish stocks.

Fisheries extension agents deal with the people side of fishing and social scientists attempt to better describe human behavior in the face of changing conditions. Unfortunately, we're beginning to learn that change can be rapid, as well as environment-altering. Likewise, the official response to such events results in the rapid input of enormous amounts of dollars, new governance systems, and new infrastructure. The impact on the fisheries, the fleets and the fisheries infrastructure can be cataclysmic. As a grand fishery rebuilding experiment gets underway in the United States and other parts of the world it is important to illustrate how the tradeoffs can be evaluated, examined and acted upon and how outreach plays a role in rebuilding fisheries and the people who depend on fish.

The proposed symposium is co-sponsored by the AFS Socioeconomic Section and the Sea and Land Grant fisheries extension community. Papers will focus on how managers and policy makers balance conflicting goals in resolving fishery resource use issues, especially in situations where change can be sudden and/or permanent.

SPONSORS:

NOAA National Sea Grant Office, AFS Socioeconomic Section, USDA Cooperative State Research, Education and Extension Service

SPEAKERS AND TOPICS (Preliminary – see the AFS web page for the final list):

	Speakers Name	Title of Presentation
	TUESDAY, September 12	
1	Dave Beutel, Laura Skrobe, Univ. of Rhode Island	Collaborative research: fishermen response to changing groundfish populations on Georges Bank
2	Dana Morse, Univ. of Maine, Dave Beutel, Univ. of Rhode Island	The heck with the data, look what else is going on with collaborative research
3	Troy Hartley, Northeast Consortium, Univ. of New Hampshire	Coastal communities managing change: innovative partnerships in northern New England
4	Gunnar Knapp, Univ. of Alaska	One Person's Cost is Always Another's Income: Winners and Losers in Bering Sea Crab Rationalization
5	Kathy Mills, Barbara Knuth, Cornell Univ.	Confronting trade-offs associated with ecosystem-based management: an evaluation of alternative governance arrangements
	WEDNESDAY, September 13	
6	M. Scott Baker Jr., Univ. of North Carolina, Wilmington	Harnessing consumer preferences to create new markets for North Carolina seafood
7	Jon Lucy, VIMS	Marine angler catch and release fishing and fisheries data needs: extension connects anglers and fisheries managers using the Virginia Game Fish Tagging Program
8	Gretchen Martin, NMFS; Barry Nash, NC State; Pam Morris, Core Sound Waterfowl Museum	Carteret Catch: Promoting Local Seafood through Community and Business Partnerships
9	Ralph Rayburn, Gary Graham, Texas A&M	Paradigm shifts in commercial fisheries: profiles of the Gulf of Mexico shrimp industry
10	Herb Holloway, Louisiana Department of Wildlife and Fisheries	The Louisiana Shrimp Industry: Markets, Market Structure, and Hurricane Impacts
11	Glenn Thomas, Rex Caffey, LSU	Fisheries Impacts of Hurricanes Katrina and Rita in Louisiana: Preliminary Loss Estimates and Prevailing Market Conditions
12	Flaxen Conway, Wes Shaw, Oregon State Univ.	Socioeconomic lessons learned from the response to federally-declared west coast groundfish disaster
13	Carolynn Culver, John Richards, Caroline Pomeroy, Univ. of California	The future of commercial fisheries: Resource status, fishing effort and infrastructure needs in south-central California
14	Carrie Pomeroy, Carolyn Culver, Peter Nelson, Chris Dewees, Univ. of CA; Cindy Thomson, NMFS	Informing stakeholders: a California fisheries awareness project
15	Liz Brown, Univ. of Alaska	Impacts of restructuring fisheries management - the case of the Chignik Cooperative
16	Fred Snyder, Kelly Reisen, Frank Lichtkoppler, Jeff Reutter, Dave Kelch, Ohio Sea Grant	Revitalizing Ohio's Lake Erie sport fishery through fisheries extension enhancement
17	Ronald Kinnunen, Charles Pistis, Michigan State Univ.	Marketing Michigan's Great Lakes whitefish: an extension approach to enhancing the commercial fishing industry
18	Nicholas Brozvoic, Cameron Speir, Jason Wright, Univ. of Illinois	Harvester response to changes in a fishery due to invasive species: A spatial analysis of Asian carp in the Mississippi and Illinois Rivers

(continued on next page)

19	Justin Hospital, Univ. of Wisconsin	Does Occam's Razor Cut It? Estimating the Welfare Effects of Commercial Catch Restrictions in the Great Lakes
*	Torie Baker, Paula Cullenburg, Terry Johnson, Sunny Rice, Liz Brown, Terry Reeve, Reid Brewer, Dolly Garza, AK Sea Grant; Arlot Hall, Univ. of AK Extension; Pete Granger, Univ. of Washington	Extension response to a market crisis in Alaska and Washington Wild Salmon Markets (POSTER)



Call for Papers

The AFS Northeastern Division is soliciting abstracts for a second international symposium "**Challenges for Diadromous Fishes in a Dynamic Global Environment**", built upon the successful 1986 AFS symposium "Common Strategies of Anadromous and Catadromous Fishes". Invited, contributed, and poster papers are being solicited in seven topic areas:

- Dynamic Nature of Diadromy
- Ocean Environment and Migration
- Climate Change and Anthropogenic Influences
- Population and Habitat Restoration
- Linkages with Ecosystem Energetics
- Socio-Economic and Bio-Political Linkages in Management
- Ecosystem Management Approaches for the Future

Proceedings will be published through AFS, including papers from oral presentations and poster abstracts. Titles and abstracts for papers are due 1 September 2006; posters 1 January 2007.

Symposium website and abstract submission: www.anacat.ca .

Contact: Alex Haro, Chair (Alex_Haro@usgs.gov; 413-863-3806).

Request for a Global Fisheries Ecosystem Management Network Survey Review

Here is the text of an e-mail that the SES president received from Jessica Geubtner (AFS Policy and Development Coordinator):

To: John Whitehead
From: Jessica Geubtner
Data: Mon 7/24/2006 3:40 PM
Subject: Request for Socioeconomic Help from AFS

Dear John,

AFS is managing part of a GEF-funded project called the Global Fisheries Ecosystem Management Network (GFEMN). As part of this project, we have designed a survey to send out to members of this network, who live and work in over 40 developing countries around the world. I have attached both the survey as well as a summary article on the project.

As the survey is described in our grant proposal:

“The survey of the needs of countries participating in the GEF/LME projects in sound, responsible scientific approaches to fisheries management will be conducted under this component. This survey will help project management determine the specific needs within each country. Congress attendees will receive the survey. Results will be compiled and will form the core of the management practices database. In this way, capacity building within each country may be more specialized to serve practical concerns of that country and its citizens. The survey might also cover some of the countries not yet involved in the GEF/LME projects.”

There is additional information on the GFEMN website:
<http://www.fisheries.org/html/gfemn/index.shtml>

We are hoping that you, and any other willing members of your Section, would be able to read through this survey. We are looking for input on covering a socioeconomic angle as well, and feel that your review would provide a valuable perspective. Please feel free to contact me with any additional questions, or for greater detail on the project.

Thanks in advance for any help you can provide. I look forward to hearing your thoughts!

Sincerely,

Jessica

To view the background document and survey, go to <http://www.fisheries.org/socioecon/gfemn>. The files are there in PDF. I encourage any SES members to review this survey and provide comments directly to Jessica. Her email address is: jgeubtner@fisheries.org.



FIRST CALL FOR PAPERS



American Fisheries Society
2007 Urban Fishing Symposium
Held in conjunction with the AFS Annual Meeting
September 2-6, 2007 in San Francisco, CA

<http://www.uaex.edu/uapbstudent/UrbanFishing/2007.htm>

Symposium Goals

Recreational fishing participation has been declining in recent years and many states have experienced long-term downward trends in fishing license sales. In response to this, many states have developed urban fishing programs and/or aquatic education programs with the specific goals of recruiting and retaining anglers from urban areas and under-represented demographic groups, such as women and minorities. It is advantageous and efficient for urban fishing programs to learn from each other, and this urban fishing symposium will provide an excellent medium for the sharing of knowledge and experiences and will produce a valuable reference material that will aid in the development, implementation, and management of urban fishing and aquatic education programs.

Symposium Organizers

American Fisheries Society

Symposium Topics

- Invited presentations updating topics from the 1983 Urban Fishing Symposium or addressing new and important topics in urban fishing
- Urban fishing and aquatic education program case studies
- Research related to urban fishing and aquatic education programs
- Full list of invited topics and other presentations are located on our website

Submission of Abstracts

Persons interested in presenting or co-authoring an invited topic paper should contact the steering committee chair no later than July 15, 2006. Urban fishing and aquatic education case study manuscripts/oral presentations are filled. However, anyone interested in submitting a case study is encouraged to do so as a poster presentation/management brief. Persons interested in presenting a research paper or poster at the symposium should E-mail a title, abstract, and contact information no later than September 15, 2006 to:

Thomas J. Lang, Steering Committee Chair, tlang@uaex.edu, Phone: (870) 575-8164

Please indicate whether you would prefer an oral presentation or poster. Authors are encouraged to submit their abstracts early. Individuals who submit abstracts will be notified by October 31, 2006 as to whether their submission has been accepted. Preference will be given towards presentations that offer new information and fresh insights into topics that are a focus of the symposium. The symposium will be organized into eight sessions, with five presentations in each. Presentations shall last 15 minutes, with an additional 5 minutes for questions and answers.

Peer-reviewed Publication

To assure that the technical information presented at the symposium is of high quality and is broadly disseminated, the American Fisheries Society has agreed to publish the proceedings of this symposium. All presentations, both oral and poster, will be included in the publication. Presenters of oral presentations will be required to submit an article for publication, following the guidelines given in the AFS North American Journal of Fisheries Management (NAJFM) *Guide for Authors*. Presenters of poster presentations will be required to submit a poster summary/management brief (1,000-2,000 words), also following NAJFM guidelines. **All manuscripts and management brief/summaries are due by September 1, 2007 - prior to the symposium.** All articles and management briefs will be submitted and reviewed electronically via <http://afsbooks.allentrack.net/>. Questions on the publication should be directed to the Proceedings co-editors: Rick Eades Rick.Eades@ngpc.ne.gov, Wes Neal wneal@uaex.edu, or Tom Lang tlang@uaex.edu. The editors also invite anyone interested in serving as a reviewer for submitted articles to E-mail them their contact information and areas of interest/expertise.

Symposium Sponsors

- USFWS Fish & Wildlife Service Fish and Wildlife Management Assistance Branch
- American Sportfishing Association
- Arkansas Game and Fish Commission
- Minnesota Department of Natural Resources
- Recreational Boating and Fishing Foundation
- AFS Southern Division
- Arizona Game and Fish Department
- AFS Fisheries Administrator's Section
- In-Fisherman magazine
- University of Arkansas at Pine Bluff AFS student sub-unit





Charting the Course for Ocean Science in the United States: Research Priorities for the Next Decade

The National Science and Technology Council Joint Subcommittee on Ocean Science and Technology is developing ***Charting the Course for Ocean Science in the United States: Research Priorities for the Next Decade***, a draft document that outlines the national ocean research priorities for the United States for the next ten years.

Called for in the U.S. Ocean Action Plan, this draft document, along with a follow-on Implementation Strategy, will describe a vision for U.S. ocean science and technology, highlight key areas of interaction of our society and the ocean, and identify critical ocean research priorities for these areas. The draft document is scheduled to be released for public comment late summer 2006.

Public briefings on the national ocean research priorities will be held during the next few months in the following cities: Seattle, WA; Anchorage, AK; Miami, FL; Honolulu, HI; Baton Rouge, LA; West Long Branch, NJ; Chicago, IL; and La Jolla, CA. Town hall meetings and panels will also be held at several conferences across the country including Oceans 2006, California and the World Ocean '06, and the American Fisheries Society Annual Meeting. A developing list of public briefings and meetings with venue details is located at:

http://ocean.ceq.gov/about/sup_jsost_orpp_outreach.html

Members from the research community, Industry groups, ocean educators, government representatives (federal, state, tribal, and local), international representatives, non-governmental organizations, and any interested individuals are invited to attend.

For more information, contact:

Shelby E. Walker, JSOST Project Manager

USGCRP/CCSP Office, 1717 Pennsylvania Ave., Suite 250, Washington, DC 20006

T:202-419-3464; F:202-223-3064; e-mail:swalker@usgcrp.gov

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