

# *Evolution of a Curriculum: Preparing Fisheries Professionals to Thrive in a Changing Environment*

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# What is a Curriculum?

- An organized program of study and courses required for a specific degree program.
- BUT really it's much more than that....
  - Theory
  - Practice / experiential

## Department of Fisheries and Wildlife



*Preserving our past... Creating our future*

*How can we modify curricula to be responsive to the evolving demands of the environment (ecological and social) and employers, students, and professors?*

# The Issues


- What are the Goals of the Profession?
- How is the World Changing?
- Rise of the Millennials
- Workforce Demands / Changing Core Curriculum
- Specialization / Interdisciplinarity of the Professoriate



**The four basic personality types**

# What are the Goals of the Profession?





*Increased productivity, better  
output, and increasing relevance to  
internal and external stakeholders  
leading to enhanced stewardship  
of our fisheries resources*

# Promote Professionalism

Commitment beyond employment is  
required to produce fisheries  
professionals living to a code of conduct.

“I do what I love  
and I love what I do.”

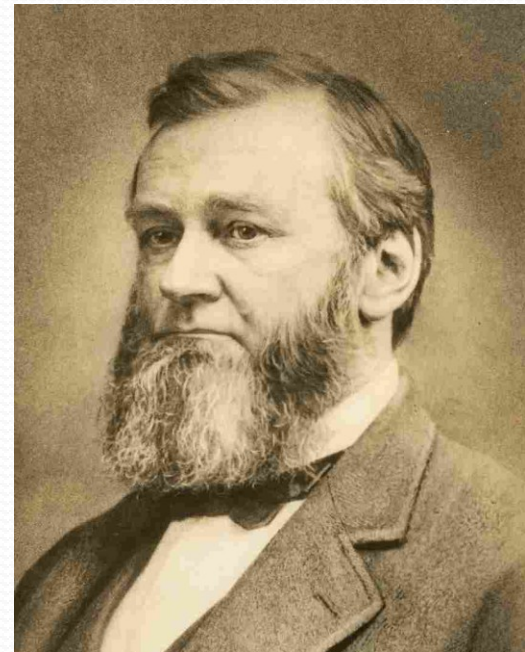


# How is the World Changing?



# History

- “...fully nine tenths of the fish have disappeared...”



1872 “The Decrease of Our Fish Supply”, Scientific American,  
Vol. XXXVII, No. 6, pg. 72

# Early Fisheries Management

- States principle guardians
- Local management of trans-boundary stocks
- *Laissez-faire* approach
- Free access to many fisheries
- Stocking viewed as solution



# Globalization

## **OLD PARADIGM**

Atomism

Emphasis on separate  
working parts

Fragmentation

## **NEW PARADIGM**

Holism

Emphasis on  
relationship

Integration



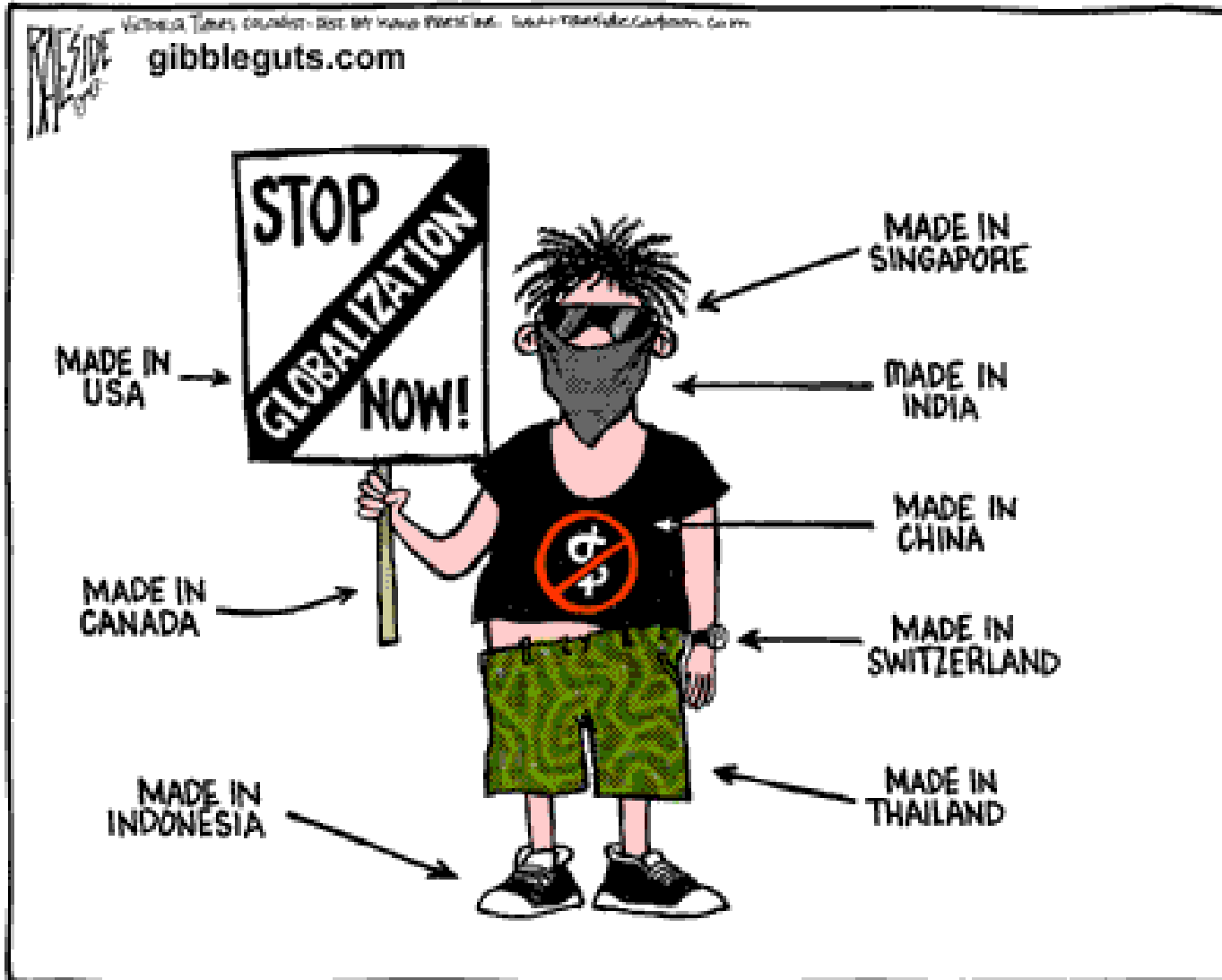
***“To survive in the world, we have to  
act in concert with others.”***

***Deborah Tannen***

# How Our World is Changing

- Globalized social and environmental systems

# Raeside Cartoon From Gibbleguts.com



# How Our World is Changing

- Globalized social and environmental systems
- Expanding communication & transportation networks



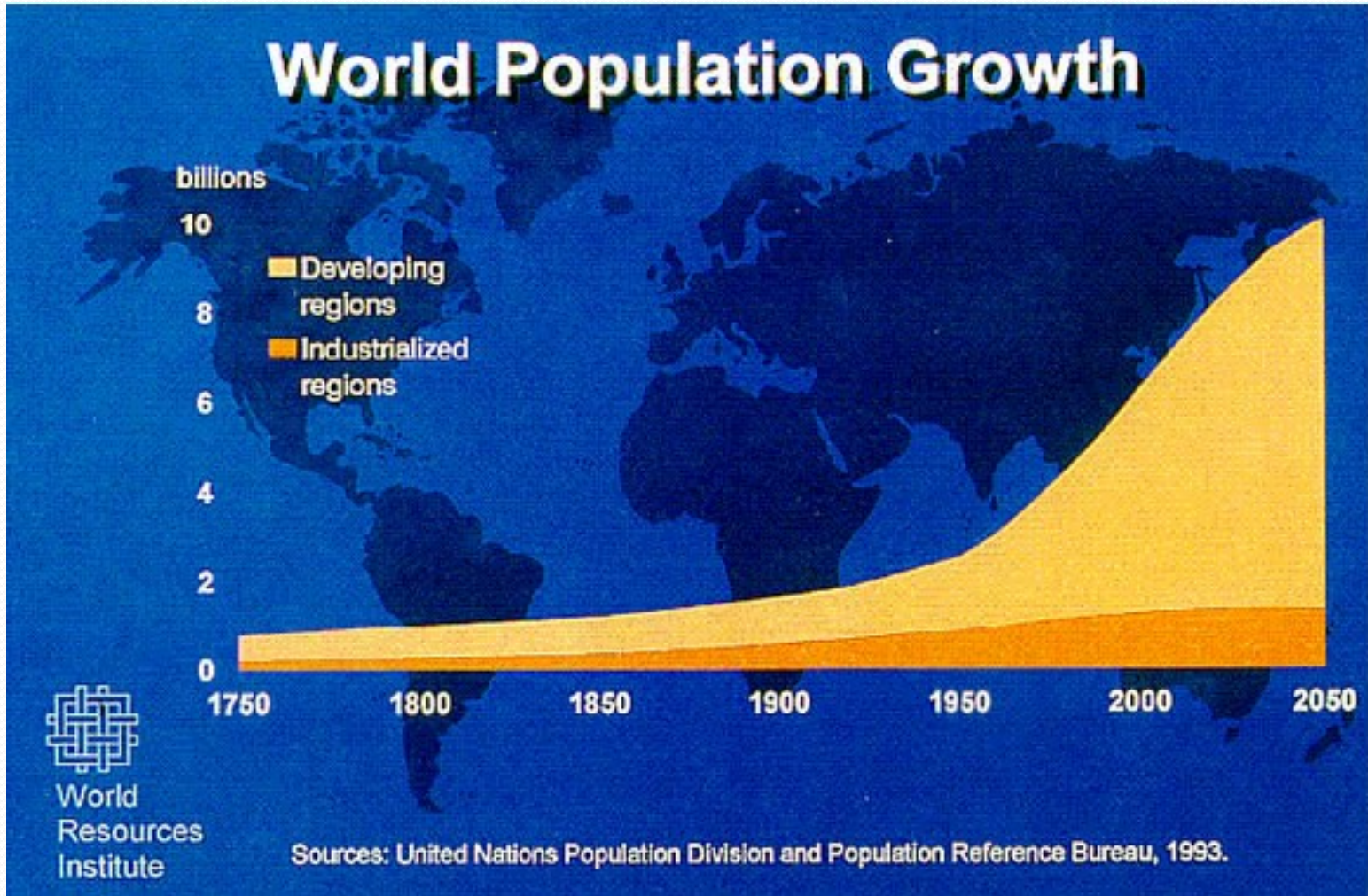


**“All equipped with cell phones so the minute you catch anything you can call up all your friends and start bragging!”**

# How Our World is Changing

- Globalized social and environmental systems
- Expanding communication & transportation networks
- **Shifting demographic patterns**

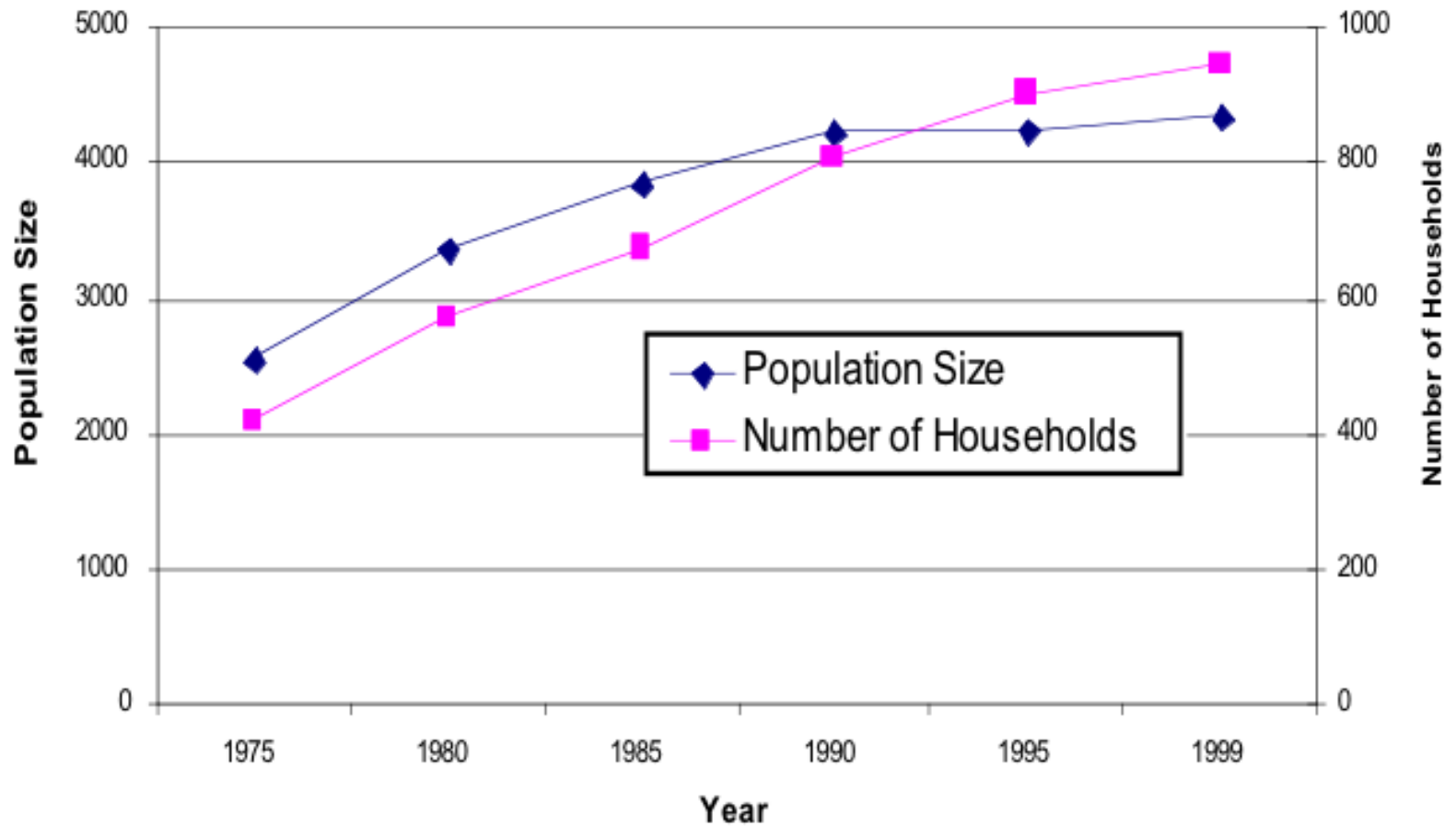
# Increasing World Population



# How Our World is Changing


- Globalized social and environmental systems
- Expanding communication & transportation networks
- Shifting demographic patterns
- Changing family and community structure

## Population Size and Household Dynamics in Wolong




# How Our World is Changing

- Globalized social and environmental systems
- Expanding communication & transportation networks
- Shifting demographic patterns
- Changing family and community structure
- Ever-increasing use of and reliance on technology



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This page is dedicated to providing information about the law and policy of fisheries management, including background information, access to Understanding Fisheries Management, and valuable Internet tools.

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# How Our World is Changing

- Globalized social and environmental systems
- Expanding communication & transportation networks
- Shifting demographic patterns
- Changing family and community structure
- Ever-increasing use of and reliance on technology
- **Increasing competition for resources**

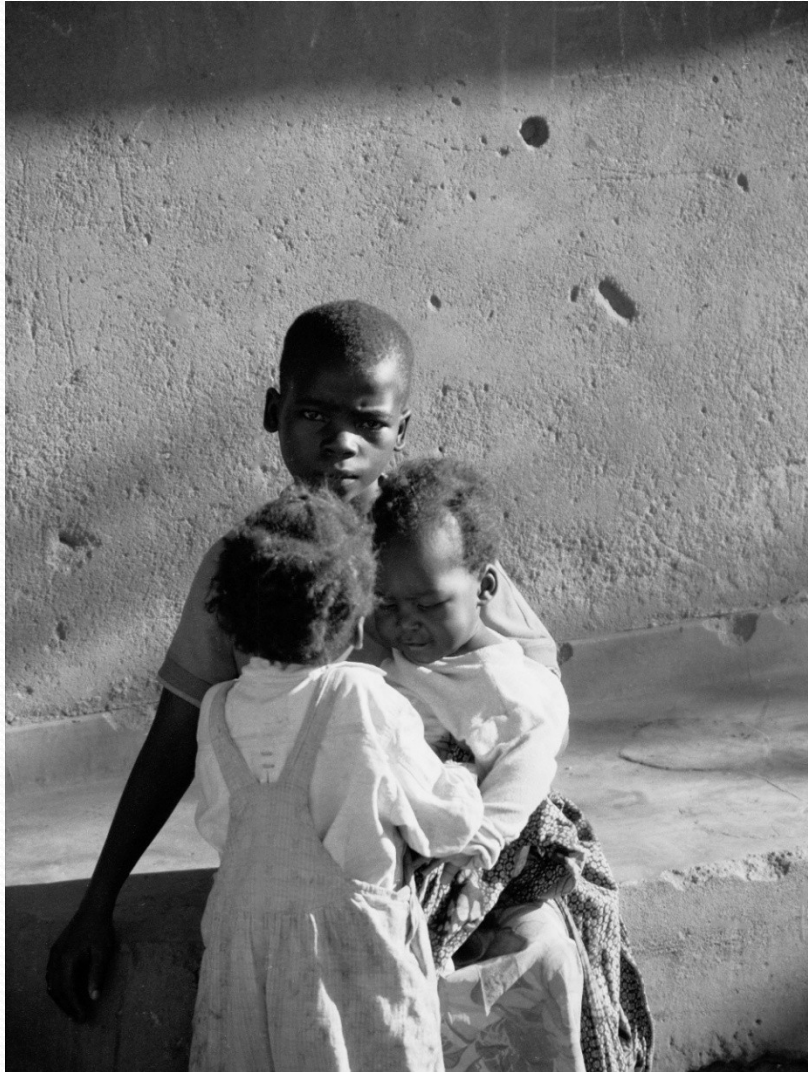




<http://www.biol.unt.edu/~burggren/salmon%20crossing%20road.jpg>

# How Our World is Changing

- Globalized social and environmental systems
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- Ever-increasing use of and reliance on technology
- Increasing competition for resources
- Widening gap between “haves” and “have-nots”



# How Our World is Changing

- Globalized social and environmental systems
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- Ever-increasing use of and reliance on technology
- Increasing competition for resources
- Widening gap between “haves” and “have-nots”
- Growing potential for conflict & resource degradation

# The Turbot War



# The Rise of the Millennials



# MILLENNIALS

## Students of the 21st Century

- Students born after 1992 who now number more than 80 million
- Characterized by:
  - Sheltered
  - Special
  - Confident
  - Lax ethics
  - High expectations of rewards
  - Social

# More characteristics of Millennials

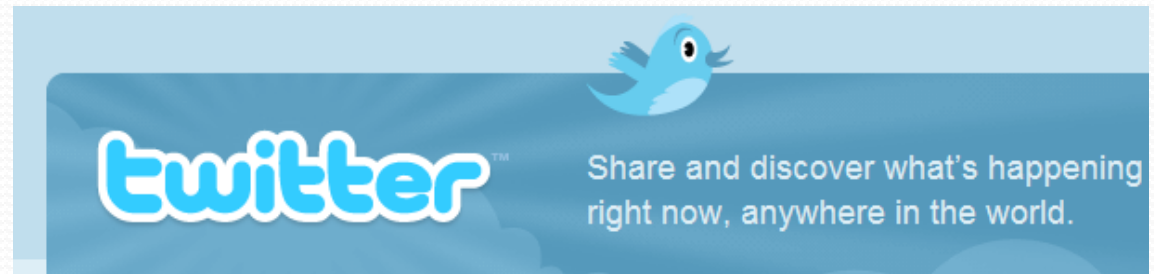
- More focused on personal achievement than esoteric “learning”
- Preference for those subjects that are applicable in the real world
  - “What will get me a job that makes lots of money?”
- Consumer attitude towards higher education
- As a general rule they are more conformist and less rebellious towards authority



# Helicopter Parents

- Changing the role of the university as *in loco parentis*
- Frequently hyper-aggressive in advocating for their children
  - Capitalize on the disorganized structure of institutions of higher education to contact a series of administrators until they achieve a desired result

# Digital Natives and Immigrants



## AFS Education Symposium Wiki

VIEW

### ☆ FrontPage

last edited by Michael Brown 6 days ago

Page history

You have **read-only** access to this page.

Welcome to the "Fisheries Education in the 21st Century" wiki!

The purpose of this wiki is to facilitate management of the *Fisheries Education in the 21st Century* symposium. This is a secure site for exchanging ideas, sharing feedback, and discussing issues related to the Nashville symposium.

# Workforce Demands / Changing Curriculum



**1930's:** Discussion of academic training for fisheries scientists begins

**1970's:** Discussion re-opened focusing on increasing complexity within the profession

**1979:** Entire issue of Fisheries dedicated to reviewing education from multiple perspectives

**1980's:** Issues with curricula and course diversity

**1990's:** Increasing specialization within discipline arises; validity of specialized programs of study in adequately preparing students for jobs questioned.

**2000's:** Possibility of altering teaching methods and faculty rewards to improve student work and retention arises.

# Agency Needs

- Call for graduates who can:
  - Write well
  - Speak effectively in public
  - Work autonomously
  - Problem-solve
- Aging workforce <sup>(1)</sup> -
  - Individuals capable of filling upper-echelon positions

<sup>1</sup> Renewable Natural Resources Foundation. 2004.

# The Changing Face of Natural Resources Students, Education, and the Profession

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**ABSTRACT** There are many challenges facing natural resources programs in North American higher education today. Pressures exerted by a new generation of students, changing workplace requirements (including undergraduate core-knowledge requirements), and an increasingly specialized professoriate are great but not insurmountable. We discuss each of these issues and pose potential solutions to address each including adopting new pedagogical techniques for content delivery (e.g., adapting courses to be inclusive of new technologies), revising curriculum to meet the needs of a new suite of learners (e.g., developing curricula that allow structured flexibility of choices, designing a core curriculum that is a mix of single-discipline courses and courses that integrate across disciplines), and new strategies for faculty engagement in discipline-specific survey courses. By remaining deliberate and effective in our pursuit of quality higher education we have the opportunity to ensure we are delivering the best possible education to the future professionals of our disciplines. (JOURNAL OF WILDLIFE MANAGEMENT 73(4):573-579; 2009)

DOI: 10.2193/2008-318

# Repeated Terms

- Communication skills
- Conflict resolution
- Public policy understanding
- Diverse perspectives
- Team work
- Global perspective



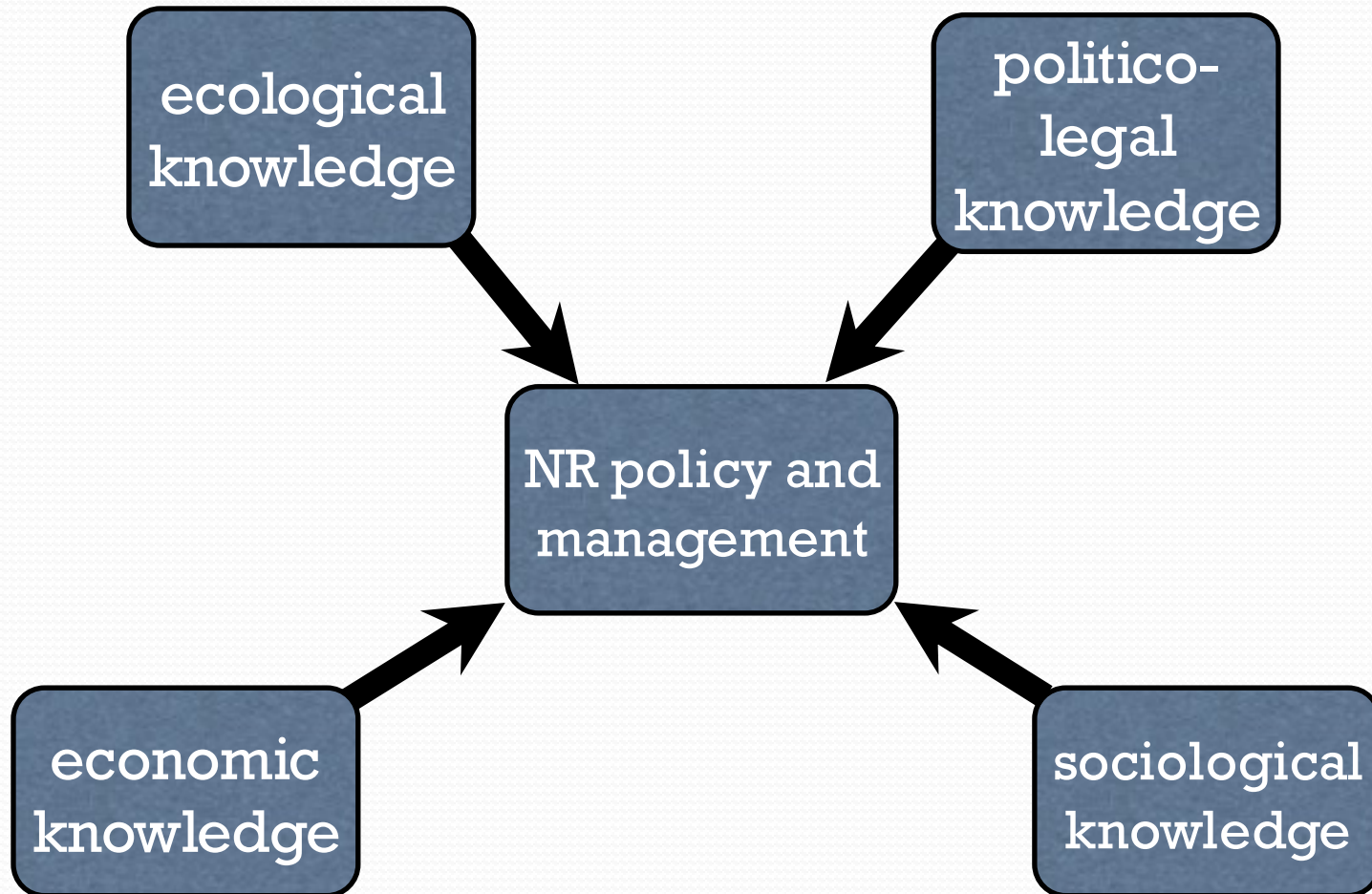
# Importance of...Policy

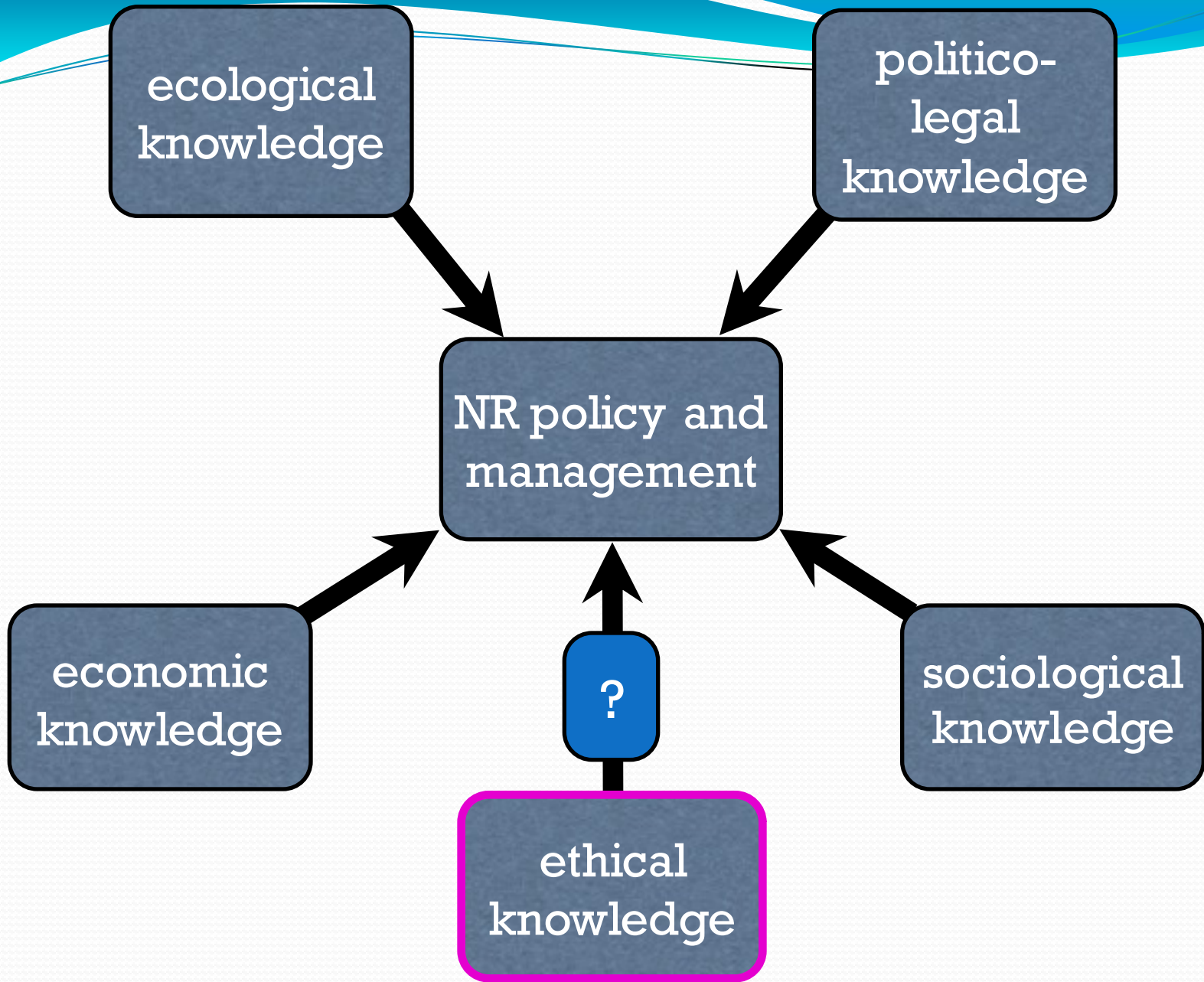


***INTERDISCIPLINARITY***



# Current View of NR Policy







***...a curriculum should not tell students what they value of believe.***

***Rather, a curriculum should...***

**"...encourage students to explore diverse values and perspectives, to engage in personal reflection in their decisions and actions, and to define their own position in the ethical debate." (Kessler et al. 1998)**

# Future Directions



*Business Strategies for Environmental  
Sustainability and Conservation  
Graduate Specialization*

# Future Directions



*Center for Conservation Law and Policy*

*Conservation Policy and Practice  
Specialization*

# Specialization / Interdisciplinarity of the Professoriate

# Who will actually teach courses?

- As disciplines begin to develop, sub-specializations begin to emerge
  - generalist perspectives become more difficult to maintain due to a proliferation of knowledge created by sub-fields
- Impact to courses that can be taught
  - More from generalist trained to specialist trained

# Interdisciplinary / Specialized

- Not that different
- Raise the same concerns

*Interdisciplinary training  
of new faculty resulted in  
faculty with specialized  
interests....McDaniels 2008*



# Where is the pressure coming from?



National Science Foundation  
WHERE DISCOVERIES BEGIN



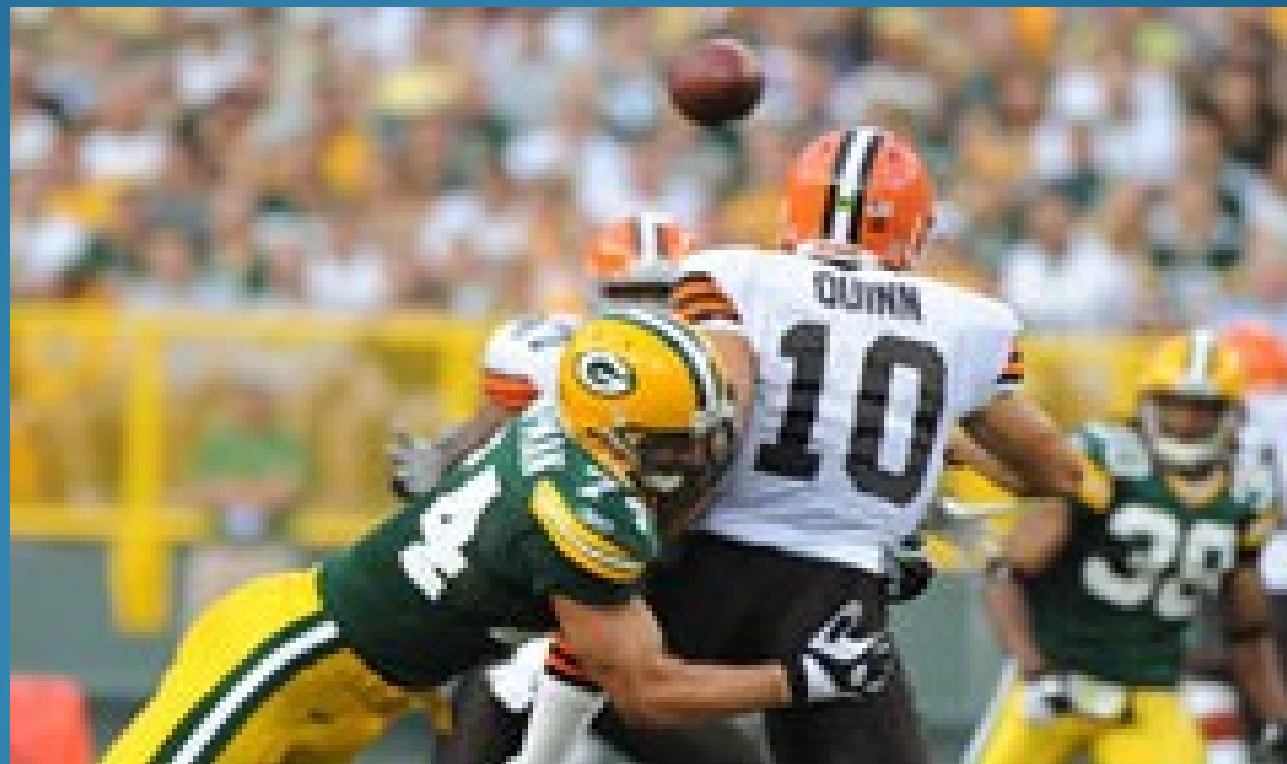
U.S. Department of Health & Human Services



National Institutes of Health

*The Nation's Medical Research Agency*

# How do we Tackle these Challenges / Opportunities?



# Purpose of Today...to Deal with these Issues

- What are the Goals of the Profession?
- How is the World Changing?
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# Opportunities and Challenges

- Constant dilemma to IMPROVE EFFICIENCY and EFFECTIVENESS of programs COUPLED with INNOVATION
- BUT...too much innovation can be a bad thing.

*Reading the writing  
on the wall before  
the writing is there!*