Are Universities Providing the Knowledge and Skills Students Need to Succeed as Fisheries and Wildlife Professionals?

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A topic of discussion for many years

- "The requirements necessary for state employees to deal effectively with today's fisheries resource problems are beyond the training presently being provided in our universities."
  - Donaldson, J.R. 1979. *Fisheries* 4(2):24-26.

Some suggest broader education of fisheries professionals

- "Students who aspire to be fisheries scientists should be encouraged to complete their undergraduate degrees in a basic science..."
- "The emphasis should be placed on conceptual skills such as problem solving, not on technical knowledge or skills specific to fisheries science."
  - Hard, J.J. 1995. *Fisheries* 20(3):10-16.

Others suggest more fisheries specific education

- Courses identified as "essential" by NMFS Science Centers in preparing students to conduct high-level quantitative population dynamics/stock assessments
  - Population dynamics, Fish ecology, Multivariate statistics, Sampling theory, Fisheries or natural resource modeling, Bayesian statistics, Stock assessment, Risk & decision analysis, Fisheries or natural resources computer programming
    - U.S. Dept. of Commerce & U.S Dept. of Education (2008)

Surveys suggest more emphasis is needed on communication skills

- "...subjects in areas of interpersonal interactions and administration...were almost as important as the scientific subjects. However, these...subjects seemed to be underemphasized in their college educations."
  - Adelman et al. 1994. *Fisheries* 19(11):17-25.

Objectives

- Discuss results of a recent survey of employers in natural resources regarding desired competencies & perceived proficiencies of entry-level hires
- Broaden the focus of the discussion
  - This isn't just a university problem

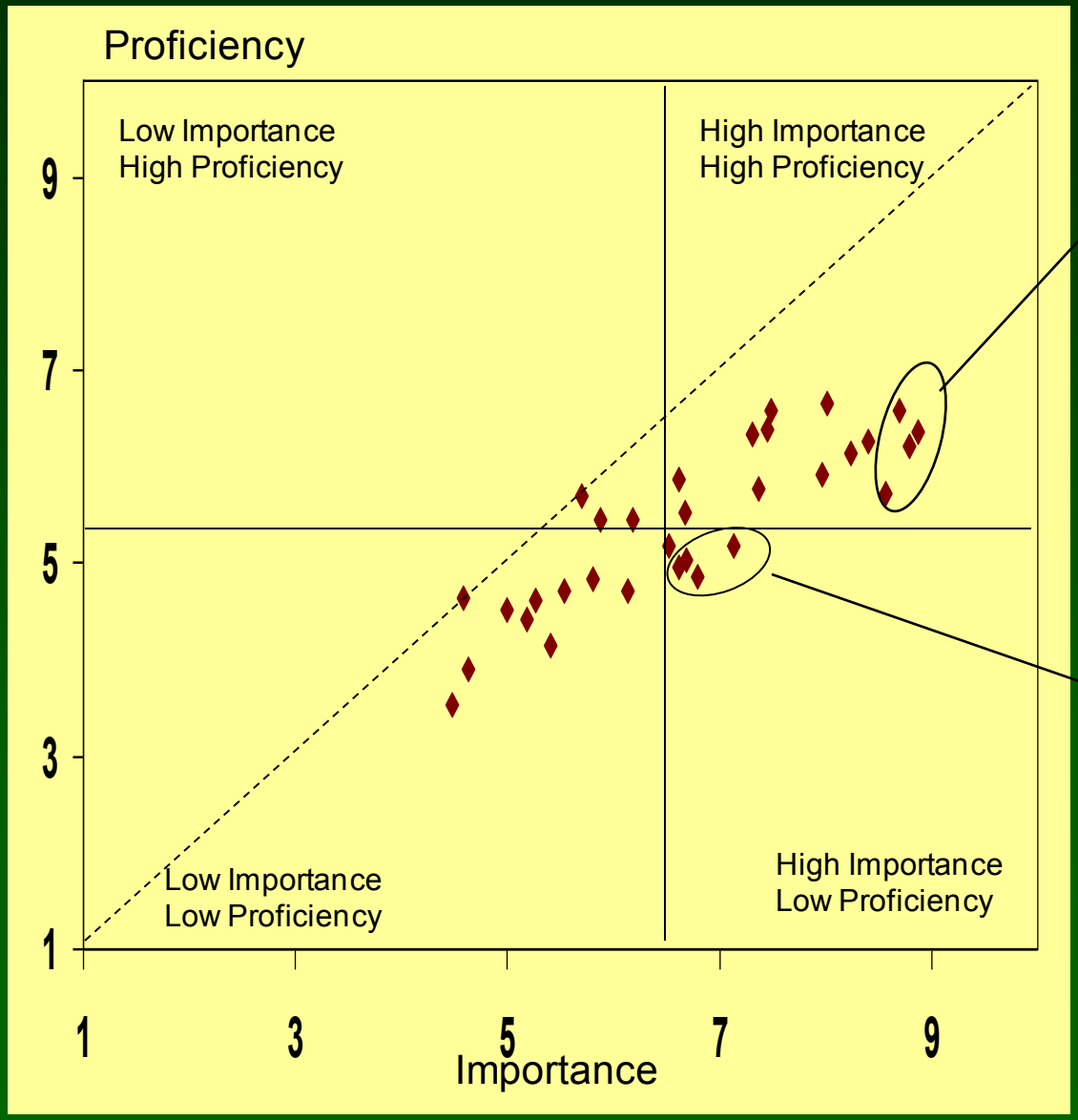
TWS Collegiate Wildlife Programs Committee

- Established in response to concerns re: relevancy of university wildlife programs to KSA's needed by today's professionals
- Stauffer & McMullin (2009) surveyed TWS membership
  - Importance of knowledge in wide array of disciplines for entry-level hires
  - Perceptions of proficiency in those areas

TWS Survey

- 1,750 respondents (418 state agency, 342 federal agency, 235 private sector, 111 NGO)
- Top 3 areas of knowledge
  - Oral communication
  - Written communication
  - Working in teams

TWS Survey



Oral Communication
Written Communication
Working in Teams
Interacting w/ stakeholders

Human Dimensions
Wetlands Ecology
Field Botany
Policy/Administration

Mixed Messages on Communication

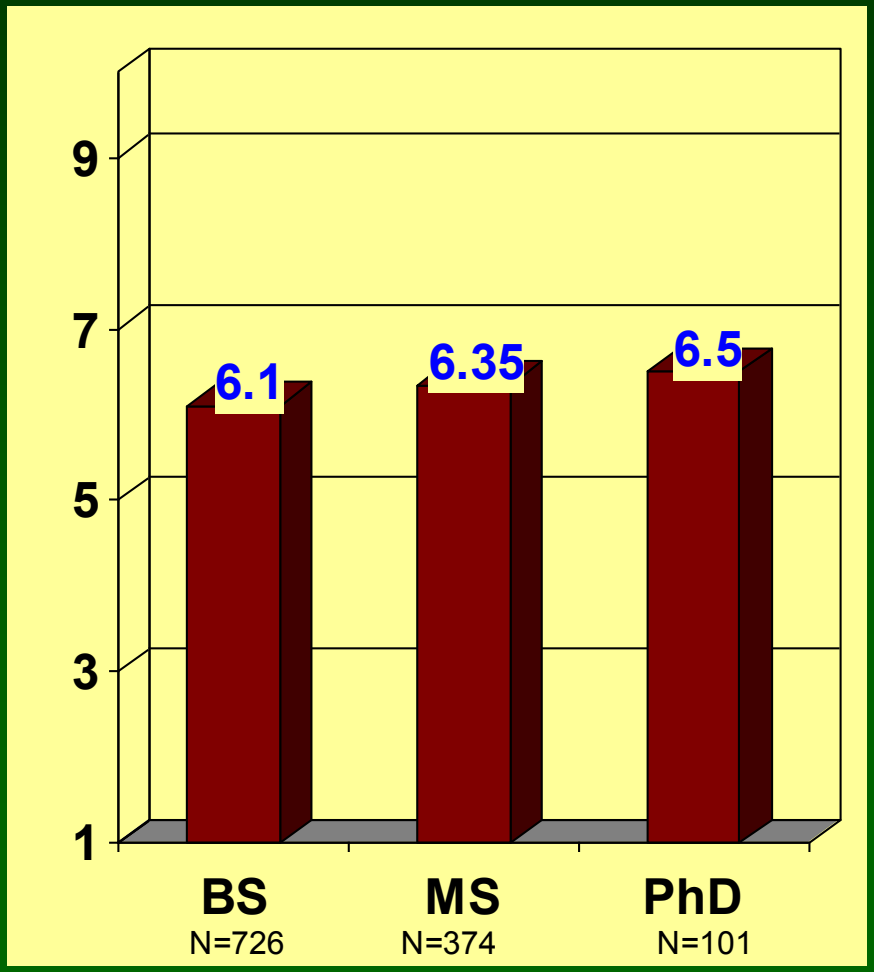
- Written & oral communication skills rated highly for importance and proficiency
- However, proficiency rated 2-3 points lower on 10-point scale

Does advanced training make a difference in communication skills?

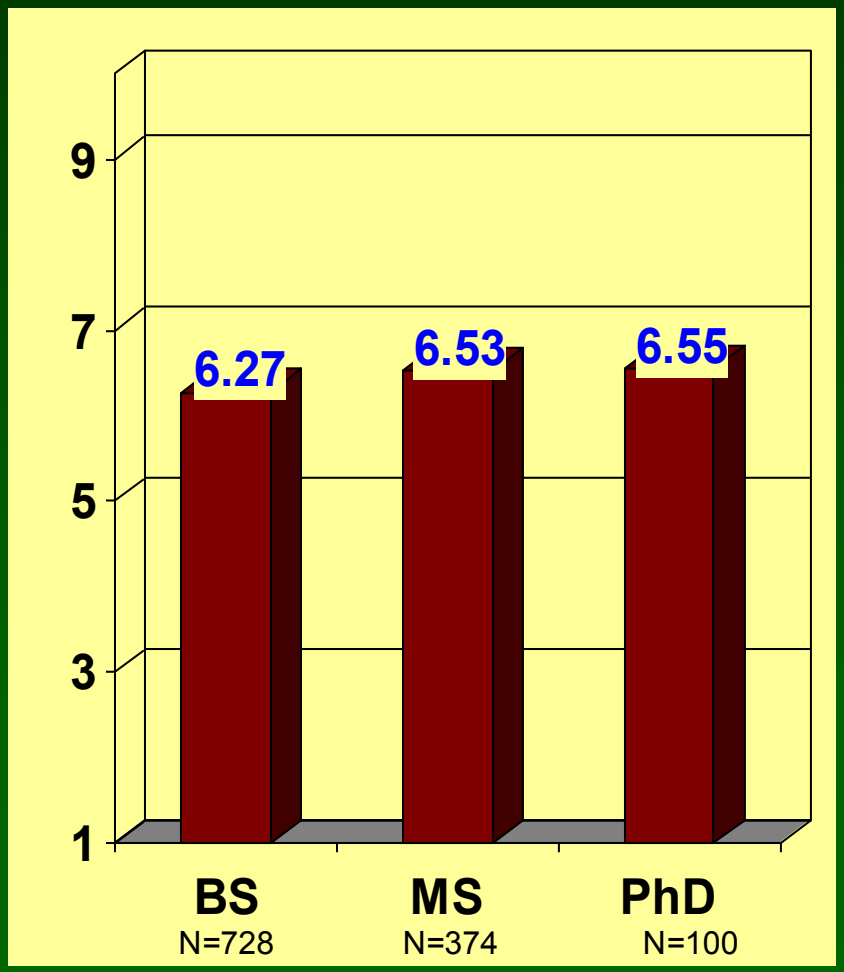
- "No number of courses can replace the thesis in training a research scientist."
- "...the process of preparing a thesis provides training in synthesizing relevant information, analyzing data, writing technical reports, and delivering scientific presentations."
  - Hard, J.J. 1995. *Fisheries* 20(3):10-16.

No difference in perceived proficiency with increased education

Perceived Proficiency—
Written Communication



Perceived Proficiency—
Oral Communication



Broadening the Discussion

- Are we teaching the written and oral communication skills that students really need?
  - Technical writing and presentations are important
  - Do we emphasize communicating to non-professional audiences enough?

Universities can't address this issue alone

- Acquiring and sharpening the skills needed to succeed as fish & wildlife professionals should be the responsibility of
  - Universities
  - Employers
  - Professional societies
  - Individuals

Suggested Roles

- Professional societies
  - Define standards of competency through certification
  - Focus on minimum requirements
    - What does it mean to be a fisheries professional?
  - Update certification requirements regularly

Suggested Roles

- Universities
  - Bachelor's graduates of fisheries programs should be able to meet certification requirements
  - Focus on critical thinking, problem solving, acceptable communication skills
  - Advanced degree candidates should be able to design research, analyze & synthesize data, further hone their communication skills

Suggested Roles

- Employers
  - Don't expect entry-level hires to be finished products
  - Engage universities in curriculum discussions
  - Support continuing education, professional development
  - Focus on job aspects that are more difficult to teach in university classes
    - Stakeholder interactions, conflict resolution, leadership & supervision, planning & budgeting

Suggested Roles

- Individuals
  - Professionalism requires life-long learning
  - Commitment to self-improvement