

# Constructing a One Health Curriculum

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## Tufts Master of Science in Conservation Medicine

**Gretchen E. Kaufman, Joann M. Lindenmayer, Alison Robbins, and Robyn G. Alders** : Cummings School of Veterinary Medicine, Tufts University

**Elena N. Naumova** : School of Engineering, Tufts University



# Why do we need a One Health curriculum?

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- Limitations of traditional training
- Increasing demand for professionals to deal with :
  - Complex problems at the intersections of human, animal and environmental health
  - Transdisciplinary team work platform, requiring strong interdisciplinary and project management skills
  - Research and investigation skills that lead to actionable knowledge, moving science and policy into implementable solutions



# Drivers for a One Health curriculum

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- NIH/NSF initiatives
  - Ecology of Infectious Diseases grant
  - Dynamics of Coupled Natural and Human Systems grant
  - IGERT program
- USAID Emerging Pandemics Threat program
- AVMA One Health Task Force and One Health Commission
- Young professionals calling for more collaborative One Health programs

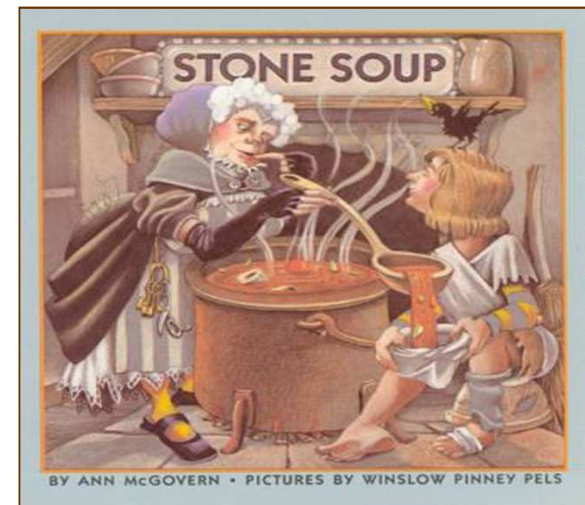
*Barrett, MA, et al. Integrating a One Health approach in education to address global health and sustainability challenges. Frontiers in Ecology and the Environment, 2010*



# One Health curricula must be interdisciplinary

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- Disciplinary grounding is a critical platform but...
- Interdisciplinary teaching and learning must take place to prepare students appropriately
  - Knowing what's available
  - Common language
  - Communication & writing skills
  - Project leadership skills



# Conservation Medicine

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- Few programs that exclusively offer conservation medicine content
- Most are aimed at veterinarians alone and lack significant opportunity for interdisciplinary teaching and learning



# Tufts University

- 3 campuses
- 7 schools



- Tufts Center for Conservation Medicine

**Tufts** | OneHealth  
UNIVERSITY



# Graduate program in conservation medicine

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- Overall goals:
  - Provide essential conservation medicine knowledge and skills on top of a student's expertise or chosen field
  - Create an interdisciplinary teaching and learning environment that fosters One Health collaborative skills



# Process –

## Essentials of Conservation medicine training

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Groundwork laid through workshops/conversations  
with the greater conservation medicine community

Designing Graduate Training Programs in Conservation  
Medicine. GE Kaufman, JH Epstein, J Paul-Murphy, and JD  
Modrall. EcoHealth, Volume 5, December, 2008 : 519-527.

- Fundamental themes and concepts
- Policy - applying conservation medicine
- Interdisciplinary work/communication skills



# Process –

## Determined basic program structure

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- Defined target audience
- One year professional program without research thesis
- Seminar style experiential and case based pedagogy



# Process –

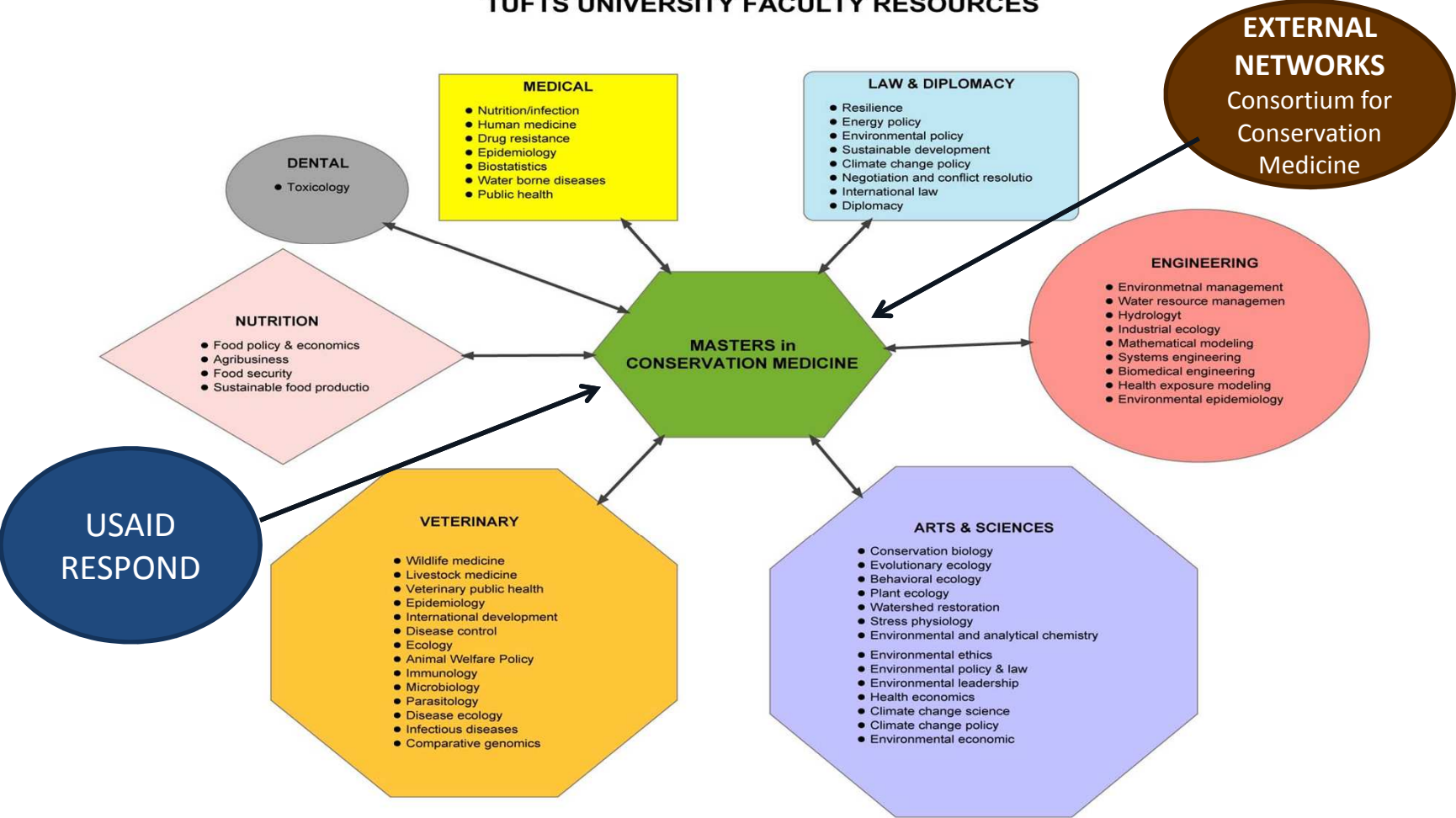
## Determined resources available

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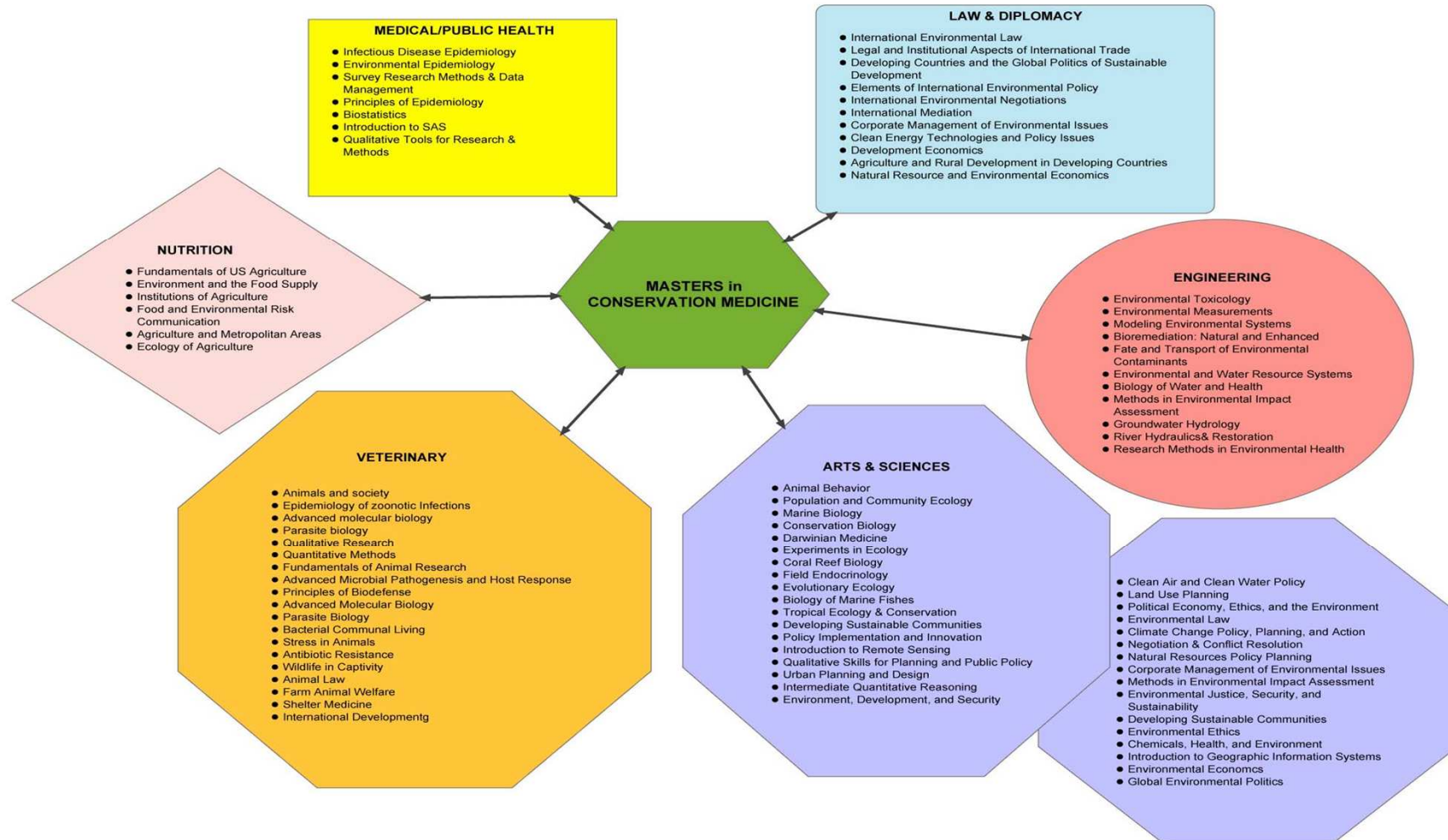
- Conducted asset map of Tufts University teaching resources and beyond
- Gained buy-in from key faculty and department chairs and deans



**ASSET MAPPING for CONSERVATION MEDICINE  
TUFTS UNIVERSITY FACULTY RESOURCES**



## ASSET MAPPING for CONSERVATION MEDICINE TUFTS UNIVERSITY CURRICULAR RESOURCES

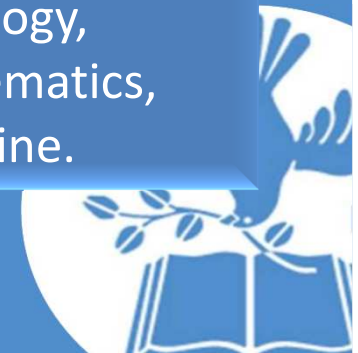


## Process –

### Explored interdisciplinary teaching methods

- Worked with teaching and learning experts
- Conducted interdisciplinary teaching exercises through One Health University seminar

Current One Health seminar includes undergraduate and graduate students from nearly all schools representing nutrition , biology, community health, policy, engineering, epidemiology, mathematics, political science, psychology, public health, veterinary medicine.



# Process – Course development

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- Devised 8 NEW complementary courses to cover essential elements
  - 4 skill based ; 4 knowledge based
- Made room for preceptorship and electives to serve student's individual interest
- Established other integrating activities across the program – case study, journal club, group assignments



# Process – Course development

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- Built a community of course leaders through focused retreats and a wiki platform
  - Established program and course learning objectives
  - Mapped learning objectives across courses
  - Established specific course content



### Meeting the Masters in Conservation Medicine Overarching Program Goals and Objectives

D= Directly meets learning objective ; P = Partially meeting learning objective ; I = Indirectly meets learning objective

Overarching Program Goals and Learning Objectives	Course											
	Intro/orientation	Ecology/ConBio	Health, D5, Enviro	Human Dimensions	Engineered Solutions	Research Skills I	Research Skills II	Field and Lab Tech	Project Mgt./Commun	Journal Club	Case Study	Preceptorship
<b>A. Principles of Conservation Medicine</b>												
1. Students will gain a comprehensive understanding of conservation medicine in a one health context and be able to articulate its value in tackling global health issues.	D	I	I	P								
2. Students will be able to articulate the value of protecting biodiversity as an essential element of global one health.		D*	D	I								
3. Students will be able to identify the critical components or inputs from human, animal and ecosystem health perspectives toward a given issue.		D	D	D								
4. Students will become familiar with the the language, tools and approaches of the various contributing disciplines and will be able to apply this knowledge in formulating a team approach to conservation medicine problems.		D	D	D								
5. Students will gain a working knowledge of current conservation medicine challenges and will be able to use this knowledge in approaching new and evolving issues.		D	D*	P								
6. Students will learn to balance the need for evidence with the need to incorporate the political process in the practice of conservation medicine.				P								
<b>B. Applying Conservation Medicine</b>												
Students will become familiar with the process of developing and using public policy as part of the practice of conservation medicine (applying conservation medicine in a real world context)												
1. Students will gain knowledge and skills in techniques for effecting change, including the role of advocacy, science informing policy, working within various decision making systems and incorporating behavior change in their work.		P	P	P								
2. Students will gain knowledge in existing frameworks for constructing and implementing wildlife policy and conservation medicine principles in both national and international settings.		P	P	P								
3. Students will gain knowledge in existing frameworks for constructing and implementing agricultural and public health policy on a local (community), national and international level.		P	P	D								
4. Students will develop skills necessary for working effectively with agencies, governments, non-governmental partners and grass-roots community organizations as part of their work in conservation medicine.		I	I	D/I								



# Process – Integration

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- Established ‘uniform’ pedagogy across curriculum that
  - reinforces interdisciplinary skills
  - provides consistency
- Established consistent evaluation/assessment scheme across curriculum



# Curriculum

FALL SEMESTER	SPRING SEMESTER
Ecology and Conservation Biology	Human Dimensions of Conservation Medicine
Research Methods I – Systematic Review and Analysis	Research Methods II – Surveillance
Health, Disease and Environment	Engineered Solutions
Field and Laboratory Techniques	Project Management and Communication
Elective	Elective
Case Study & Journal Club	Case Study & Journal Club
WINTER and SUMMER	
Preceptorship	
Case Study	



# Conclusions

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- Synthesis & integration essential for One Health curricula
- Tufts program:
  - Diverse student body
  - Diverse faculty
  - Opportunities to exercise interdisciplinary skills

Questions?

