Epidemiology of Wildlife Diseases
Wednesday (10 a.m. – 12 p.m.) and Friday (10:45-11:45 a.m.)
Room D-236, College of Veterinary Medicine, Main Building

Course Coordinator: Suzanne Kennedy-Stoskopf, D.V.M., Ph.D., Diplomate A.C.Z.M.
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Course Justification: There is increasing emphasis at the federal and state levels to better understand the human/livestock/wildlife interface in relation to infectious agents that pose threats to biosecurity related to potential zoonoses directly impacting human health or epidemics that would devastate animal production for human consumption. In addition, wildlife species are sensitive biomonitors of ecosystem health, and infectious diseases can be used as indicators. This course provides the framework for Fisheries, Wildlife, and Conservation Biology (FWCB) students, who will become future policy makers, researchers and managers of our fisheries and wildlife, to understand fundamental principles of infectious diseases in order to interact knowledgeably with both human and veterinary health professionals. Likewise, veterinarians taking the course will develop a better appreciation of how fisheries and wildlife ecology affects disease expression in populations and the unique challenges of investigating wildlife disease outbreaks.

Course Pre-Requisites: Enrollment in the Fisheries, Wildlife and Conservation Biology graduate program or Masters of Public Health program through UNC-CH; graduate students in other programs by approval of the course coordinator; or 3rd and 4th year undergraduates by recommendation of their advisor and approval of the course coordinator.

Course Description: The course is designed to engage students with diverse backgrounds in fisheries and wildlife, veterinary medicine, public health, and environmental sciences to develop a complimentary appreciation and understanding of how wildlife diseases impact free-ranging populations, domestic animals and humans. Wednesday classes are a combination of lectures and discussion on assigned primary literature. Friday classes cover techniques and methods that are important to conduct wildlife disease investigations and manage outbreaks. The course is not designed as a comprehensive survey course of wildlife diseases. The focus is infectious diseases (i.e. viruses, bacteria, fungi and protozoa) and some parasitic diseases that illustrate concepts important to the ecology of the agent and its relationship to its hosts and the environment. Geographic distribution of selected infectious agents will be global but with emphasis on diseases that occur in North America. Affected animal species include fish, amphibians, birds, and both aquatic and terrestrial mammals.

Learning Outcomes: At the end of the course, the student will be able to: 1) Explain the relationships of infectious agents to their hosts and the environment; 2) Identify factors that contribute to disease outbreaks; 3) Distinguish between exposure and presence of an
organism within a population and its relation to animal health; 4) Design an effective approach to evaluate a disease outbreak in free-ranging wildlife; 5) Outline different strategies for managing disease outbreaks in free-ranging wildlife; 6) Justify diagnostic samples collected; 7) Explain the principles of diagnostic tests and identify their limitations; and 8) Articulate how different disciplines approach the same problems differently and recognize the importance of working cooperatively across disciplines to solve problems.

Texts on reserve in the CVM Library: There are no required texts but the following books are good references to supplement class presentations and primary literature.


Course Organization and Scope: The course is offered every Fall semester. A minimum of 6 students is required for the class to be taught. Unless otherwise noted, Dr. Kennedy-Stoskopf will conduct the classes.

Schedule of Topics – Wednesdays (10 a.m. – 12 p.m.)


September 5. Recognizing a Problem. Lots of carcasses! Anthrax, botulism.

September 12. Recognizing a Problem. Lots of carcasses and skin lesions! Chytrid disease and white-nose syndrome.
September 19. Recognizing a Problem. Skin lesions! Scabies, fibropapillomas, foot and mouth disease, viral hemorrhagic septicemia.


October 17. Must know diseases. Plague, tularemia, influenza.


October 31. Must know diseases. Mycobacterial diseases.


November 28. Work on research paper.

**Schedule of Topics – Fridays (10:45 – 11:45 a.m.)**

August 24. Investigating a Wildlife Disease Outbreak

August 31. Samples and Sample Collection

September 7. Interpretation of test results – serology

September 14. Interpretation of test results – molecular techniques

September 21. Spatial and temporal aspects of disease dynamics

September 28. No class.

October 5. Fall Break

October 12. Mid-term.


November 2. Disease Management - host. Depopulation or dispersal. Vaccination.


November 23. Thanksgiving Break.

November 30. Research paper due.

**Schedule of Reading Assignments:** Before each Wednesday class, 2-3 primary papers will be assigned to read.

**Schedule of Papers and Tests:** There will be a mid-term exam and final exam. A research paper on a wildlife disease not covered in class is due November 30th. The paper should be 7-8 pages, not including references. Topic must be submitted for approval by class coordinator September 26th. Outline of paper for review is due October 31st. Detailed instructions for the paper and grading criteria will be posted the first week of class.

**Grades:** Grades will be letter grades, A through F. Numerical scores, 91-100 = A; 81-90 = B; 71-80 = C; 61-70 = D; and ≤ 60 = F. The mid-term represents 20%, the final exam 20%; research paper 40% and class participation/attendance 20% of the final grade.

**Incomplete Grades and Late Assignments:** In accordance with university policy, incomplete grades must be completed by the end of the next academic semester. Reasons for an incomplete grade are the same as for excused absences described below.

**Attendance:** Students are expected to attend and participate in class unless they have previously arranged with the course coordinator for an excused absence or have a personal or family emergency that can be verified. The following university website gives examples of acceptable absences.

http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.4.php

**Academic Integrity:** The University policy on academic integrity may be found at http://www.ncsu.edu/policies/student_services/student_conduct/POL445.00.1.htm. It is the understanding and expectation of faculty that the student's signature on any test or assignment means that the student neither gave nor received unauthorized aid.

**Students with Disabilities:** Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information, go to http://www.ncsu.edu/provost/offices/affirm_action/dss/