FISHERIES AND WILDLIFE
Department of Fisheries and Wildlife
College of Agriculture
and Natural Resources

101 Fundamentals of Fisheries and Wildlife
Ecology and Management
Fall, Spring. 3(3-0) SA: FW 100, FW 205
Ecological and sociological concepts of fisheries and wildlife ecology and management. Career opportunities.

101L Fundamentals of Fisheries and Wildlife
Ecology and Management Lab
Fall. 2(0-4) P: FW 101 or concurrently R: Open to undergraduate students in the Fisheries and Wildlife major. Not open to students with credit in FW 284.
Natural history and ecology of primary terrestrial, wetland, and aquatic ecosystems. Species and communities in Michigan and the United States. Species identification in various ecosystem types. Impacts of disturbances on ecosystems. Field trips required.

110 Conservation and Management of Marine Resources
Spring. 3(3-0)
Marine environment, resource distribution, and human impacts on selected marine commercial fisheries. Conflicts in management goals between government and industry. Management goals and techniques in preserving and conserving marine resource biodiversity.

181 Introduction to Science, Technology, the Environment and Public Policy
Fall. 3(3-0) Interdepartmental with Lyman Briggs and James Madison College. Administered by Fisheries and Wildlife.
Relation of science and technology to ethics and public policy. Environmental law and public policy. Managing fish, water and wildlife resources at state, national, and international levels. Science and technology in developing countries. Impacts of military technology on environmental policy.

203 Resource Ecology
Fall, Spring. 3(3-0)
Basic concepts of ecology which provide a foundation for examining environmental problems and their solutions.

204 Energy Issues in Natural Resource Management
Spring. 3(3-0) Interdepartmental with Community, Agriculture, Recreation and Resource Studies. Administered by Fisheries and Wildlife. RB: FW 101 or FW 203 or ESA 200 or ESA 201 or FOR 202

207 Great Lakes: Biology and Management
Fall. 3(3-0) Interdepartmental with Environmental Studies and Applications. Administered by Fisheries and Wildlife. Living aquatic resources of the Great Lakes, environmental history, and biological resources and their management. Policy issues.

208 Outdoor Preparedness for Natural Resources Professionals
Spring. 3(3-0)

211 Introduction to Gender and Environmental Issues

224 Introduction to Probability and Statistics for Ecology
Spring. 3(2-2) Interdepartmental with Statistics and Probability. Administered by Statistics and Probability. P: MTH 103 or MTH 116 or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently) RB: BS 110 or BS 148H or LB 144 SA: FW 324 Not open to students with credit in STT 231. Probability and statistics with computer applications for the analysis, interpretation and presentation of ecological data. Data analysis, probability models, random variables, estimation, confidence intervals, test of hypotheses, and simple linear regression with applications to ecology.

238 Introductory Fisheries and Wildlife Field Experience
Summer. 3(1-4) RB: Introductory Biology, Botany, Zoology, Forestry, Natural Resources, Plant Biology, Fisheries and Wildlife course R: Approval of department; application required. Terrestrial and aquatic field research techniques and their application to current issues. Interaction with professionals. Field trips required.

284 Natural History and Conservation in Michigan
Fall. 3(2-3) R: Not open to undergraduate students in the Fisheries and Wildlife major. Not open to students with credit in FW 101L. Identification, habitat requirements, and distribution of Michigan’s flora and fauna. Interrelationships which influence natural resource use.

293 Undergraduate Seminar in Fisheries and Wildlife
Fall. 1(0-2) P: FW 101 R: Open to undergraduate students in the Department of Fisheries and Wildlife. Case studies highlighting the integrative nature of fisheries and wildlife management.

324 Wildlife Biometry
Spring. 3(2-3) P: (MTH 103 or MTH 116 or LBS 117) or (MTH 124 or concurrently) or (MTH 132 or concurrently) or (LBS 118 or concurrently) or (MTH 152H or concurrently) RB: ZOL 355 Quantitative techniques to analyze and interpret fisheries and wildlife data.

341 Writing Nature and the Nature of Writing
Fall. 3(3-0) Interdepartmental with Writing, Rhetoric and American Cultures. Administered by Writing, Rhetoric and American Cultures. P: Completion of Tier I writing requirement. R: Open to students in the College of Agriculture and Natural Resources or in the Professional Writing major or approval of department. SA: AL 341 Writing- and reading-intensive course focusing on the language of scientists, poets, essayists, naturalists, environmentalists, and biologists, and on their various responses to and representations of the natural environment.

364 Ecological Problem Solving
Spring. 3(2-2) P: (MTH 124 or concurrently) or (MTH 132 or concurrently) or (LB 118 or concurrently) (STT 224 or STT 231 or STT 421) and (ZOL 355 or BE 230) Application of ecological concepts and models to problems in natural resource and ecosystem management.

369 Introduction to Zoo and Aquarium Science
Spring. 3(3-0) Interdepartmental with Landscape Architecture and Veterinary Medicine and Zoology. Administered by Zoology. P: BS 110 or LB 144 or BS 148H Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.

370 Introduction to Zoogeography
Fall. 3(3-0) Interdepartmental with Geography and Zoology. Administered by Zoology. P: ZOL 355. Patterns of geographical distribution of animals and the ecological and historical processes leading to these patterns.

404 Women and the Law in the United States
Fall of odd years, Spring of odd years. 3(3-0) Interdepartmental with Women's Studies. Administered by Women's Studies. RB: WS 201 or WS 202 or WS 203 R: Not open to freshmen or sophomores. Law in the United States as a vehicle for structuring and maintaining women’s social roles, and for social change.

410 Upland Ecosystem Management
Spring. 3(2-3) P: (ZOL 355 or FOR 404) and completion of Tier I writing requirement. Analysis and management of upland ecosystems to meet wildlife management and biodiversity objectives. Mitigation of human impact. Field trips required.

413 Wildlife Research and Management Techniques
Fall. 3(1-6) P: FW 101 and FW 101L Field techniques used in collecting, analyzing, and communicating data on wild animal populations and their habitats. Field trips required.

414 Aquatic Ecosystem Management
Fall. 3(3-0) P: (ZOL 355) and completion of Tier I writing requirement. Management of aquatic habitats and populations for ecological and socioeconomic objectives; human impacts on aquatic ecosystems. Field trips required.
416 Marine Ecosystem Management
Fall, 3(3-0) P ZOL 355 RB: FW 110 or ZOL 353 or GLG 303

417 Wetland Ecology and Management
Fall, 3(2-3) Interdepartmental with Plant Biology. Administered by Fisheries and Wildlife. P: (ZOL 355) and completion of Tier I Writing requirement SA: FW 412 Biological, physical, and chemical processes controlling wetland structure and function. Utilization, mitigation, and conservation of wetlands on a sustainable basis.

419 Applications of Geographic Information Systems to Natural Resources Management
Spring, 4(2-4) Interdepartmental with Community, Agriculture, Recreation and Resource Studies and Biosystems Engineering and Forestry and Geography. Administered by Fisheries and Wildlife. P: GEO 221 Application of geographic information systems, remote sensing, and global positioning systems to integrated planning and management for fish, wildlife, and related resources.

420 Stream Ecology
Fall, 3(3-0) Interdepartmental with Zoology. Administered by Fisheries and Wildlife. P: BS 110 or BS 148H or LB 144 RB: (CEM 141 and ZOL 355) Biological and environmental factors determining structure and function of stream ecosystems.

422 Aquatic Entomology
Fall of odd years. 3(2-3) Interdepartmental with Entomology. P: BS 110 SA: ENT 420 Biology, ecology and systematics of aquatic insects in streams, rivers and lakes. Field trips and aquatic insect collection required.

423 Principles of Fish and Wildlife Disease
Spring of odd years. 3(3-0) Interdepartmental with Large Animal Clinical Sciences. Administered by Fisheries and Wildlife. P: BS 110 or BS 148H or LB 144 RB: Additional course work in ecology, zoology, microbiology or environmental science. R: Open to juniors or seniors or graduate students in the College of Agriculture and Natural Resources or in the College of Natural Science or in the College of Veterinary Medicine.
Diseases of fish and wildlife species. Disease detection and diagnosis. Ecological and epidemiological analysis and management of major classes of wildlife diseases. Threatened and endangered species, game species, and fish and wildlife species that serve as vectors or reservoirs of human and domestic animal diseases.

423L Principles of Fish and Wildlife Disease Laboratory
Spring of odd years. 1(0-3) Interdepartmental with Large Animal Clinical Sciences. Administered by Fisheries and Wildlife. RB: Additional laboratory course work in ecology, zoology, microbiology or environmental sciences. C: FW 423 concurrently. Tools for diagnosis and assessment of disease in fish and wildlife populations. Field Trips required.

424 Population Analysis and Management
Fall, 4(3-2) P: ZOL 355 and (STT 224 or STT 231 or STT 421) and (MTH 124 or MTH 132 or LB 118) Statistical, ecological and management concepts and methods needed to analyze and interpret demographic data and manage fish and wildlife populations.

434 Human Dimensions of Fisheries and Wildlife Management
Spring, 3(2-2) P: FW 424 and (FW 410 or FW 412 or FW 414.1). R: Open only to seniors in the Department of Fisheries and Wildlife. Sociological implications of public policy and planning processes in fisheries and wildlife management.

435 Integrated Communications for the Fisheries and Wildlife Professional
Fall, 3(3-0) P: Completion of Tier I writing requirement. R: Open to juniors or seniors or graduate students. Role and practical application of communications for fisheries and wildlife professionals, which integrates public and media relations, communication strategies, social marketing, and courtroom testimony using a variety of communication tools including news releases, direct mail, storyboards, and business writing.

438 Philosophy of Ecology (W)
Spring of even years. 3(3-0) Interdepartmental with Lyman Briggs. Administered by Fisheries and Wildlife. P: Completion of Tier I Writing Requirement RB: Additional coursework in ecology, natural resources, philosophy, or environmental sciences. R: Open to juniors or seniors or graduate students. Conceptual issues in the science of ecology, including connections between ecology and environmental philosophy. Western and non-western perspectives.

439 Conservation Ethics
Spring of odd years. 3(3-0) P: Completion of Tier I Writing Requirement RB: Additional coursework in ecology, natural resources, philosophy, or environmental sciences. R: Open to juniors or seniors or graduate students. Ethical concepts and arguments underlying natural resources.

443 Restoration Ecology
Spring, 3(2-2) Interdepartmental with Biosystems Engineering and Zoology. Administered by Fisheries and Wildlife. RB: (CSS 210 or BE 230) and (FOR 404 or FW 364 or ZOL 355) Principles of ecological restoration of disturbed or damaged ecosystems. Design, implementation, and presentation of restoration plans.

444 Conservation Biology
Fall, 3(3-0) Interdepartmental with Zoology. Administered by Fisheries and Wildlife. P: (ZOL 355 or FOR 404) and completion of Tier I writing requirement. Ecological theories and methodologies to manage species, communities and genetic diversity on a local and global scale.

445 Socio-economics and Policy of Conservation Biology
Spring, 3(3-0) Interdepartmental with James Madison College. Administered by Fisheries and Wildlife. P: (EC 201 or concurrently) or (EC 202 or concurrently) or (EC 251H or concurrently) and completion of Tier I writing requirement RB: Interest in Conservation Biology Social, economic, and policy considerations. Approaches to conserve biodiversity.

450 International Environmental Law and Policy
Fall of even years. 3(3-0) Interdepartmental with James Madison College. Administered by James Madison College. P: EC 201 or EC 202 RB: FW 181 and EC 340 Overview of concepts, actors, norms, laws, and institutions related to international environmental policy. Case studies on current global environmental issues.

452 Watershed Concepts
Fall, Spring, Summer. 3(3-0) Interdepartmental with Biosystems Engineering and Crop and Soil Sciences and Environmental Studies and Agriscience and Forestry. Administered by Environmental Studies and Agriscience. P: ESA 324 and ZOL 355 RB: organic chemistry SA: RD 452 Watershed hydrology and management. The hydrologic cycle, water quality, aquatic ecosystems, and social systems. Laws and institutions for managing water resources.

454 Environmental Hydrology for Watershed Management
Spring of odd years. 3(3-0) P: (MTH 124 or MTH 132 or LB 118) and (PHY 183 or concurrently) or (PHY 231 or concurrently)) RB: ZOL 355 or concurrently Effect of climate, topography, geology, soil, vegetation, and anthropogenic land uses on the amount, timing, and quality of water yield. Implications for fish and wildlife resource management. Field trips required.

456 Natural Resource Policy
Spring, 3(3-0) Interdepartmental with Forestry and Park, Recreation and Tourism Resources and Resource Development. Administered by Forestry. R: Not open to freshmen or sophomores. Natural resources policy-making in the context of scientific, environmental, social, and legal-institutional factors. Historical evolution of policies and case studies of contemporary policy issues.

469 Biomonitoring of Streams and Rivers
Summer of even years. 3(2-3) Interdepartmental with Entomology. Administered by Entomology. P: BS 110 Practical field and lab rapid bioassessment methodologies used to sample and assess the biota of streams and rivers. Sampling and identification of fish, macroinvertebrates and other biota.

470 Fisheries Techniques
Spring, 3(2-3) P: ZOL 355 or concurrently Theory, field, and laboratory techniques for studies of freshwater fishes. Field trips required.
ICHTHYOTOLOGY
Fall, 4(3-3) Interdepartmental with Zoology. Administered by Fisheries and Wildlife. P: (BS 110 or BS 148H or LB 144) and completion of Tier I writing requirement. Fish morphology and physiology. Development, behavior, evolution, and ecology. World fishes with emphasis on freshwater fishes. Field trips required.

LIMNOLOGY
Spring, 3(3-0) Interdepartmental with Zoology. Administered by Fisheries and Wildlife. P: (CEM 141 or LB 171) and ZOL 355. Ecology of lakes with emphasis on interacting physical, chemical, and biological factors affecting their structure and function.

ENVIRONMENTAL FISH PHYSIOLOGY
Spring of odd years. 3(3-0) Interdepartmental with Physiology. Administered by Fisheries and Wildlife. P: BS 111 or BS 149H or LB 145 R: Not open to freshmen or sophomores. Physiological adaptations of fish to environmental factors: bioenergetics, homeostasis, senses adaptations to diverse and extreme aquatic environments.

LIMNOLOGICAL TECHNIQUES
Fall, 3(2-3) Interdepartmental with Zoology. Administered by Fisheries and Wildlife. P: (FW 414 or concurrently) or (FW 420 or concurrently) or FW 472. Field and laboratory techniques for the investigation and analysis of lake and stream ecosystems and their biota. Field trips required.

AQUACULTURE
Spring, 3(3-0) Interdepartmental with Animal Science. Administered by Fisheries and Wildlife. RB: ANS 313 or ZOL 355. Propagation and rearing of aquatic organisms used for food, bait and recreational fisheries management. Culture principles and techniques for important aquatic species. Commercial potential.

PEST MANAGEMENT I: PESTICIDES IN MANAGEMENT SYSTEMS
Fall of even years. 3(3-0) Interdepartmental with Crop and Soil Sciences and Entomology and Horticultural Science with Biological Sciences. Administered by Entomology. RB: (CEM 143 or CEM 251) and (PLP 405 and CSS 402) and (ENT 404 or ENT 470) R: Open to juniors or seniors or graduate students. Chemistry, modes of action, and environmental fate of pesticides. Product development and regulation. Social aspects of pesticide use.

PEST MANAGEMENT II: BIOLOGICAL COMPONENTS OF MANAGEMENT SYSTEMS (W)
Spring of even years. 3(2-3) Interdepartmental with Crop and Soil Sciences and Entomology and Forestry and Horticulture. Administered by Entomology. P: (ENT 404 or ENT 470 or PLP 405 or CSS 402) and completion of Tier I writing requirement. Principles of host plant resistance and biological control and their relationship to the design of agroecosystems. Classification of insect biological control agents.

FISHERIES MANAGEMENT
Spring, 3(2-2) P: ZOL 355. Quantitative analysis of fish populations. Case study of ecological interactions linking fish to aquatic ecosystems and the challenge of balancing multiple human values in managing fisheries resources. Field trips required.

INTERNATIONAL STUDIES IN FISHERIES AND WILDLIFE
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: ZOL 355 R: Approval of department; application required. Fisheries and wildlife ecology and management study in regions beyond the United States. Ecological, economic, social, and cultural influences on fisheries and wildlife resources.

GLOBAL ISSUES IN FISHERIES AND WILDLIFE
Spring. 3(3-1) Interdepartmental with James Madison College. Administered by Fisheries and Wildlife. P: EC 201 or EC 202 R: Open to juniors or seniors or graduate students. Global issues and their impacts on implications for the management of fisheries and wildlife resources.

ENVIRONMENTAL SCIENCE SENIOR SEMINAR
Spring, 1(2-0) P: ESA 435 or concurrently R: Open to seniors. Ecological principles, population growth, resource utilization and lifestyle choices.

SEMINAR IN ZOO AND AQUARIUM SCIENCE
Fall, Spring. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. Interdepartmental with Landscape Architecture and Park, Recreation and Tourism Resources and Zoology. Administered by Zoology. R: Approval of department. Scientific writing and oral presentations related to zoo and aquarium studies.

INDEPENDENT STUDY IN FISHERIES AND WILDLIFE
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. RB: BS 110 R: Not open to freshmen or sophomores. Approval of department; application required. Supervised individual research and study in fisheries and wildlife.

SPECIAL TOPICS IN FISHERIES AND WILDLIFE
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Approval of department; application required. Selected topics of current interest and importance in fisheries and wildlife.

PROFESSIONAL INTERNSHIP IN FISHERIES AND WILDLIFE
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. A student may earn a maximum of 6 credits in all enrollments for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CMP 493, CSS 493, EEP 493, ESA 493, FIM 493, FSC 493, FW 493, HRT 493, PKG 493, PLP 493, and PRR 493. P: FW 101 and FW 101L R: Approval of department; application required. Supervised professional experiences in agencies and businesses related to fisheries and wildlife professions.

INTERNSHIP IN ZOO AND AQUARIUM SCIENCE
Fall, Spring, Summer. 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. Interdepartmental with Landscape Architecture and Zoology. Administered by Zoology. R: Open to juniors or seniors. Approval of department. Application of zoological experience in a zoo or aquarium setting outside the university.

SENIOR THESIS IN FISHERIES AND WILDLIFE
Fall, Spring, Summer. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. R: Open to seniors in the Fisheries and Wildlife major. Approval of department. Faculty-guided undergraduate research in Fisheries and Wildlife. Thesis required.

HUMAN DIMENSIONS RESEARCH IN FISHERIES AND WILDLIFE
Spring of even years. 3(3-0) Quantitative and qualitative methods of involving the public in fish and wildlife management. Human dimensions research and current case studies.

DEMOCRACY AND ENVIRONMENT
Fall of odd years. 3(3-0) RB: Exposure to social science or legal approaches to the environment. Relationship between democracy and environmental protection and management. Effects of democratic institutions on natural resource management.

AQUATIC ANIMAL MEDICINE
Fall. 3(2-2) Interdepartmental with Pathobiology and Diagnostic Investigation and Veterinary Medicine. Administered by Fisheries and Wildlife. RB: (FW 423) or prior course work in animal ecology, microbiology, parasitology or pathology. Health management techniques and pathobiological processes relating to the etiology, diagnosis, and control of diseases affecting aquatic animal populations and communities.

WILDLIFE DISEASE ECOLOGY AND MANAGEMENT
Summer of even years. 3(2-3) Interdepartmental with Large Animal Clinical Sciences and Small Animal Clinical Sciences. Administered by Fisheries and Wildlife. RB: (FW 423) or prior course work in vertebrate ecology, epidemiology or animal disease management. R: Open only to graduate students in the College of Agriculture and Natural Resources or the College of Natural Science or the College of Veterinary Medicine. Ecological and epidemiological principles of wildlife disease investigation and management.

ANALYSIS OF WILDLIFE POPULATIONS
Spring of even years. 3(2-3) Statistical and ecological concepts, methods and computer techniques needed to analyze and interpret demographic data from fish and wildlife studies.

CONSERVATION AND GENETICS
Fall of even years. 3(2-2) Interdepartmental with Plant Biology and Zoology. Administered by Fisheries and Wildlife. RB: ZOL 341 or CSS 350 or ANS 314. Population and evolutionary genetic principles applied to ecology, conservation, and management of fish and wildlife at the individual, population, and species level.
829 The Economics of Environmental Resources
Spring. 3(3-0) Interdepartmental with Com-
munity, Agriculture, Recreation and Re-
source Studies and Agricultural Economics
and Forestry and Park, Recreation and Tourism Resources. Admi-
nistered by Agricultural Economics. RB: Graduate Status
Economic principles related to environmental con-
licts and public policy alternatives. Applications to
water quality, land use, fish and wildlife, conserva-
tion, development, and global environmental issues.

840 Landscape Ecology
Fall of odd years. 3(2-2) RB: Knowledge or
course work in the natural sciences, particu-
larly ecological concepts, as well as expo-
sure to GIS and data analysis.
Ecological patterns and processes. Spatial variation
in landscapes at multiple scales as affected by
natural causes and human activity. Landscape
ecology in natural resource decision-making and
management.

842 Population Genetics, Genealogy and
Genomics
Fall. 3(3-0) Interdepartmental with Animal
Science and Crop and Soil Sciences and
Forestry and Genetics and Horticulture. Administered by Forestry. RB: Pre-calculus, basic genetics
Population genetic processes underlying patterns of
molecular genetic variation. Genealogical approach-
es to the study of genomic diversity, phylogenetic
reconstruction, and molecular ecology.

850 Applied Multivariate Statistical Methods
Spring of even years. 4(3-2) Interdepart-
mental with Statistics and Probability. Admi-
nistered by Fisheries and Wildlife. RB: (STT
422 or concurrently) and MTH 514 SA: FOR
976
Application of multivariate methods to research
problems. Hotelling's T-test, profile analysis, discri-
minant analysis, canonical correlation, principal components, principal coordinates, correspondence
analysis, and cluster analysis.

852 Systems Modeling and Simulation
Fall of even years. 3(3-0) Interdepartmental
with Biosystems Engineering and Forestry
and Resource Development. Administered by
Fisheries and Wildlife. RB: STT 422 or
STT 442 or STT 464 or GEO 463
General systems theory and concepts. Modeling
and simulation methods. Applications of systems
approach and techniques to natural resource man-
age ment, and to ecological and agricultural re-
search.

853 Applied Systems Modeling and
Simulation for Natural Resource
Management
Spring of odd years. 3(2-2) Interdepartmen-	al with Biosystems Engineering and Fore-
stry and Resource Development and Zoolo-
gy. Administered by Fisheries and Wildlife. RB: (FW 820 or BE 486 or ZOL 851) or
approval of department. R: Open only to se-
nior and graduate students
Mathematical models for evaluating resource man-
age ment strategies. Stochastic and deterministic
simulation for optimization. System control struc-
tures. Team modelling approach.
Ecosystem Ecology  
Spring. 4(4-0) Interdepartmental with Plant Biology and Zoology. Administered by Zoology.  
Structure and function of natural ecosystems. Succession, food web analysis, energy flow, nutrient cycling, and effects of human activities on ecosystems. Global environmental change. Ecosystem management and restoration.

Master’s Research  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to graduate students in the Fisheries and Wildlife major.  
Master’s degree Plan B research paper.

Master’s Thesis Research  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to graduate students in the Fisheries and Wildlife major.  
Master’s thesis research.

Doctoral Dissertation Research  
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in the Department of Fisheries and Wildlife.  
Doctoral dissertation research.