DEPARTMENT OF WILDLIFE AND FISHERIES SCIENCES

The Department of Wildlife and Fisheries Sciences uses the latest in the ecological and management disciplines to provide the most diverse and progressive education available in the conservation of the earth’s biodiversity. Students in this department are interested in making contributions to solving problems associated with the extinction of species, wildlife recreational uses, food production from aquaculture, environmental education, wildlife management, and urban wildlife and fisheries recreational activities.

The conservation and management of wildlife and fisheries resources require resolution of increasingly complex issues that extend far beyond the bounds of classical biology. Contemporary wildlife and fisheries professionals must be well-versed in the life and physical sciences, mathematics, and the language, philosophy and culture. Today’s professionals must have a problem-solving orientation that accommodates animals and their habitats within a larger ecological and socio-economic system. In addition, modern students must be familiar with molecular genetics and the principles of conservation biology. Curricula in wildlife and fisheries sciences are designed to provide both the traditional and contemporary dimensions of academic instruction necessary to transform motivated and intellectually capable students into competent professionals.

Faculty

Barboza, Peregrine S, Professor
Wildlife & Fisheries Sciences
PHD, University of New England, 1991

Bixler, Richard P, Lecturer
Wildlife & Fisheries Sciences
PHD, Colorado State University, 2014

Conway, Kevin W, Associate Professor
Wildlife & Fisheries Sciences
PHD, Saint Louis University, 2010

Dewitt, Thomas J, Associate Professor
Wildlife & Fisheries Sciences
PHD, State University of New York at Binghamton, 1996

Dronen, Norman O, Professor
Wildlife & Fisheries Sciences
PHD, New Mexico State University, 1974

Fitzgerald, Lee A, Professor
Wildlife & Fisheries Sciences
PHD, University of New Mexico, 1993

Fujiwara, Masami, Associate Professor
Wildlife & Fisheries Sciences
PHD, Massachusetts Institute of Technology, 2002

Gatlin, Delbert M, Professor
Wildlife & Fisheries Sciences
PHD, Mississippi State University, 1983

Grace, Jacquelyn K, Assistant Professor
Wildlife & Fisheries Sciences
PHD, Wake Forest University, 2014

Grant, William E, Professor
Wildlife & Fisheries Sciences
PHD, Colorado State University, 1974

Hurtado Clavijo, Luis A, Associate Professor
Wildlife & Fisheries Sciences
PHD, Rutgers, The State University of New Jersey, 2002

Klassen, Jessica A, Lecturer
Wildlife & Fisheries Sciences
PHD, Florida Atlantic University, 2016

Lacher, Thomas E, Professor
Wildlife & Fisheries Sciences
PHD, University of Pittsburgh, 1980

Light, Jessica E, Associate Professor
Wildlife & Fisheries Sciences
PHD, Louisiana State University, 2005

Masser, Michael P, Professor
Wildlife & Fisheries Sciences
PHD, Texas A&M University, 1986

Mateos, Mariana, Associate Professor
Wildlife & Fisheries Sciences
PHD, Rutgers, The State University of New Jersey, 2002

Mora-Zacarias, Miguel A, Professor
Wildlife & Fisheries Sciences
PHD, University of California, Davis, 1990

Morrison, Mike L, Professor
Wildlife & Fisheries Sciences
PHD, Texas A&M University, 1997

Roelke, Daniel L, Professor
Wildlife & Fisheries Sciences
PHD, Texas A&M University, 1982

Silvy, Nova J, Professor
Wildlife & Fisheries Sciences
PHD, Southern Illinois University Carbondale, 1975

Voelker, Gary A, Professor
Wildlife & Fisheries Sciences
PHD, University of Washington, 1998

Winemiller, Kirk O, Professor
Wildlife & Fisheries Sciences
PHD, The University of Texas at Austin, 1987

Yorzinski, Jessica L, Assistant Professor
Wildlife & Fisheries Sciences
PHD, University of California, Davis, 2012

Majors

- Bachelor of Science in Renewable Natural Resources (http://catalog.tamu.edu/undergraduate/agriculture-life-sciences/interdepartmental-degree-programs/renewable-natural-resources-bs)
• Bachelor of Science in Wildlife and Fisheries Sciences, Vertebrate Zoology Option (http://catalog.tamu.edu/undergraduate/agriculture-life-sciences/wildlife-fisheries-sciences/bs-vertebrate-zoology-option)

Minors

Courses
WFSC 101 Introduction to Wildlife and Fisheries
Credit 1. 1 Lecture Hour.
Introduction to the wildlife and fisheries profession and to alternatives for study in the department.
Prerequisite: Open only to students with less than 36 hours at Texas A&M University. Registration through the Department of Wildlife and Fisheries Sciences only.

WFSC 291 Research
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of faculty member in wildlife and fisheries sciences. May be repeated 3 times for credit.
Prerequisites: Freshman or sophomore classification and approval of instructor.

WFSC 300/ENTO 300 Field Studies
Credits 3. 3 Other Hours.
Integration of principles of animal and plant ecology with environmental factors to characterize wildlife populations. Intensive analysis of specific areas will emphasize either the development of a wildlife management plan or a general vertebrate natural history survey.
Prerequisite: Prior approval of instructor.
Cross Listing: ENTO 300/WFSC 300.

WFSC 301 Wildlife and the Changing Environment
Credits 3. 3 Lecture Hours.
Using an ecosystem approach, analyzes changes in the North American environment; effects of these changes on wildlife populations; and reviews areas of major, current concern.
Prerequisites: Junior or senior classification; restricted to non-majors.

WFSC 302 Natural History of the Vertebrates
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Introduction to life histories of fishes, amphibians, reptiles, birds and mammals; lecture covers vertebrate groups on a worldwide scale and emphasizes a comparative approach to the study of adaptation to the environment; lecture topics include behavior, reproduction, feeding specializations, evolutionary history, locomotion, hibernation, migration, endangered species, zoogeography and importance to man; laboratory emphasizes the recognition of Texas vertebrates. Designed for both science and non-science majors.
Prerequisites: BIOL 111 and BIOL 112 or BIOL 101 and BIOL 107 or equivalent.

WFSC 303 Fish and Wildlife Laws and Administration
Credits 3. 3 Lecture Hours.
Review and analysis of state and federal laws and international treaties and conventions affecting fish and wildlife; their application and administration; organizational structure of state, federal and international agencies; their objectives, policies and practices.
Prerequisites: RENR 205 or BIOL 357; junior classification.

WFSC 304 Wildlife and Fisheries Conservation
Credits 3. 3 Lecture Hours.
Ecological principles used to conserve and manage wildlife and fisheries resources at the individual, population and community levels; topics include conservation biology, species interactions, animal-habitat relationships, population dynamics and harvesting, habitat management and restoration and human dimensions of fish and wildlife conservation.
Prerequisites: RENR 205 and junior or senior classification or approval of instructor.

WFSC 311 Ichthyology
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Introduction to the study of fishes, their biology, classification, evolution, distribution, ecology and economic importance.
Prerequisite: WFSC 302 or BIOL 318.

WFSC 314 Down River: Biology of Gulf Coastal Fishes
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Understanding the biological complexity of Gulf coast river systems while gaining hands-on experience in field and museum ichthyological techniques; sampling of the Guadalupe and San Antonio rivers; participation in lectures, museum preparation and archiving specimens at the Biodiversity Research and Teaching Collections (BRTC).
Prerequisites: WFSC 311 with a grade of B or better and approval of instructor.

WFSC 315 Herpetology
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Evolutionary ecology of reptiles and amphibians and conservation biology of the major groups; labs concentrate on the global diversity of herps and the herpetofauna of Texas; foundation for students in wildlife science and biology.
Prerequisites: WFSC 302 or approval of instructor; WFSC 302 or BIOL 318.

WFSC 316 Field Herpetology
Credit 1. 3 Lab Hours.
Field work involving collection and preservation of herpetological specimens; natural history, ecological relations. Available for students enrolled in WFSC 315 who would like to have field trips.
Prerequisite: WFSC 315 or registration therein.
WFSC 327/VTPB 301 Wildlife Diseases
Credits 3. 3 Lecture Hours.
Basic mechanisms of diseases as they occur in wildlife populations; interplay of habitat requirements, individual physiological requirements and disease producing mechanisms of varied wildlife species.
Prerequisite: Junior classification or approval of department head.
Cross Listing: VTPB 301/WFSC 327.

WFSC 335 Natural History of the Invertebrates
Credits 4. 3 Lecture Hours. 3 Lab Hours.
A phylogenetic survey of the invertebrate phyla including their taxonomy, morphology, life histories, ecology, ethology and zoogeography. Field trips may be required for which departmental fees may be assessed to cover costs.

WFSC 401 General Mammalogy
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Mammalian biology; evolution, classification, biogeography, reproduction, physiology, ecology, and behavior; focuses on basic concepts necessary for a foundation in both wildlife science and biology.
Prerequisites: WFSC 302 or BIOL 318; junior classification.

WFSC 402 General Ornithology
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Introduction to study of birds, their structure, classification, geographic distribution, ecological relations and economic status; foundation of wildlife science, also for museum work.
Prerequisites: WFSC 302 or BIOL 318; junior classification.

WFSC 403 Animal Ecology
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Concepts of animal ecology which emerge at various levels of organization; the ecosystem, the community, the population and the individual; laboratories emphasis on the quantitative analysis of field data and the simulation of population dynamics.
Prerequisites: WFSC 201 and RENR 205 or approval of instructor; junior classification.

WFSC 404 Aquatic Ecosystems
Credits 3. 3 Lecture Hours.
Inland and coastal zone aquatic ecosystems, lower foodweb structure, functioning and influence on living resources; lakes, rivers, estuaries, open bay systems, factors impacting ecosystem health and fisheries; harmful algal blooms, reduced water inflows, eutrophication and hypoxia formation as they affect foodwebs, recruitment of commercially and recreationally important fisheries.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 405 Urban Wildlife and Fisheries
Credits 3. 3 Lecture Hours.
Urban wildlife and fisheries trains students to establish and maintain diverse, self-sustaining urban wildlife and fish populations at levels in harmony with ecological, social, and economic values of the human community and to develop optimal levels of public appreciation and use of urban wildlife and fish resources and associated habitats.
Prerequisites: RENR 205; junior or senior classification.

WFSC 406 Wildlife Habitat Management
Credits 3. 3 Lecture Hours.
Designed to acquaint the student with major land use practices on lands that produce wildlife, how these influence wildlife production and alterations or manipulations of habitat used to achieve specific wildlife management goals.
Prerequisites: WFSC 201 and WFSC 403; WFSC 401 or WFSC 402; senior classification; wildlife and fisheries sciences major or approval of instructor; concurrent registration in WFSC 407 required.

WFSC 407 Field Wildlife Habitat Management
Credit 1. 2 Lab Hours.
Field and laboratory studies of specific wildlife habitat management practices with special emphasis on those used in Texas; attendance required at four weekend field trips to study wildlife habitat operations.
Prerequisite: Concurrent registration in WFSC 406 required.

WFSC 408 Techniques of Wildlife Management
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Techniques available to directly and indirectly manipulate wild animal populations to achieve balance between socioeconomic and aesthetic values.
Prerequisites: Senior classification; WFSC 403 and WFSC 406 or registration therein or approval of instructor.

WFSC 409 NATURE in the Classroom: Needed Activities To Understand Resource Ecology
Credit 1. 3 Lab Hours.
Integration of natural resources through conservation ecology programs, utilization of research techniques adaptable for classroom use; field trips to community facilities, gaming strategies and computer simulations.
Prerequisites: WFSC 420 or RENR 205 or concurrent enrollment; junior or senior classification.

WFSC 410 Principles of Fisheries Management
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Basic knowledge from ichthyology, biology of fishes and limnology related to applied aspects of freshwater and marine fishery science. Management techniques applicable to streams, ponds, reservoirs, estuaries and the oceans.
Prerequisites: WFSC 311 and WFSC 414; STAT 302 or concurrent enrollment; or approval of instructor.

WFSC 411 Ecology of Lakes and Rivers
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Biological, physical, chemical and geological characteristics of fresh waters; human impacts, which include influence of industrial, domestic, conservation and restoration activities.
Prerequisites: CHEM 101 and CHEM 222; PHYS 201; junior or senior classification.

WFSC 412 Aquatic Ecosystems
Credits 3. 3 Lecture Hours.
Inland and coastal zone aquatic ecosystems, lower foodweb structure, functioning and influence on living resources; lakes, rivers, estuaries, open bay systems, factors impacting ecosystem health and fisheries; harmful algal blooms, reduced water inflows, eutrophication and hypoxia formation as they affect foodwebs, recruitment of commercially and recreationally important fisheries.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 413 Principles of Fisheries Management
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Basic knowledge from ichthyology, biology of fishes and limnology related to applied aspects of freshwater and marine fishery science. Management techniques applicable to streams, ponds, reservoirs, estuaries and the oceans.
Prerequisites: WFSC 311 and WFSC 414; STAT 302 or concurrent enrollment; or approval of instructor.

WFSC 414 Ecology of Lakes and Rivers
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Biological, physical, chemical and geological characteristics of fresh waters; human impacts, which include influence of industrial, domestic, conservation and restoration activities.
Prerequisites: CHEM 101 and CHEM 222; PHYS 201; junior or senior classification.

WFSC 415 Aquatic Ecosystems
Credits 3. 3 Lecture Hours.
Inland and coastal zone aquatic ecosystems, lower foodweb structure, functioning and influence on living resources; lakes, rivers, estuaries, open bay systems, factors impacting ecosystem health and fisheries; harmful algal blooms, reduced water inflows, eutrophication and hypoxia formation as they affect foodwebs, recruitment of commercially and recreationally important fisheries.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 416 Aquatic Ecosystems
Credits 3. 3 Lecture Hours.
Inland and coastal zone aquatic ecosystems, lower foodweb structure, functioning and influence on living resources; lakes, rivers, estuaries, open bay systems, factors impacting ecosystem health and fisheries; harmful algal blooms, reduced water inflows, eutrophication and hypoxia formation as they affect foodwebs, recruitment of commercially and recreationally important fisheries.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 417 Biology of Fishes
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Fishes' physiological and morphological adaptations for life in aquatic systems; physiological and behavioral responses of fish to environmental variation. Laboratory emphasizes design, conduct and analysis of virtual experiments featuring "EcoFish," a simulation model of fish autecology.
Prerequisites: WFSC 302 or WFSC 311; WFSC 414; or approval of instructor.

WFSC 418 Ecology of the Coastal Zone
Credits 3. 3 Lecture Hours.
Introduction to the ecosystems that comprise the coastal zone with an emphasis on the role of freshwater inflows; open bay systems are the focus of lectures, but fringing habitats are also discussed; human components of the coastal zone are also discussed including industrial, commercial domestic, conservation and restoration issues.
Prerequisite: Junior or senior classification.
WFSC 419 Wildlife Restoration
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Study of the fundamentals of the restoration of animal populations and the resources they require; factors that control the distribution and abundances of animals in relation to restoration; and how restoration plans for wildlife are developed.
Prerequisite: RENR 205 or equivalent; junior or senior classification or approval of instructor; WFSC 406 and WFSC 407 and ESSM 320 preferred.

WFSC 420 Ecology and Society
Credits 3. 3 Lecture Hours.
Study and compare human and natural ecosystems using diversity, interrelations, cycles, and energy as the conceptual organization; central themes are sustainability, stewardship and science.
Prerequisite: Junior or senior classification.

WFSC 422 Ethology
Credits 3. 3 Lecture Hours.
Survey of the control, ontogeny, function and natural selection of behavior in a variety of vertebrate and invertebrate species; interaction between the organism and its environment with regard to the mechanisms and adaptive significance of behavior; evolution of anti-predator, feeding, reproductive and cooperative traits.
Prerequisite: BIOL 112 or equivalent.

WFSC 423 Aquaculture
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Principles of fish production for stock enhancement and human food. Species of fish used for production, cross-breeding and selection; feeds and feeding of fishes and nutritional and environmental requirements for optimum productivity; effects of fish production on land and water uses as related to conservation.

WFSC 425 Marine Fisheries
Credits 3. 3 Lecture Hours.
Survey of fisheries for marine vertebrates and invertebrates primarily in the Gulf of Mexico and South Atlantic with special emphasis being directed to their biology, economics and management.

WFSC 426/MARB 426 Aquatic Animal Nutrition
Credits 3. 3 Lecture Hours.
Chemistry, digestion, absorption and intermediary metabolism of nutrient classes with special emphasis on their relationship to warmwater fish nutrition; determination of nutrient requirements, feed evaluation, feed processing, ration formulation and feeding practices.
Prerequisites: CHEM 222; CHEM 227 or equivalent. Taught even years.
Cross Listing: MARB 426.

WFSC 427 Disease Management in Fisheries and Aquaculture
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Fish and invertebrates of economic importance; factors influencing the maintenance of health for each species group; problems and solutions unique to each phase of aquaculture from breeding to growout; application of routine diagnosis and other management tools.
Prerequisite: Junior classification.

WFSC 428 Wetland Ecosystem Management
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Ecosystem approach to the ecology and management of wetlands; emphasis on factors controlling wetland structure and function, characteristics of different wetland types, and applied issues of wetland restoration, creation and delineation.
Prerequisite: Junior or senior classification.

WFSC 433 Molecular Ecology in Wildlife and Fisheries
Credits 3. 3 Lecture Hours.
Fundamentals of molecular ecology applied to conservation and management of wildlife and fisheries; presentation and discussion of scientific papers on wildlife and fisheries molecular ecology; topics in conservation, management and aquaculture.
Prerequisites: BIOL 112 or equivalent; junior or senior classification.

WFSC 444 Aquaculture I: Principles and Practices
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Scientific perspectives concerning major principles associated with fish production under controlled conditions; production techniques associated with prominent species produced via aquaculture throughout the world with emphasis on those cultured in the United States.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 447 Aquaculture II: Aquatic Animal Nutrition, Feeding and Disease Management
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Review of scientific perspectives on major aspects of nutrition, diet formulation and feeding of aquatic species in aquaculture; major disease-causing organisms encountered in aquaculture and means of disease prevention and control.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 448 Fish Ecophysiology
Credits 3. 3 Lecture Hours.
Ecological domains and demands placed on physiological performance; physiological mechanisms and control in fishes, interaction of physiological mechanisms with environment, emphasis in adaptive value of physiological traits; analysis of physiology and adaptation with models; process and functional modeling.
Prerequisite: WFSC 311 or concurrent enrollment, junior or senior classification or approval of instructor.

WFSC 449 Professional Aspects of Aquatic Ecology
Credits 3. 3 Lecture Hours.
Discipline of aquatic sciences through oral presentation and written documentation; job market expectations, resume preparation, job application, and preparation for and giving an interview.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 450/ENTO 450 Caribbean Conservation
Credits 2. 6 Lab Hours.
Provide experience in and appreciation for diverse tropical habitats and the problems associated with conserving these habitats; design and conduct individual research projects on topics of their choice with approval from the instructors on project design and feasibility.
Prerequisites: Concurrent enrollment in ENTO 300/WFSC 300 and ENTO 451/WFSC 451; junior or senior classification.
Cross Listing: ENTO 450/WFSC 450.

WFSC 451/ENTO 451 Caribbean Research Seminar
Credit 1. 1 Other Hour.
Document research activities; keep a journal of activities and research methods during study abroad trips.
Prerequisites: Concurrent enrollment in ENTO 300/WFSC 300 and ENTO 450/WFSC 450; junior or senior classification.
WFSC 454 Amazon Field School  
Credits 4. 4 Lecture Hours.  
Investigation of social and ecological complexities of biodiversity  
conservation in tropical ecosystems; biological and social science  
approaches to evaluate causes, consequences and solutions to  
biodiversity loss through ecology, culture and governance.  
Prerequisites: Junior or senior classification with a minimum GPA of 2.0  
and approval of instructor.  
Cross Listing: RPTS 454 and VTPB 404.

WFSC 462/BIOL 462 Amazon River Tropical Biology  
Credits 3. 3 Lecture Hours.  
History, ecology, evolutionary-biology, geography, and culture of the  
Amazon River and Rio Negro; exploration of the world’s most bio-diverse  
river during a 10-day expedition from Manaus, Brazil; survey biota, record  
observations about the ecosystem, select research topics, development  
of presentations.  
Prerequisites: BIOL 107, BIOL 112, BIOL 113, BIOL 357 or RENR 205; or  
approval of instructor.  
Cross Listing: BIOL 462/WFSC 462.

WFSC 481 Seminar  
Credit 1. 1 Lecture Hour.  
Oral discussion of selected topics from technical literature on recent  
advances in the field.  
Prerequisites: Senior classification in wildlife and fisheries sciences; 6  
hours of 300- or 400-level wildlife and fisheries sciences courses. May be  
repeated for credit.

WFSC 484 Internship  
Credits 1 to 9. 1 to 9 Other Hours.  
Practical experience working in a professional wildlife or fisheries  
facility.  
Prerequisite: Approval of department head.

WFSC 485 Directed Studies  
Credits 1 to 3. 1 to 3 Other Hours.  
Individual study and research on selected problem approved by instructor  
and academic advisor.  
Prerequisites: Junior or senior classification; approval of department  
head.

WFSC 489 Special Topics in...  
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.  
Selected topics in an identified area of wildlife and fisheries sciences.  
May be repeated for credit.  
Prerequisite: Approval of department head.

WFSC 491 Research  
Credits 1 to 6. 1 to 6 Other Hours.  
Laboratory and/or field research supervised by a faculty member in  
wildlife and fisheries sciences. Registration in multiple sections of  
this course are possible within a given semester provided that the per  
semester credit hour limit is not exceeded.  
Prerequisites: Junior or senior classification; approval of instructor.