Fisheries, Wildlife, and Conservation Biology (BS): Conservation Biology Concentration

Fisheries, Wildlife and Conservation Biology (FWCB) major prepares students to manage and conserve populations of fish and wildlife in their natural habitats. This STEM (Science, Technology, Engineering and Mathematics) major gives students the skills they need to observe, research, monitor and assess the impact of environmental change, human behavior and public policy on wild populations of animals. Using a combination of lab work, technology and field study, students develop conservation strategies that ensure the long-term health of fish and wildlife populations.

After sophomore year, students spend six weeks in summer field courses. During the “summer camp” experience, students learn hands-on fish and wildlife management techniques in locations across the state. From plant and animal identification and bird mist netting to camera-trapping and radio telemetry, students gain experiences that prepare them for careers after graduation. FWCB students have the option to substitute the summer field course with approved internships or study abroad courses.

The Conservation Biology concentration allows flexibility for students to pursue elements of conservation that align with their specific career goals. The degree requirements include 9 credits of technical electives that compliment the major such as courses in environmental policy, entomology, science communication, or environmental education.

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Plan Requirements

First Year		Hours
ENV 100	Student Success in Environmental First Year	1
ENV 101	Exploring the Environment	2
MA 131	Calculus for Life and Management Sciences A	3
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
BIO 183	Introductory Biology: Cellular and Molecular Biology	4
CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
COM 110	Public Speaking	3
ENG 101	Academic Writing and Research [1]	4
	Hours	**25**
Second Year		
FOR 172	Forest System Mapping and Mensuration I	2
FW 221	Conservation of Natural Resources	3
PY 131	Conceptual Physics	4
Choose one of the following Economics electives:		3
ARE 201	Introduction to Agricultural & Resource Economics	
ARE 201A	Introduction to Agricultural & Resource Economics	
EC 201	Principles of Microeconomics	
EC 205	Fundamentals of Economics	
Choose one of the following Ecology electives:		4
AEC 360	Ecology	
FOR 260	Forest Ecology	
PB 360	Ecology	
Plant Elective (p. 2)		3
Quantitative Elective (p. 2)		3
Physical Science Elective (p. 2)		3
	Hours	**25**
Summer		
FW 311	Piedmont Wildlife Ecology and Management	3
FW 312	Fisheries Techniques and Management	1
FW 313	Mountain Wildlife Ecology and Management	1
FW 314	Coastal Ecology and Management	1
	Hours	**6**
Third Year		
GIS 280	Introduction to GIS	3
FW 333	Conservation Biology in Practice	3
FW 353	Wildlife Management	3
FW 373	Vertebrate Natural History	3
ST 311	Introduction to Statistics	3
Select one of the following Organic Chemistry courses:		4
CH 220 & CH 222	Introductory Organic Chemistry and Organic Chemistry I Lab	
CH 221 & CH 222	Organic Chemistry I and Organic Chemistry I Lab	
GN 301 or GN 311	Genetics in Human Affairs or Principles of Genetics	3
FW 411	Human Dimensions of Wildlife and Fisheries	3
ENG 333	Communication for Science and Research	3
	Hours	**28**
Fourth Year		
FW 415	Professional Development in Fisheries, Wildlife, and Conservation Biology	1
FW 453 or AEC 420	Principles of Wildlife Science or Introduction to Fisheries Science	3
ENT 201	Insects and People	3
Policy Elective (p. 2)		3
Conservation Biology Elective (p.)		3

Fisheries & Wildlife Elective (p. 3)	3
Technical Electives (p. 3)	9
Hours	**25**
Total Hours	**109**

[1] A grade of C- or better is required.

Code	Title	Hours	Counts towards
GEP Courses			
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		6	
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		2	
GEP Elective (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3	
GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/) (Verify Requirement)			
World Language Proficiency (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-language-proficiency/) (Verify Requirement)			
Total Hours		**11**	

Acad Writing Research

Code	Title	Hours	Counts towards
Acad Writing Research			
ENG 101	Academic Writing and Research	4	
FLE 101	Academic Writing and Research	4	
Transfer Sequence			
ENG 202	Disciplinary Perspectives in Writing	3	
ENG 1GEP		3	

Plant Electives

Code	Title	Hours	Counts towards
FOR 339		4	
PB 220	Local Flora	3	
PB 250	Plant Biology	4	
PB 403	Systematic Botany	4	
PB 503	Systematic Botany	4	

Quantitative Electives

Code	Title	Hours	Counts towards
CSC 200		3	
MA 231	Calculus for Life and Management Sciences B	3	
MA 241	Calculus II	4	
NR 300	Natural Resource Measurements	4	
ST 312	Introduction to Statistics II	3	

Physical Science Electives

Code	Title	Hours	Counts towards
CH 201	Chemistry - A Quantitative Science	3	
CH 202	Quantitative Chemistry Laboratory	1	
CH 223	Organic Chemistry II	3	
MEA 100	Earth System Science: Exploring the Connections	4	
MEA 130	Introduction to Weather and Climate	3	
MEA 200	Introduction to Oceanography	3	
MEA 210	Oceanography Lab	1	
MEA 220	Marine Biology	3	
MEA 250	Introduction to Coastal Environments	3	
MEA 323	Geochemistry of Natural Waters	3	
PY 212	College Physics II	4	

Policy Electives

Code	Title	Hours	Counts towards
ARE 309	Environmental Law & Economic Policy	3	
FOR 472	Forest Soils	4	
NR 460	Renewable Natural Resource Management and Policy	3	
NR 560	Renewable Natural Resource Management and Policy	3	

PS 320	U.S. Environmental Law and Politics	3
PS 336	Global Environmental Politics	3

Conservation Biology Electives

Code	Title	Hours	Counts towards
AEC 761	Conservation and Climate Science	3	
FW 403	Urban Wildlife Management	3	
FW 460	International Wildlife Management and Conservation	3	
FW 560	International Wildlife Management and Conservation	3	
NR 406	Conservation of Biological Diversity	3	

Fisheries & Wildlife Electives

Code	Title	Hours	Counts towards
AEC 420	Introduction to Fisheries Science	3	
AEC 441	Biology of Fishes	3	
AEC 501	Avian Ecology	4	
FW 444	Mammalogy	3	
FW 453	Principles of Wildlife Science	4	
FW 544	Mammalogy	3	
ZO 410	Introduction to Animal Behavior	3	
ZO 542		3	

Technical Electives

Code	Title	Hours	Counts towards
AEC 419	Freshwater Ecology	4	
AEC 519	Freshwater Ecology	4	
ENT 201	Insects and People	3	
ENT 402	Forest Entomology	3	
ENT 425	General Entomology	3	
FOR 252	Introduction to Forest Science	3	
FOR 304	Theory of Silviculture	4	
FOR 402	Forest Entomology	3	
FW 403	Urban Wildlife Management	3	
FW 404	Wildlife Habitat Management	3	
FW 465	African Ecology and Conservation	4	
FW 565	African Ecology and Conservation	4	
SSC 200	Soil Science	3	

Semester Sequence

This is a sample.

Critical Path Courses – Identify using the code (CP) which courses are considered critical path courses which represent specific major requirements that are predictive of student success in a given program/plan. Place the (CP) next to the credit hours for the course.

First Year		
Fall Semester		**Hours**
ENV 100 & ENV 101	Student Success in Environmental First Year and Exploring the Environment	3
ENG 101	Academic Writing and Research [1]	4
MA 131	Calculus for Life and Management Sciences A	3
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
	Hours	**15**
Spring Semester		
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4
BIO 183	Introductory Biology: Cellular and Molecular Biology	4
COM 110 or COM 112	Public Speaking or Interpersonal Communication	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
	Hours	**15**
Second Year		
Fall Semester		
Plant Elective (p. 2)		3
FW 221	Conservation of Natural Resources (CP)	3
PY 131	Conceptual Physics	4
FOR 172	Forest System Mapping and Mensuration I	2
Physical Science Elective (p. 2)		3
	Hours	**15**

Spring Semester		
Economics Elective (p. 1)		3
Ecology Elective (CP) (p. 1)		4
GEP Elective (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
Quantitative Elective (p. 2)		3
	Hours	**13**
Summer		
FW 311	Piedmont Wildlife Ecology and Management	3
FW 312	Fisheries Techniques and Management	1
FW 313	Mountain Wildlife Ecology and Management	1
FW 314	Coastal Ecology and Management	1
	Hours	**6**
Third Year		
Fall Semester		
GIS 280	Introduction to GIS	3
FW 333	Conservation Biology in Practice (CP)	3
ST 311	Introduction to Statistics	3
FW 353	Wildlife Management	3
GN 301 or GN 311	Genetics in Human Affairs or Principles of Genetics	3
	Hours	**15**
Spring Semester		
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
Select one of the following:		4
CH 221 & CH 222	Organic Chemistry I and Organic Chemistry I Lab	
CH 220 & CH 222	Introductory Organic Chemistry and Organic Chemistry I Lab	
FW 373	Vertebrate Natural History (CP)	3
FW 411	Human Dimensions of Wildlife and Fisheries (CP)	3
ENG 333	Communication for Science and Research	3
	Hours	**16**
Fourth Year		
Fall Semester		
Technical Elective (p. 3)		3
Fish & Wildlife Elective (p. 3)		3
Policy Elective (p. 2)		3
ENT 201	Insects and People (GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/))	3
FW 415	Professional Development in Fisheries, Wildlife, and Conservation Biology	1
	Hours	**13**
Spring Semester		
FW 453 or AEC 420	Principles of Wildlife Science (CP) or Introduction to Fisheries Science	3-4
Conservation Biol Elective (p. 3)		3
Technical Elective (p. 3)		6
	Hours	**12**
	Total Hours	**120**

1 A grade of C- or better is required.
2 Can be met by summer camp (courses listed in adjacent block), a combination of internship and/or study abroad, or other courses that provide hands-on conservation biology experience**.**

Career Opportunities

Graduates are prepared for graduate school and entry-level professional positions in state and federal government agencies, non-profit organizations and private industry. Upon graduation, students are qualified to seek certification from The Wildlife Society or the American Fisheries Society.

Career Titles

Learn More About Careers

NCcareers.org (https://nccareers.org/)
Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (https://www.bls.gov/ooh/)
Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (https://www.careeronestop.org/)
View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (https://careers.dasa.ncsu.edu/explore-careers/career-assessments/) (NC State student email address required)
This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (https://careers.dasa.ncsu.edu/about/hours-appointments/) to discuss the results.

Focus 2 Apply Assessment (https://www.focus2career.com/Portal/Register.cfm?SID=1929) (Available to prospective students)
A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

North Carolina Chapter of the Wildlife Society (http://nctws.org/wordpress/)
North Carolina Chapter of the American Fisheries Society (https://nc.fisheries.org/)