

Pathway to Zoologist/ Wildlife Biologist

What does a Zoologist or Wildlife Biologist do? How's the job outlook? Zoologists and wildlife biologists study animals. Zoologists often study animals in a lab, zoo, aquarium, or sanctuaries. Wildlife biologists study organisms in their natural setting often focusing on the interactions with other organisms and/or the ecosystem. The work of wildlife biologists often requires collecting data in the field and then analyzing that data in an office setting. Many of the organisms that are studied have some conservation concern.



Employment of zoologists and wildlife biologists is projected to grow 5 percent from 2020 to 2030, which is slower than the average for all occupations. Despite limited employment growth, about 1,700 openings for zoologists and wildlife biologists are projected each year, on average, over the next decade. Most of those openings are expected to result from the need to replace workers who transfer to alternative occupations or exit the labor force/retire.

*U.S. Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, Zoologist and Wildlife Biologist, on the Internet at <https://www.bls.gov/ooh/life-physical-and-social-science/zoologists-and-wildlife-biologists.htm>

How do I become a Zoologist or Wildlife Biologist?

A minimum of a bachelor's degree (B.S. or B.A.) is needed to be a wildlife biologist. Completing undergraduate research or an internship is highly recommended prior to graduating with this bachelor's degree. A minor in Geographic Information Systems (GIS) is highly recommended. Many wildlife biologists do go on to get a master's degree in wildlife biology and/or wildlife management. Colorado State University (CSU) has both an in-person and online master's program in conservation and wildlife biology. Regis University also has a master's program in environmental biology. For a more zoology-based master's program, the Denver Zoo is a partner with Miami University online for a master's in biology. CSU also has a professional master's degree (PSM) in zoo, aquarium, and animal shelter management.

Biology Faculty Advisor who can guide you for this path are:

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REQUIREMENTS FOR A MAJOR IN BIOLOGY
for 2020-2021 or future catalogs ONLY

A grade of "C-" or better is required for each BIO prefix course to count towards the major

Required Biology Courses for both the B.A. or the B.S. Degree

- BIO 1080-3** General Biology I.....3
- BIO 1090-1** General Biology Lab I.....1
- BIO 1081-3** General Biology II.....3
- BIO 1091-1** General Biology Lab II1

- BIO 3520-3** General Ecology.....3

Take ONE of these Genetics options:

- BIO 3600-4** General Genetics (no lab)4
- OR**
- BIO 3610-4** Genetics: Principles & Analysis (has lab)4

*Genetics with a lab is preferred for hands-on learners or those that may use genetics in their future research plans.

Pick ONE of these options:

- Option 1:** **BIO 2100-5** General Botany
OR
- Option 2:** **BIO 2400-5** General Microbiology
OR
- Option 3:** **Both BIO 2310-4 and BIO 2320-4** (Anatomy & Physiology I & II)
(You must take both semesters to get credit for this option)
OR
- Option 4:** **Either BIO 3200-4** Invertebrate Zoology or **BIO 3260-4** Vertebrate Zoology
(If you wish to take both zoology courses, the other will count as an upper division elective. Both courses are suggested if you are doing a zoology or wildlife biology pathway)

Students are required to take a Senior Experience course:

Fulfills Senior Experience Requirement	
<input type="checkbox"/> BIO 4050-3 Advanced Cell & Molecular Biology	<input type="checkbox"/> BIO 4510-4 Microbial Ecology
<input type="checkbox"/> BIO 4230-3 Issues in Conservation Biology *	<input type="checkbox"/> BIO 4540-4 Plant Ecology *
<input type="checkbox"/> BIO 4300-3 Neurobiology	<input type="checkbox"/> BIO 4550-4 Animal Ecology *
<input type="checkbox"/> BIO 4820-4 Developmental Biology	
<input type="checkbox"/> BIO 4850-3 Evolution *	

* These are the senior experience classes suggested for zoology or wildlife biology. You may take more than one senior experience and it may be beneficial to take both Animal Ecology and Issues of Conservation Biology.

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Elective Biology courses: Biology courses from 2000, 3000, and 4000 must be completed to bring the total of biology courses approved for the major to 40 credits. **At least 21 of these Biology credits must be from the 3000 or 4000 courses of the Department of Biology.**

Recommended Elective Courses from which to Choose:

- BIO 2100-5 Botany
- BIO 3180-4 Vascular Plant Taxonomy
- BIO 3200-4 Invertebrate Zoology
- BIO 3220-5 Comparative Vertebrate Anatomy
- BIO 3240-4 Animal Behavior
- BIO 3260-4 Vertebrate Zoology
- BIO 3270-4 Parasitology
- BIO 3280-2 Field Ornithology
- BIO 3360-4 Animal Physiology
- BIO 39AC-3 Principles of Wildlife Biology & Management
- BIO 4000-3 Variable Field Courses Abroad (e.g. Tropical Field Biology)
- BIO 4230-3 Issues in Conservation Biology
- BIO 4250-4 Entomology
- BIO 4280-4 Ornithology
- BIO 4290-4 Mammalogy
- BIO 4540-4 Plant Ecology
- BIO 4550-4 Animal Ecology

* Most government wildlife biology jobs require (<https://www.opm.gov/policy-data-oversight/classification-qualifications/general-schedule-qualification-standards/0400/wildlife-biology-series-0486/>):

- At least 9 semester hours in such wildlife subjects as mammalogy, ornithology, animal ecology, wildlife management, or research courses in the field of wildlife biology; and
- At least 12 semester hours in zoology in such subjects as general zoology, invertebrate zoology, vertebrate zoology, comparative anatomy, physiology, genetics, ecology, cellular biology, parasitology, entomology, or research courses in such subjects (Excess courses in wildlife biology may be used to meet the zoology requirements where appropriate.); and
- At least 9 semester hours in botany or the related plant sciences.

** Internships and/or research credits are highly recommended

***Minor in Geographic Information Systems (GIS) or Environmental Science with at least Geospatial Sciences and Intro to GIS is recommended. If you choose one of these minors, it may make more sense for you to earn a B.A. instead of a B.S.

Total Credit Hours in Biology (minimum of 40) _____

Upper Division Biology Credit Hours (minimum of 21) _____

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B.S. Non-Bio Course Requirements:

CHE 1800-4 Gen Chemistry I _____
CHE 1801-1 Gen Chemistry I Lab _____
CHE 1810-4 Gen Chemistry II _____
CHE 1811-1 Gen Chemistry II Lab _____

CHOOSE YOUR PATH:

CHE 3100-4 Organic Chemistry I _____
CHE 3120-1 Organic Chemistry I Lab _____
AND
CHE 3110- 3 Organic Chemistry II _____

~OR~

ºCHE 3090- 4 Survey of Organic Chem _____
CHE 3120-1 Organic Chemistry I Lab _____
AND
ºCHE 4310-4 Biochemistry _____

- º **Note on CHE 3090 – Survey of Organic Chemistry** - this class is no longer being offered
- º **Note on CHE 4310 – Biochemistry** – requires completion of both Organic Chemistry I and II

Choose from the following math courses:

MTH 1108-1109 (Stretch College Algebra) *, MTH 1110 (College Algebra), MTH 1111 and MTH 1101 (College Algebra with lab), MTH 1112 (College Algebra through Modeling), MTH 1115/1116 (College Algebra through Modeling with Lab), MTH 1120 (Trigonometry), MTH 1210 (Intro to Statistics), MTH 1410 (Calculus I)**

MTH 1108-1109 is a Stretch Course and only counts as ONE of the required math courses for the BIO BS.

Students planning to take Calculus must take MTH 1108-1109, MTH 1110, or MTH 1111

***Master's programs often require you to take Intro to Stats course, including CSU and Regis University. Other graduate programs may require you to take math up to Calculus, Physics I & Lab, and Physics II & lab. Look at possible graduate programs to see their specific requirements.

Math Requirement (2 semesters)

General Studies Requirements (33 cr. total), please visit

<http://www.msudenver.edu/advising/facultystaff/generalstudiesrequirements/>

Total Credits (Minimum 120) _____

Total Upper Division Credits (Minimum 40 TOTAL) _____

What is your Minor? (required) _____