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Becoming a Wildlife Biologist

Inside this Guide

Where do I even start?

Finding and applying for jobs within the wildlife field can be daunting tasks. There are many steps involved and they are not often discussed or taught during undergrad.

With this guide you will be able to determine if becoming a Wildlife Biologist is something that fits well into your life plan. Both the highs and the lows will be discussed as well as all the little details that you have probably been wondering about.

This guide was a group effort and is meant to be shared freely and added to over time. Please help to make this information more well-known and widespread. Together we can make this field more accessible for all. If you would like to add to the guide or feel that something should be changed, feel free to contact me. Best of luck!

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About the creator

I was raised in New Mexico, where I obtained my Bachelor's of Conservation Ecology from New Mexico State University. I later obtained my Master's in Wildlife and Range Science from Texas A&M University-Kingsville at the Caesar Kleberg Wildlife Research Institute. I now live in Michigan where I work as a full time Wildlife Biologist.

Growing up, I spent most of my time in New Mexico, surrounded by my large Hispanic family (3 siblings, 20 first cousins on that side). My Mum is Australian and I have dual USA/Australian citizenship so we would spend summers, when my parents were able to save up enough, with the other side of my family in SE Australia.

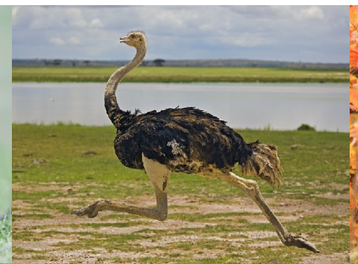
I have spent the past decade pursuing my love of wildlife across the USA. When I started out within the field, I had no idea what to do! It has taken me many years as well as a lot of help and privilege to get to where I am now. I now want to share the knowledge that I (and so many other amazing biologists who helped with this guide) have gained along the way.

NM STATE

Caesar Kleberg WILDLIFE Research Institute

TEXAS A&M UNIVERSITY KINGSVILLE

CACTUS QUOLL CREATIONS



Why it matters

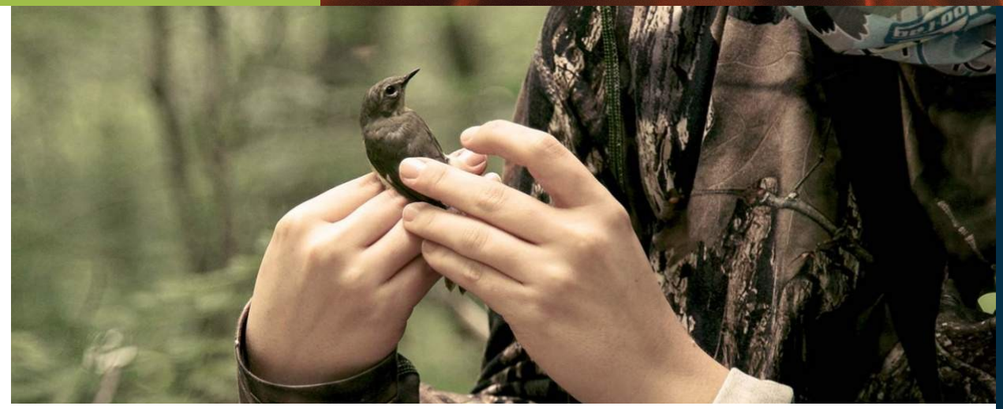
The sector in which you work as a biologist can have a big influence on what you do at work and the income that you bring in. While there are many similarities between the various sectors, there can also be many differences.

It can be advantageous to work in a variety of sectors as a seasonal or temporary technician / intern. This will help you determine which one is the best fit for you.

Speaking to biologists within different sectors can also help you to find out what their jobs entail. Ask them about the positives and negatives of the sector and if they recommend working for that particular one.

Career Paths

Learn about the numerous options available for fish and wildlife professionals.



Federal Agency

Work for the federal government through a multitude of different agencies. Common positions include fish/wildlife technician, fish/wildlife biologist, fish & wildlife biologist, GIS analyst, policy specialist, etc.

Examples of federal agencies include:

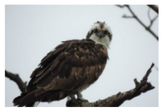
- U.S. Fish & Wildlife Service,
- U.S. Forest Service,
- Natural Resources Conservation Service, and
- National Park Service

State Agency

Work for state agencies includes a multitude of different positions. Each state has its own conservation department. See the state agencies handout for details on the agency in your state.

Common positions with a state agency include: fish/wildlife biologist or manager, hatchery manager, fish or wildlife educator, public educator and outreach specialist, conservation enforcement officer, fish or wildlife technician, communications and public relations specialist, and GIS specialist.

Private/Contractor



For profit organizations that are separate from State and Federal agencies and are for hire. Common work entails surveying of land or property prior to large project implementation. Often complete surveys related to the Endangered Species Act (ESA) or the National Environmental Policy Act (NEPA). Wildlife consultants evaluate ecosystems to determine environmental impacts from proposed actions. Following standards create by the NEPA, consultants provide reports to businesses, industries, and governments to ensure quality environments.

Non-Profit/Non-Governmental

Local, Regional, National, and International organizations that are run by a Board of Directors, not a state or federal agency, and typically have 501(c)(3) charity status. Work is often completed through grants and member support. Many of these organizations work with private landowners to complete on the ground habitat creation, management, and conservation.

Opportunities include:

- Local/Regional Organizations: Land Trusts (Landtrustalliance.org)
- National Organizations: Pheasants Forever, National Wild Turkey Federation, Ducks Unlimited, The Nature Conservancy, etc.

Research

Design and implement research programs as a research scientist. Research informs fisheries, wildlife, and conservation decision-making to improve applied field techniques and management.

Opportunities include:

- Academia & Tenure Track
- Biological Field Stations
- Research Institutes (often non-profits)

Tribal Lands

Native American Nations consist of approximately 56 million acres of lands within the United States. These lands are largely unpopulated and are rich in both natural and cultural resources. Sustainability and care of the land is both critical and culturally important to Native American tribes. Often, these tribes have their own natural resources departments. While there are federal opportunities to work with Native American tribes through the Bureau of Indian Affairs, many tribes also have their own fisheries and wildlife biologists to manage the vast natural resources on their lands.

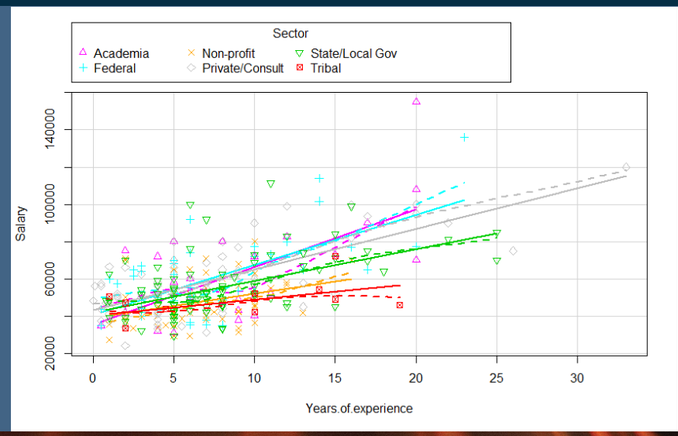
Military Lands

Military lands comprise approximately 25 million acres in the United States. They preserve ecologically important native habitats and very often are havens for rare and unique species. Positions are often similar to state and federal jobs, and work with endangered species, fisheries, invasive species, migratory birds, law enforcement, wetlands, environmental contaminants, and more. Open positions are typically posted and applied for through the USAJobs website, same as other federal jobs.

North Central Section
The Wildlife Society
wildlife.org/ncs/

North Central Division
American Fisheries Society
https://ncd.fisheries.org/

USA Salary Stats by Sector (2021 data)



State and Province Agency List

http://midwestfw.org/documents/State%20and%20Province%20Agency%20List.pdf

Helpful Classes

Outside of wildlife classes, the following subjects are also useful to take

Look for experiences outside of class

Not all experience can be gained within your classes and any advantage you can get will help you stand out among job candidates.

Master Naturalist

http://www.ecosystemgardening.com/master-naturalist-programs-by-state.html

Almost every state in the United States has a Master Naturalist Program, often developed in conjunction with Universities and County Extension offices.

Datacamp

https://www.datacamp.com/

Learn the data skills you need online at your own pace—from non-coding essentials to data science and machine learning.

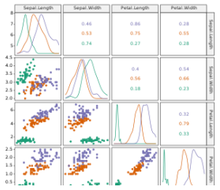
Chemical immobilization

https://wildlifecaptureandcare.com/

Wilderness first aid and CPR classes

https://www.nols.edu/en/coursefinder/courses/wilderness-first-aid-WFA/

https://www.redcross.org/take-a-class/cpr/wilderness-sports



Statistics

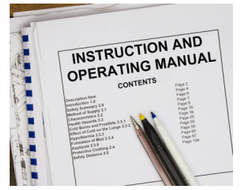
Statistics form the basis for almost all of the wildlife management and science that Biologists do. It can be a weakness for many and can be a tough subject, but it is an extremely important skill. Statistical knowledge helps you use the proper methods to collect the data, employ the correct analyses, and effectively present the results.

Forensics

Wildlife work doesn't always involve working directly with animals and it can be rare to actually see the species that you are working with. Often Biologists have to assess a situation without the presence of the creature that created it with clues that they find, such as hair, pawprints, feathers, or markings on trees. In addition, necropsies of deceased animals are an incredibly useful tool in management. Necropsies of prey animals can provide information about the predators, such as prey preference, health of prey, method of kill, etc. Necropsies on focus species can provide information on cause of death, diet, health of the animal before it died, and much more.

Personal Finance

Financial skills are important in any career, but especially so in one that is often lower paying and can be challenging during numerous job changes early on in your career. Managing your money well can be the deciding factor for being able to remain in this career. Topics like retirement, taxes, and investment goals can be complex and having even basic knowledge gives you a huge advantage. Knowing how to properly manage money is also a far-reaching skill that can also enable you to properly manage grants within your job itself.



Technical Writing

Wildlife Biologists regularly employ writing skills in their day to day work for things such as abstracts, research proposals, literature reviews, and management recommendations. You must be able to effectively evaluate the work of others and create your own. This kind of writing goes beyond avoiding grammatical errors and into the complex process that sets scientists apart in their subject of expertise.

Public Speaking/Communications

Science means nothing if it can't be communicated both within the scientific community as well as to those outside of it. Public speaking and communication skills enable you to do just this. You will be giving presentations to large and small audiences throughout your career on your research and work. If you can do so effectively and confidently, you will stand out in the field.

GIS/Cartography

Mapping skills have always been important within this field for navigation and communication of field sites. In addition to these, GIS has quickly become an important skill for almost any wildlife job you might pursue. It is important to start learning about these topics early on to give yourself an advantage in the long-run.

Human Dimensions/Gender/Minority/ Indigenous studies

90% of wildlife management is actually working with and managing people. Humans are a complex species with a variety of cultures and experiences. If you are not able to consider all sides and understand where others are coming from, you are missing an important aspect of your decisions making and recommendations.

Make sure that meet the requirements for federal jobs and certifications from your respective professional society

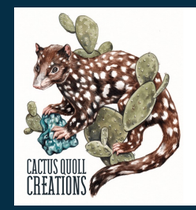
https://www.fws.gov/humancapital/factsheetpdfs/qualificationrequirementsfinal.pdf

This includes things you might not consider, such as 9 hours of botany classes.

https://www.usgs.gov/human-capital/wildlife-biologist-gs-0486

Classes current biologists recommend:

https://www.cactusquollcreations.com/askabiologist/what-classesskills-do-you-recommend-undergrads-takeget



Widen your search

Though a large number of wildlife and biology jobs are posted on sites that are focused specifically within these fields, it can also be worth searching for jobs on more general sites such as Indeed.com or on the sites of specific agencies and companies.

Be open to a variety of jobs. It's important that you keep your options open. The things that you envision as being your focus in the future could quickly change and having a variety of experience will help you to respond to changes in your interests and in the field as a whole.

Seasonal positions are often cyclical

A large number of technician positions come around multiple times. Don't feel bad if you miss out on the position once, no matter how far you got into the process. Even if you got offered the job and had to turn it down for a scheduling reason, it's okay to apply for it again. If the employer was interested once, they will be interested again. If you did not get an interview the first or second or third time applying, the next time could be different; especially if you gained further experience since the last time you applied!

Research, Internship, and Job opportunities

https://drive.google.com/file/d/1pZuW2qHx_nZ_CIW457DWfy2ZVf25_y9X/view

Wildlife Job Boards

Some of the most used and useful sites for finding jobs in the field of Wildlife

Texas A&M Job Board

https://wfscjobs.tamu.edu/job-board/

The Wildlife Society Career Center

https://careers.wildlife.org/

USA Jobs

https://www.usajobs.gov/

Conservation Job Board

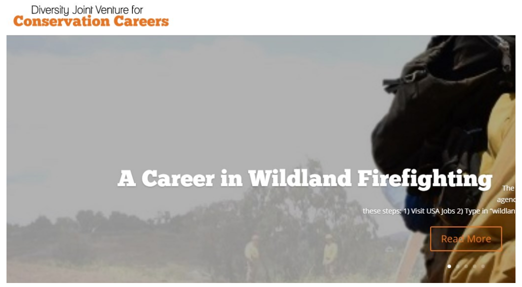
https://www.conservationjobboard.com/

American Society of Mammalogists

http://www.mammalsociety.org/jobs-post-docs-interships-assistantships-seasonal-postings

Diversity Joint Venture for Conservation Careers

https://diversityinconservationjobs.org/



Extra Resources

Keywords to search by

Wildlife	Natural resources
Biology	Technician
Biological	Ecology
0404 (on USA Jobs)	Animals
0400 (on USA Jobs)	Biologist
0486 (on USA Jobs)	
0401 (on USA Jobs)	

Navigating USA Jobs

https://drive.google.com/file/d/1DdWDSxAWIo0v5Xqv5Hh0OmNSyKpvpE99/view

6 tips for landing a job in Wildlife

https://www.theoutbound.com/imogene-cancellare/6-tips-for-landing-a-job-as-a-wildlife-biologist

Networking and Application Tips

http://www.midwestfw.org/documents/Tips_for_Students.pdf

Job board lists

https://www.canr.msu.edu/fw/employment/fisheries_wildlife_employment/index

https://naturalreserves.ucsc.edu/student_resources/job%20listings.html

http://www.pherkad.com/jobs.html

https://docs.google.com/spreadsheets/

Should I apply to this job?

The short answer to this is yes. Remember that even though you might not have all of the listed qualifications, you might still stand a good chance at the job. The employer is listing their ideal candidate that they may never actually find and you could still come the closest. Many others will apply for the job, often with much less experience that you. Be confident in your abilities and take a chance! Even if you are 70% qualified for a job, that is often enough to get you an interview

Get experience outside of wildlife

You will be continuously surprised by the things that benefit you along the way as a biologist. Something that you never thought would come into play could help you in a tough spot. Take classes that are outside of your major. Pick up a miscellaneous hobby. Befriend people with differing interests. Being a fully rounded person will do make you an even stronger candidate for jobs and a better biologist.

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Technician and Internship position reviews

https://www.cactusquollcreations.com/tech/intern-reviews

Red flags

What to look out for when searching for jobs

Little/No pay

You are a hard-working human being and you deserve to be fairly compensated for your work. Those employing technicians/interns in this way have little motivation to treat them with the dignity they deserve. Furthermore, since your work is so cheap for them, they can afford to keep you working extremely long hours beyond what anyone should be working. Make sure you are honest with yourself about the cost of living and food while working this job, as well as any debt or monetary obligations you may have.

Terrible Hours/Work Schedule

Everyone deserves a regular, consistent work schedule. Just because you are just starting out in this field does not mean that you should be expected to go without weekends or regular hours. Irregular schedules happen at times, but it should not be the norm. You should be able to rely on a set schedule with time for you to have a life outside of your job.

Any position that charges you for the “privilege” of working for them

These “jobs” should not even be considered. This is a form of manipulation by organizations that know their positions are highly desired such as a big cat position in a foreign country that expects you to pay them and cover all costs. The experience that you gain from these positions may sadly not be respected in the field and you may lose time and money that could be spent gaining meaningful experience.

Requiring you to provide expensive gear

If the position required specialty gear (waders, GPS, binoculars, etc.) the employer should be providing them to you. A lot of this gear is extremely expensive and not something that you should be required to buy. Don’t be afraid to ask for this gear to be provide or for the cost to be covered by your employer

Requiring you to provide a field vehicle

Field vehicles take on a huge amount of wear and tear beyond that of regular vehicles. We’re talking dents, scrapes, smashed mirrors, broken lights, broken off bumpers, the works! If a vehicle is needed for the job itself, your employer should be providing it and paying for the gas and maintenance.

Requiring you to provide housing

Less of a full on red flag and more of something to hesitate at. If this is a temporary position it will be extremely hard for you to find a rental or adequate housing on a short-term basis. Most landlords will not allow less than a year long lease, and those that do are often very low quality or problematic. If you are being asked to move to an area for a job, look for positions that provide housing. In some cases, field positions are based entirely in the field and the crew will be living in something such as a tent or trailer in remote areas. But if you are expected to find your own place to live, it can be very difficult to find as well as costly.

No returning technicians, ever

This can be really hard to figure out, but it is a good indicator that this is not a good job. If no one is returning for another field season (especially as crew leads) when they are given the chance, there is definitely a reason!

Your main boss/supervisor has never done what you’re being asked to do

They should be willing or able to do what they are asking of you, for both training and ethical reasons. If they are not willing to do the kind of work that you are doing, even during training, they either lack the skills themselves (potentially putting you in danger by sending you into the field untrained), they see the activity (and therefore you) as beneath them, or they know the activity is not something they should be asking you to do under your job title and responsibilities.

What if I can’t find this information?

Be wary

Any job that avoids providing all the information you need to know if it is a good fit for you is one that you should potentially avoid. Things like pay (even a range) and start date should be readily available with the job posting.

Reach out

It is okay to email the contact and ask if they can provide a pay range or general start date if it is not listed in the posting. The contact should be able and willing to provide this information to you or know where it can be found.

How to quit your job

Don’t make it personal. Don’t burn bridges. Stay broad. Do it in person. Send a follow up email saying “I officially resign on X date”. Short and sweet.

Always have an emergency fund

You never know what is going to happen, especially in this field. Start putting a portion of your paychecks, even a small portion, into an account that is only used for emergencies. This can cover things such as paying for car issues, unexpected times without a job, or family emergencies.

You can turn down a position

Sometimes a job is just not a good fit. It might be the timing, the atmosphere, or even just personal preference. No matter what, just because you are offered a job you are not required to accept. Employers understand that they are trying to win the candidates over just as much as you are trying to win them over. Telling an employer “no” in a professional manner is not a bad thing.

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Applying for Jobs

Cover letters and resumes

Gear your resume and cover letter towards each position

Look at the specific requirements and descriptions of each job that you are applying to and use the same layout within your application. Do not use the same resume and cover letter for every application that you do. Supervisors are wading through a sea of applications and the easier you can make it on them to identify if you are a good candidate for the job, the more likely you are to get in interview.

What biologists look for when hiring

https://www.cactusquollcreations.com/askabiologist/0hka5xzz69f00tbhjndq3z7hu8ct9b

DO
Have multiple reviews of your resume/CV

Gaining feedback on your resume or CV from multiple points of view will help you to understand the varying perspectives. For example, if you are applying for a state job, have a state employee review your resume.

DON'T
Use the same Cover Letter

Each cover letter sent should be tailored to the job description supplied by the employer. Take the time to highlight how your experience matches the experience they are looking for and what you personally can bring to that position. Use language in the job description in your cover letter.

DO
Apply early

Allows you to spend time on organizing required documents and personalizing your application to each position. Demonstrates drive and motivation. Allows for any issues that arise in the application process to be addressed.

DON'T
Restrict your resume to one page

Unless specifically asked for, do not limit your resume or CV to one page. If a skill is important to the application, make sure it is listed, do not sell yourself short.

DO
Proofread, proofread, proofread!

Your application materials are your first impression, and first impressions are everything. Grammatical, spelling, and format errors can lead to a quick dismissal of your application packet. Have someone who's never seen your materials, read them. A fresh eye catches many errors!

DON'T
Address letter "To Whom it may Concern"

Always do your due diligence on who you are sending the application to. If you are provided a name to submit your materials to, take time to learn who they are, what their prefix and pronouns may be. Do not make assumptions.

DO
Write Succinctly

Although you shouldn't limit yourself to a page, you should write succinctly. Use bullet points where they make sense, and keep resume/CV skills to the point. A resume/CV or cover letter that is too long is just as unappealing as one that is too short.

DON'T
Repeatedly contact the hiring manager

If you haven't heard back from the hiring manager after a couple of weeks, it is okay to send them an email stating you are checking they received your materials. However, do not contact them repeatedly. One check in is acceptable, multiples are not.

Source: Midwest Fish and Wildlife Conference

Dealing with Rejection

Rejection is hard and it happens to everyone. It can be discouraging to see others getting positions while you are still struggling to find one. Remember that a rejection or lack of reply altogether usually has nothing to do with you at all. Perhaps they already had a candidate in mind or another candidate was a better fit because of something entirely out of your control. Implicit bias is another factor in this kind of situation. This field can be tough and most go for stretches without a job in the field. Based on my recent survey, biologists average around 6 months between positions. Remind yourself of the reasons that you are in this field and consider opening up your search to include jobs and locations you may not have considered yet.

You can also take the opportunity to call or email the interviewer for feedback on your resume, cover letter, and/or interview. This could drastically improve your chances on the next job. Take their advice and make the necessary changes to your future applications.

Examples and Guides

Example cover letter 1
https://career.colostate.edu/wp-content/uploads/2018/06/FWCB-Cover-Letter-Example.pdf

Example cover letter 2
https://resources.environment.yale.edu/content/documents/00011161/Sample-Monitoring-and-Biodiversity-Manager-Cover-Letter.pdf?1537889831

Oregon State cover letter guide
https://fw.oregonstate.edu/sites/agscid7/files/fw/WRITINGEFFECTIVEFWCOVERLETTERS.pdf

UMass cover letter guide
https://eco.umass.edu/wp-content/uploads/2011/05/CoverLetterTipsandExamples.pdf

Oregon State resume guide
https://fw.oregonstate.edu/sites/agscid7/files/fw/writing_effective_resumes.pdf

UMass resume guide
https://www.umass.edu/rso/wildlife/resume.pdf

Example resume
https://career.colostate.edu/wp-content/uploads/2018/06/FWCB-Resume-Example.pdf

Do your research

Look into the background of the agency/school/tribe etc. that you are applying to. A way to stand out from other applicants is to show that you have spent time and effort and truly know things about the place that you are applying to.

Mirror their language

Read the goals and missions statements on the websites. Look at the job posting itself. Use the same language that they use when writing your cover letter and listing out your experience in your resume. HR departments often see the applications before the Biology department and may use computer systems to filter through applications. If you have keywords and phrases matching those of the company and job posting, you are more likely to get through and be noticed.

Practice practice practice

The best way that you can prepare for an interview is through practice. A great way to do this is with mock interviews. Ask a friend or family member if they will play the part of the interviewer and practice answering the questions they ask. Record yourself and watch it back to see what you could improve. By the time you get to the interview, you want the questions rolling off your tongue.

Be on time

Always plan to be at the interview early in case anything goes wrong along the way. You might have trouble with traffic, navigation, internet connections, or anything else.

Be honest

It's okay if you don't have the answer to every question. Admit when you don't know something in a professional way. If you are lacking experience somewhere or missing a certification/ qualification let the interviewer know. Be ready to explain how you will overcome this.

Write down your questions

It's very professional to bring a pen and paper to take notes with while doing an interview. You can prepare your questions for the interviewer ahead of time and write down their responses to refer to later. It shows that you thought ahead and care about the position.

Job Interviews

What might be asked by the interviewer

What is your experience so far?

They are trying to get a feel for what you have done and if you have enough experience to do well in this position. Don't feel bad if you don't have everything they listed on the job posting. They are describing their ideal candidate and you might still be the person that comes the closest to that.

Tell us about a time you dealt with a problem/challenge.

You are always going to deal with problems and issues in the workplace. They want to know that you can face these issues head on and deal with them in a professional manner. Be able to describe an experience and the way that you solved it.

What do you like to do outside of work?

They want to know that you are a full and rounded person with passions and interests. It's an extra bonus if you can relate these back to the job, such as hiking or camping but you don't have to. This is sort of a filler question to know that you are the kind of person that would fit well in their work place.

Tell us about a time you improved a system at work.

This can be hard to come up with on the spot but shows how you can add to the project. One example is color coding field routes by general area. Think of something that applies to the particular project you are interviewing for.

Why are you interested in this position/company?

They want to get a feel for how much you actually know about the position and company/agency etc. itself and that you are actually interested in it. Anyone can say that they are passionate or excited about the opportunity, but if you do your background research and bring concrete reasons and examples that relate back to the posting and company itself, you will stand out and stick in their minds when they are deciding who to hire.

What is your experience managing/supervising others?

Whether you get this question depends on the position itself. If you do not have employee management experience, describe times you have managed a group in volunteer positions or group projects. You can also describe the qualities you have that you feel would make you a good leader.

What are your strengths and weaknesses?

Be ready to list out things you are good at that go well with the position. Such as navigational skills or being organized or optimistic. When you list a weakness, find a way to show that you are working to improve it. Don't dodge this part of the question. We all have weaknesses.

What is your current salary/what have you been paid in previous positions?

If you are asked this question, do not answer it. They are trying to figure out how little they can get away with paying you. Inform them that salary/pay can be negotiated after you are offered the position. It's pretty unlikely you will get this in regards to a technician position, but it never hurts to be ready for it just in case.

Is there anything else you'd like us to know/you would like to ask us?

It's always good to have something ready for this part of the interview. It shows that you have thought about the job and care enough to have prepared for the interview. This can be a simple question or more in depth. See the next page for possible questions.

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What to wear

For the field of biology, this usually means business casual (ex: nice jeans/kakis and a button down shirt or polo), but it can depend on the employer. You should be wearing clothes that show you know this is an important event. It can help to ask others who have interviewed with this employer what was expected to be worn.

What to bring with you

You should bring copies of your resume, a notebook, and a writing utensil with you to the interview (or have them on hand for a virtual interview). You can ask them ahead of time if there is anything in particular that you need to bring with you.

Take a moment to collect your thoughts

You are not expected to blurt out an answer the moment a question is asked of you. It's alright to consider the question and your answer for a moment before answering. If you are uncomfortable doing this in silence, one tactic is to take a drink of water to give yourself time to think. You can even say out loud "let me think about that for just a moment".

Keep answers concise and focused

This is where your practice will come into play. Be sure that your answers are targeted and that you don't go off on a tangent. If you find yourself doing so, pause and refocus

Note:

ALWAYS ask questions during an interview! It shows the employer that you are motivated and informed about this field and position.

Job Interviews

What you should ask the potential employer

What are the start and end dates?

These are good to know ahead of time and often have some level of flexibility. You can use this to find out if this job can be extended beyond the original timeline or if it is limited to a single season. This also allows you to negotiate a bit to make this position fit with the start and end dates of other positions. Feel free to let them know at this point if you need flexibility due to another position. Most employers are willing to work with you on some level with this.

Do you often have returning technicians?

This enables you to gauge a lot about the way this employers treats their technicians and lets you know if you can potentially return to this position in the future. If technicians are able to return to this position but do not choose to do so, be wary of this job. There is often a very good reason for this.

What are the hours for this job?

If they cannot answer this question clearly and with defined hours for most of the season, that is a problem. This means that they will likely expect you to work irregular and extended hours, often without overtime pay. Be sure that this job provides breaks and regular weekends.

What is a typical day like?

This question will provide you with a lot of information about what they job actually entails. A lot of jobs postings will list tasks that are not a large part of the position to entice applicants or provide little information about the actual duties. This will help to clarify what you would actually be doing in this position.

What training is provided?

This is a good question to ask to gauge whether you will receive adequate training for skills you may not yet possess or if you will be expected to arrive with those skills ready to go. This can also tell you if the employer will be providing training beyond the basics that are often paid for by the employer and look great on your resume for future jobs. It also shows the employer that you are eager to expand you own skills within the field.

Can you get packages/mail shipped to the house or is there access to a post office?

A lot of technician jobs are in remote locations that UPS/FedEx/USPS might not deliver to. This is good to know for personal mail and even supplies if there is not a shop nearby.

What is the housing like?

How many people will be in the house? Are pets allowed? Will you have your own room? Is there a yard? Is there internet access? Can you set up a shooting range/archery range in the yard? Are there areas to run/workout? These things can all greatly effect your quality of life and ability to take a job. You will often live with other technicians and can survive in tight housing as long as you have a way to escape.

What safety protocols do you have in place for your

A responsible employer will be impressed by a safety conscious attitude and will be able to give you detailed protocols (Satellite phones, adequate training, ensuring equipment is up to date and in good shape, etc.). It is the responsibility of your supervisor to ensure that you are safe and well-cared for during your time as an employee. Fieldwork can be dangerous if proper safety protocols are not in place and you want to avoid any employers who neglect or belittle this.

What is your vision of success in this role/What do you wish to see accomplished?

Whether you get this question depends on the position itself. If you do not have employee management experience, describe times you have managed a group in volunteer positions or group projects. You can also describe the qualities you have that you feel would make you a good leader.

What do you see as the biggest challenge for this role?

This will give you an idea of what will be difficult about the position or what was difficult for past employees. It also lets the employer know that you are aware all jobs have their challenges.

Do you have any concerns about my qualifications?

This will give you an opportunity to address those concerns and share how you would overcome them.

Can you describe your ideal candidate for this job?

This helps you see if I'd be a good fit, and also an opportunity to address anything they're looking for specifically that you haven't mentioned.

Are there opportunities to interact and be involved with

This may seem like an odd question to ask, but if you are in a small community like we often are everyone is going to know the new strangers in town. Some of your best tour guides are those that have lived in the area for decades. Never underestimate the power of a smile, handshake, and willingness to work alongside members of the public. The success or failure of your project could depend on a good relationship with the local community and it's up to you to foster that further during your time as a tech. Beyond work, having connections in the community can make your time working there something that you look back on with happiness.

How to explain leaving a toxic environment

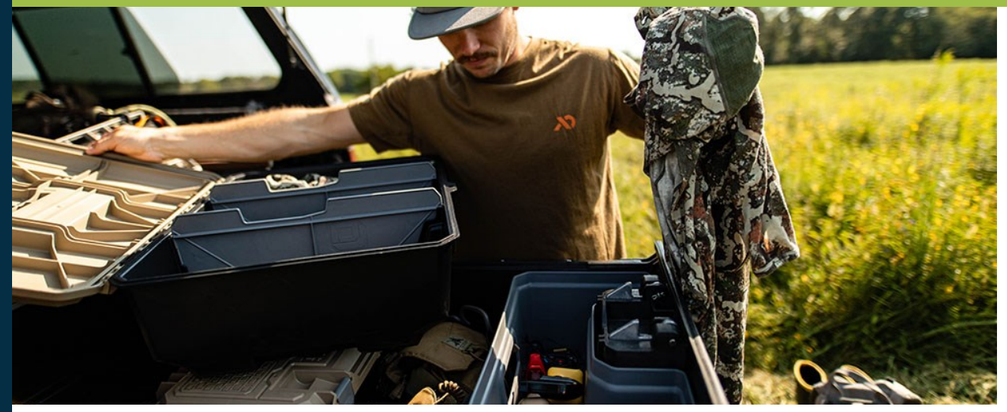
Don't go into nitty gritty toxic details. Be general. I was excited about the opportunity. It turned out to be a different set of responsibilities than I expected. It wasn't a good fit for what I was looking for and I'm excited for the opportunity of this position. Always keep the focus on the future potential position and not the past.

Pro Deals

Reduced prices on outdoor brands for professionals. These can usually be obtained with your official email address.
https://www.expertvoice.com/pro-deals/

https://outdoorprolink.com/

Some brands that offer these:
Columbia, Chaco, Lowa boots, Leatherman, First Lite, Arc'teryx, Osprey, Mountain Hardware, Kokopelli, Black Diamond, Kelty, REI, Outdoor Research, Carhartt



Field Gear

The basics needed for most jobs in the field of wildlife

A good pair of boots/shoes

Make sure your boots fit and are broken in before your first day. You should consider water-proofing since wet feet can spell doom for your feet and happiness. Ankle support is a good idea.
Good brands: Columbia, Salomon, Merrel, Lowa, Zamberlan, Scarpa, La Sportiva

Sturdy work pants

Work pants are going to take the brunt of the hard work that you do. They need to be able to protect your legs and last through tough conditions. It's important to find a brand that works for you. Here is a list of a variety of work pants from petite to plus size:
https://drive.google.com/file/d/1Fsg1lRBkupq_0N9AnUc5As9H_Jx6T9fc/view?usp=sharing

Sun protection

Hats, sunscreen, UV resistant shirts, long sleeves. Biologists spend a decent amount of time outside and need to protect themselves from sunburn and long term damage.

Wool socks

You don't want to be hiking in cotton socks, ever. Even in hot weather, wool will keep your feet much happier. They are worth the price. Good brands: Darn Tough, Smartwool, REI Co-op, Feetures, Farm to Feet

Rain gear

Good rain pants and jacket are completely worth it when you get caught in a storm!

Compass

Though this and a GPS are often provided by your employer, it is always good to have your own as a fallback if you get lost and your GPS dies.

Gloves

Both work gloves to protect your hands and gloves to keep your hands warm. The temperature can fall unexpectedly, even in warm places.

Hand/toe warmers

As with carrying gloves, this can be extremely important if the weather unexpectedly turns. Easy to carry and use when needed. They come in re-usable option.

Menstruation supplies

For those who get periods. Disposable products can be difficult to store and pack out when in remote locations. Re-usable products such as menstrual cups, re-usable pads, and period underwear (Thinx) can make all the difference. Figure out beforehand what works best for you.

Water bottles/Water bladder

Hydration is one of the most important aspects of fieldwork. Whether you are working in hot or cold weather, dehydration is an ever-looming threat. Find a method of carrying and drinking water that works the best for you personally. Make sure it is easily accessible and large enough for the type of work you are performing. Good Brands: Nalgene, Camelbak

Decent knife

Doesn't need to be fancy but it should be functional and durable. A multi-tool is incredibly useful.

Bandana

These are cheap, easy to find and have a variety of uses from sun protection, wiping sweat, holding back hair, or even marking a trail.

Whistle

This can be used to note your location in an emergency, especially if you are injured.

Bug protection

Being outside throughout the year means being exposed to a lot of bugs. This includes ticks, mosquitoes and biting flies that can all carry diseases and leave you with painful or itchy bites. Protection is available for both your clothes and skin and now comes in environmentally friendly forms.

Storage totes

These make it so much easier to move between tech jobs and keep your things organized in housing.

Headlamp

Even if your fieldwork is being done during the day, you never know when you'll end up being out late. Even a sunny day can turn dark and you may need to light something up while keeping your hands free. Get a headlamp with red and white options as well as a swivel. The red light allows you to see what you're doing without losing your night vision and the swivel will allow you to see your path/hands without blinding others.

First aid kit

Though an extensive kit should be available through your employer, it is always good to have a personal kit that contains at least the basics. Always keep one on you because you never know what could happen!

Watch

You will need to keep an eye on the time without running down your phone battery.

OMG Gear
https://omcgear.com/

Outdoor Play
https://www.outdoorplay.com/

Gear.com
https://gear.com/

Campsaver
https://www.campsaver.com/

Back Country
https://www.backcountry.com/

Steep and Cheap
https://www.steepandcheap.com/

Moosejaw
https://www.moosejaw.com/

Evo
https://www.evo.com/

Outdoor Gear Exchange
https://www.gearx.com/

Eastern Mountain Sports
https://www.ems.com/

Backcountry Gear
https://www.backcountrygear.com/

The Clymb
https://www.theclymb.com/

Feedback on graduate and undergrad programs from biologists

https://www.cactusquollcreations.com/askabiologist/do-you-recommend-your-bsmsphd-programs

DO'S and DON'TS *of* Applying to Graduate School

DO
Research graduate programs/advisors

Many programs require a student to have secured a faculty member before admittance. Research graduate programs of interest and identify potential advisors matching your research interests. Visit the school and determine if funding is available.

DON'T
Mass apply to graduate programs

Learn key details of a program, such as faculty research interests and specific courses offered, before you apply. Send professional emails to potential advisors stating your interest in their research and program, carefully proofread.

DO
Apply early

Allows you to spend time on organizing required documents and complete Graduate Record Examination (GRE) testing. Demonstrates drive and motivation. Allows for any issues that arise in the application process to be addressed.

DON'T
Fail to communicate clearly

Applications that are unclear, disorganized or contain spelling or grammatical mistakes convey applicants' inability to clearly communicate their thoughts.

DO
Carefully consider letters of recommendation

Establish a relationship with your professors and professionals in your field (e.g. visit office hours, have good class attendance, be engaged, volunteer, internships). Ask people who know you and your work well so they can write something meaningful and personalized.

DON'T
Procrastinate requests

Give at least 4 weeks notice since asking early allows the person writing the letter plenty of time before the application deadline. Keep in touch and follow up to remind them of the deadline and make sure it is completed.

DO
Put effort into a personal statement/cover letter

Your personal statement is an important part of your application. It allows you to showcase who you are and why you should be accepted into the program. Start your personal statement early and have family and friends proofread it.

DON'T
Assume one qualification will get you accepted/rejected

Admissions is holistic. Specific fields of study may focus more on one area over the other but graduate programs usually don't solely look at a test score, GPA, or exceptional experience.

North Central Section
The Wildlife Society
wildlife.org/ncs/

North Central Division
American Fisheries Society
https://ncd.fisheries.org/

Graduate School

Things to consider

Path to Graduate School

TIPS
- Determine type of job you want to pursue
- Take GRE test/improve scores if needed
- Secure advisor and funding
- Get admitted to graduate program

MASTER'S

NON-THESIS
- Opportunity to work more closely and frequently with professionals in the field
- Can take less time to complete
- Often mirrors a bachelor's program in terms of structure
- Some programs offer online options

THESIS
- Research focused
- Completing a thesis shows prospective schools and employers that you possess the skills needed for researching and writing long-form reports
- Possibility of publication
- Helpful for those pursuing PhD

PhD
- Research focused
- Involves devoting several years to intense research on a single research area
- Often required coursework is minimal to allow for a self-designed plan of study tailored to support the research project
- Expectation of publishing

Consider jobs in federal, state, local and private organizations

CAREER

PhD	Research Scientist Professor Biologist
Master's	Biologist Fisheries/Wildlife Specialist Conservation Officer Urban Conservationist Natural Resource Specialist
Bachelor's	Fisheries/Wildlife Technician Fisheries/Wildlife Laborer Creel Clerks

Thesis or Non-thesis?

It is almost not worth it within the wildlife field to do a non-thesis Master's program. While it can be useful, the main goal of a Master's program is not the classes at all, but instead gaining the experience to run your own project, do advanced science, and present it at a professional level.

Graduate School

Things to consider

Career goals

What do you ultimately hope to achieve with your career? Deciding this can help you determine if you should consider getting a Master's, a PhD, or both. Obtaining a Master's degree allows you to qualify for a large number of full time biologist jobs that you would otherwise not be considered for. These positions often focus on management of biological resources. Those who obtain a PhD after this are often looking to go into the academic or research focused sectors of biology. While it is possible to get a permanent biologist position without a Master's, it can take a lot more time.

Higher pay

Those with higher degrees are consistently paid more by their employers and are more competitive for full time positions. Those with Bachelor's average around $10k/year less in pay than those with a Master's or higher.

Advisor

The professor that you choose as your advisor can define your entire career and ensure your success or failure in graduate school. This is what you should base a large amount of your decision on when choosing a project. You need to ensure before accepting a position that you are a good fit with your advisor and that they can offer the type of support that you need. Question them about their advising style (Hands-on? Hands off?). Ask to speak to current and previous graduate students and students of other advisors to get an idea of the school in general. Find out how many of their students graduate and how many go on to publish their research. Talk to others about their reputation and relationships with biologists across the field. This part of your decision is not to be made lightly.

School/Location

Though many people are often drawn to specific schools based on their location or notoriety, these are not the most important factors. Graduate school flies past and while it can be fun to live in a place with lots of things to do, you won't end up having as much time to do those things as you think. Schools that have a strong undergraduate program do not always have a strong graduate program, and vice-versa.

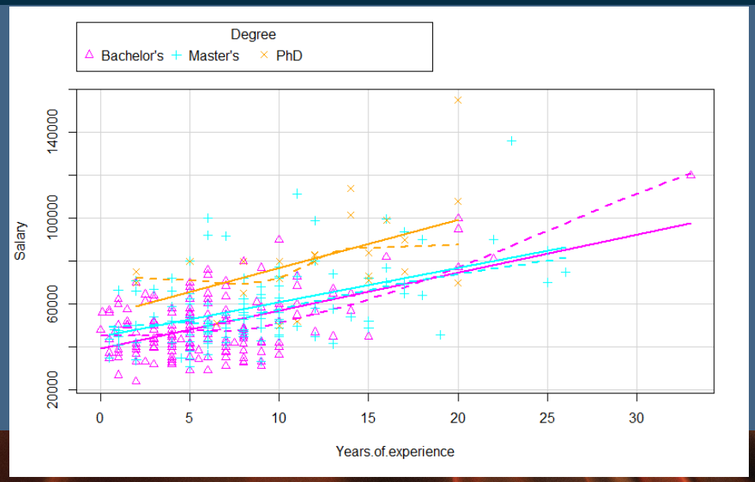
Project/Study species

Many early career biologist start out with a goal of studying "big name species" such as wolves, bears, and ocelots. Positions with animals such as these are extremely competitive and hard to obtain. Rarer species and predators tend to be hard to study due to their lower numbers and numerous legal restrictions. Consider species outside of those that you first gravitate towards. Graduate projects are less about the species and more about gaining the ability to complete a complex project and analyze data. Many students end up finding a passion in their graduate school projects that they never would have imagined with a species or subject they had not considered at first.

Take a break after undergrad

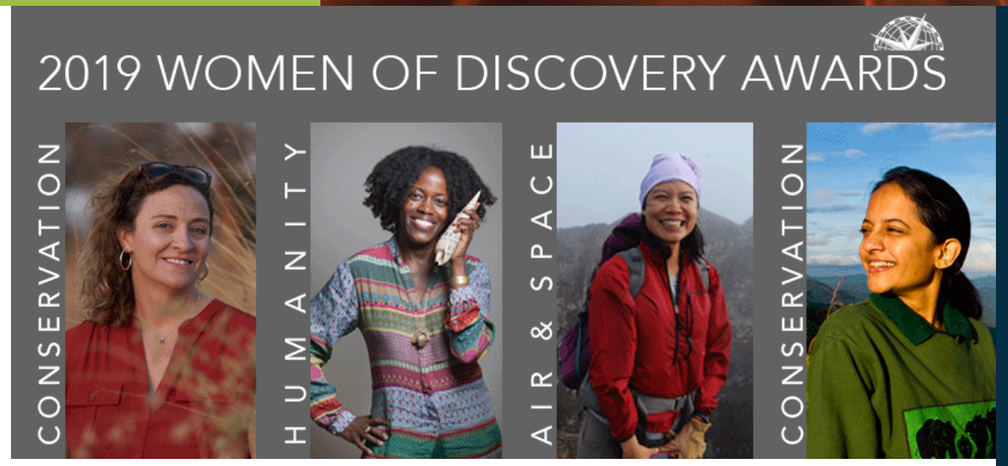
It can be extremely beneficial to take time between undergraduate and graduate school. This gives you time to gain important experience, is often a time in your life that you are able to travel and take on jobs you may not be able to later, helps you to determine your interests/career goals, and will give you a mental break before the hardships of graduate school. It also gives you flexibility and time to identifying and

USA Salary Stats by Degree (2021)



Extra steps

How can I stand out?



Join professional organizations

A large number of professional organizations exist for focuses of all kinds. The main one for the wildlife field is The Wildlife Society, but there are many others. These organizations often offer a discount for students or early career professionals. Most hold yearly meetings that are important for networking and project planning with other biologists. These meetings are also great places to learn about potential jobs and projects.

https://wildlife.org/

https://www.esa.org/

American Society of Mammalogists

https://www.mammalsociety.org/

SSAR

https://ssarherps.org/

AOS AMERICAN ORNITHOLOGICAL SOCIETY

https://americanornithology.org/

Try not to burn bridges

The field of biology is extremely small and becomes even smaller as you specialize. You never know who is going to be connected to who and which people will later have influences on your career. Be careful to build a good reputation not just as a scientist, but also as a person. Take the time to patch up disagreements and clarify misunderstandings. This is not to say that you should not feel free to be yourself, but do so in a genuine and kind way that shows everyone around you how incredible we can all be as biologists.

Use social media

This is a truly powerful tool for connecting with and staying in contact with other scientists. Be aware of the messages that you are putting out to the world on social media and the way that you are presenting yourself. Though it should not matter and is questionable to do, some employers look at the social media accounts of potential employees. Use social media to your advantage and be careful of the ways that it could harm your career. Instagram, Twitter and Tiktok are full of amazing biologists using the apps for outreach. education, and networking.

Volunteer for a day/weekend

Go into a graduate student office and ask if anyone needs or wants some help with lab and/or fieldwork! This is a great way to get experience, is a free networking opportunity, and can lead to amazing professional opportunities (like publications, presentations, career positions, or even grad positions) down the road. Grad students ALWAYS need help and are often happy to teach.

Shadow a local Biologist

Look up your local agencies and reach out to the biologists they have on staff. Biologists are passionate about their work and are happy to share it with others. Phone calls can often be more effective than emails for this kind of thing.

Keep in contact

The relationships that you make early in your career are extremely valuable and you should foster them as you go. Those that you work with at the technician and graduate level will soon be your colleagues and partners as you become established. Social media can be a valuable force to maintain those connections. Be sure though to never underestimate the power of a text, email, or phone call. Show those that you have met, worked with, and befriended that you value their involvement in your career and your life.

Join student wildlife clubs

These often offer a wide variety of opportunities

- Networking with students, professors, and other professionals
- Internship and technician opportunities
- Volunteer opportunities
- Friendships with other biologists
- Leadership opportunities
- Practice sessions for professional talks
- Competition teams

How to find them

- Ask other students or your professors
- Search your school's website

Find your local TWS student chapter

https://wildlife.org/membership/student-chapters/

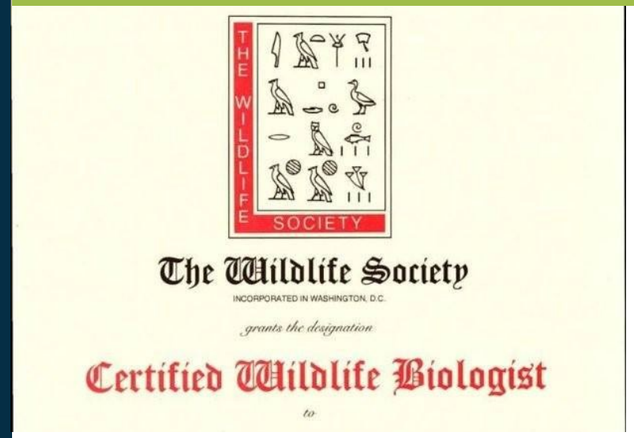
Certifications

Types and descriptions

Worth it?

It seems to be more worth spending the time and money to obtain this kind of certification if you do not yet have a higher degree and are attempting to get full time biologist positions.

Speak to others who have gotten their certification before pursuing your own as it can be costly and time consuming.



The Wildlife Society

https://wildlife.org/learn/professional-development-certification/certification-programs/

Associate Wildlife Biologist

An individual who has completed rigorous academic standards and is judged able to represent the profession as an ethical practitioner will be designated as an Associate Wildlife Biologist®. The AWB® certification is granted for 10 years and cannot be renewed. An AWB® certified individual can upgrade to Certified Wildlife Biologist® during the 10 year time period once the necessary experience requirements are obtained.

Certified Wildlife Biologist

An individual with the educational background and demonstrated expertise in the art and science of applying the principles of ecology to the conservation and management of wildlife and its habitats, and is judged able to represent the profession as an ethical practitioner, will be designated as a Certified Wildlife Biologist®. The CWB® certification is valid for 5 years and may be renewed.

Ecological Society of America

https://www.esa.org/certification/

Certification through the Ecological Society of America is a way for ecologists, at all levels of education and training, to add a credential to their resume, demonstrate their expertise, and exhibit their skill level to potential employers, clients or colleagues. The goals of the certification program are to:

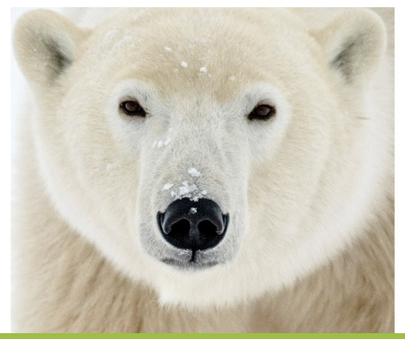
Establish and validate the credentials for certified ecologists.

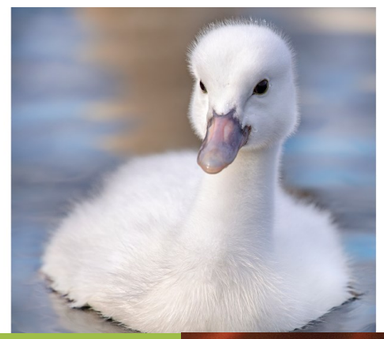
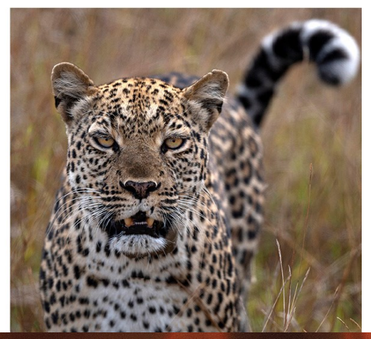
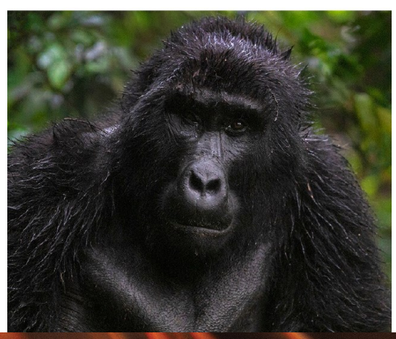
Recognize individuals whose education, training, and experience meet ESA's certification standards.

Attest that certified ecologists have met minimum education and experience requirements for their certification levels; further attest that each certified ecologist acknowledges adherence to the ESA Code of Ethics.

Foster the incorporation of ecological principles in the decision-making processes for consultancies, environmental and national resource agencies, applied research labs, government agencies and NGOs, foundations, and other organizations requiring the expertise of certified ecologists.

Provide public access to a directory of professional ecologists for advice and technical guidance on public policy and regulatory issues facing society.



Be patient.
Shelby Carter

Don’t assume you have all the answers.
Jamie Dunne

Be flexible. Things rarely work out as planned.
Kate

Be able to talk/write to ALL audiences.”
Caroline Ward Olsen

Be open minded towards different perspectives.
Alexandra Lombard

Fixing/modifying gear with less than stellar tools saves fieldwork.
Alex Loubere

Be organized with notes. Don’t try to remember things off the top of your head.
Jena Lauren

Be flexible because nature has a way of throwing a monkey wrench in your plans
Francisco Anaya

Have an open mind. You never know where your results or life will have you ending up. Enjoy the journey
Anonymous

Challenges

Honest thoughts about hard stuff

Low Pay

It is widely known and discussed that those within the field of Biology rarely receive what could be considered a large salary. The average base pay for a Wildlife Biologist normally falls around $50k/year. Even very experienced biologists often only make about $65k/year.

Long hours

Though we are all working to make changes for better working conditions, it is a long road until we fully succeed. Many biologists are required to work many hours beyond a regular 40 hour work week without overtime pay. During field seasons, this can become even more of a need and hours may fall outside of the regular schedule.

Limited jobs

As the field becomes more and more popular, the number of jobs continues to decrease. The available jobs have become extremely competitive in recent years, requiring more experience and a longer amount of time before most biologists can establish a long term job. In addition, for any biologists personally tied to another biologist, it can be next to impossible for both the be employed within the same area.

Moving, a lot

Because of the limited number of jobs and nature of the field, biologists often have to move around the country numerous times before securing a full time job and any time they want to change positions. This makes establishment of a personal life or deep roots within an area difficult for many.

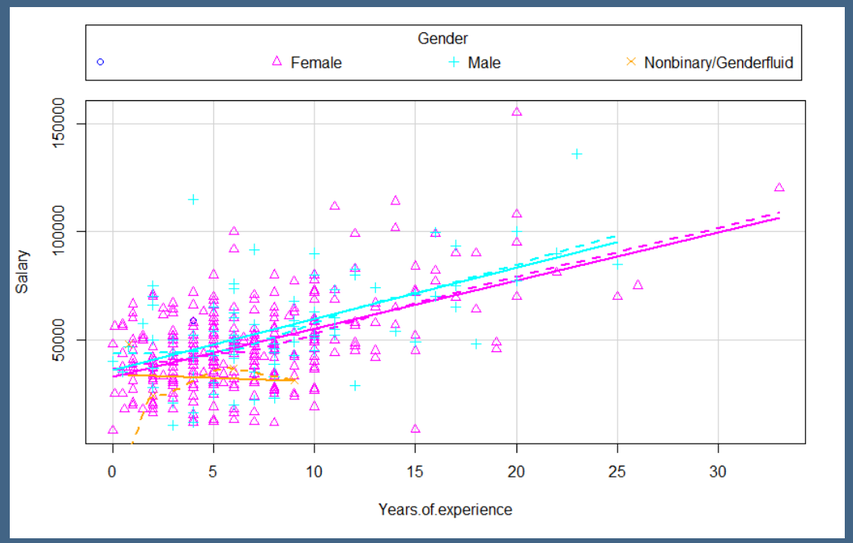
Working/Living in remote locations

A lot of work in the field of biology is done in extremely remote locations. This leads to a large amount of travel, whether it is monthly, weekly, or on a daily basis. Many biologists live outside of urban settings or travel long ways to get to work. This can be tough on personal lives and, for some, mental or physical health.

Always being on the job

Because of your involvement with the public, you will often interact with members of the public that recognize you outside of your job. You have to remember that your behavior reflects on your employer, even if you’re not on the clock. Some may even reach out to with questions or concerns outside of work hours with an expectation that you can help. It can be a tough balance to strike and a hard way to live.

USA Biologist Salary Stats by Gender



Balance science and advocacy.
Melanie Willard

Listen to the needs of landowners when working on private lands.
Rachel Smith

Be able to take results from fun field work and give it meaning
Mandy Bailey

Learn to value your mental health.
Amanda Veals

Have patience, compassion, and humility.
Aiden Branney

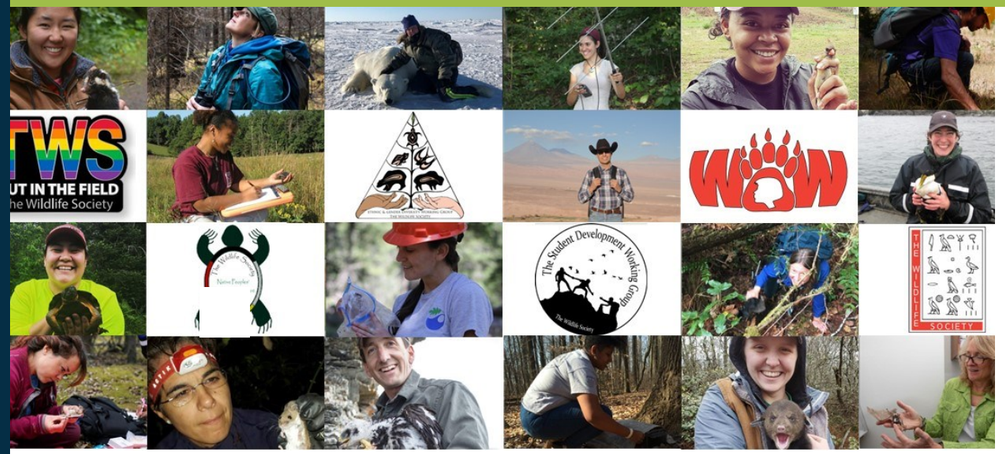
No two days are the same.
Ashley Pryor

Be able to expect the unexpected and be ready to adapt when it doesn’t go your way.”
Adam Cook

CACTUS QUOLL CREATIONS

Tattoos

While some career paths might be limited by body art, the field of Biology has come a long way in recent years. Many Biologists have tattoos and few jobs are limited by them. Despite this, it is still good to be aware that some people in the field still hold biases. If you have visible tattoos or are planning to get some, it can be important to ensure the particular employer or exact career path you are looking to take won't be affected by this decision.



Inclusion & Diversity

Addressing these important issues in the field of wildlife

Safe fieldwork strategies for at-risk individuals

https://drive.google.com/file/d/1qwjzYQEr4A_s3TINlWroGM8ZgN72GBb7/view?usp=sharing

TWS Out in the Field

https://wildlife.org/oitf/

The OiTF Initiative was started in 2019 to make LGBTQIA+ TWS members more visible so that we can support and mentor each other, and work with our allies to foster a more inclusive, welcoming culture where diversity of all kinds is clearly embraced. OiTF has three simple goals: (1) to increase visibility of LGBTQIA+ wildlifers in TWS, (2) to build a community of LGBTQIA+ wildlifers, and (3) to identify ways to support LGBTQIA+ wildlifers, including students, in the wildlife profession. OiTF is housed within the Inclusion, Diversity, Equity and Awareness Working Group.

TWS Inclusion, Diversity, Equity and Awareness Working Group

https://wildlife.org/ideawg/

This Working Group shall have as its scope of organization the study and transfer of information relative to the recruitment, retention, and career-long mentoring of wildlife scientists and managers from ethnic, gender, and socioeconomic backgrounds previously underrepresented in natural science professions. Through its activities, the Working Group will strive to increase awareness of the importance of diversity among members of the Society and the profession at large.

Black AF in Stem

https://www.blackafinstem.com/

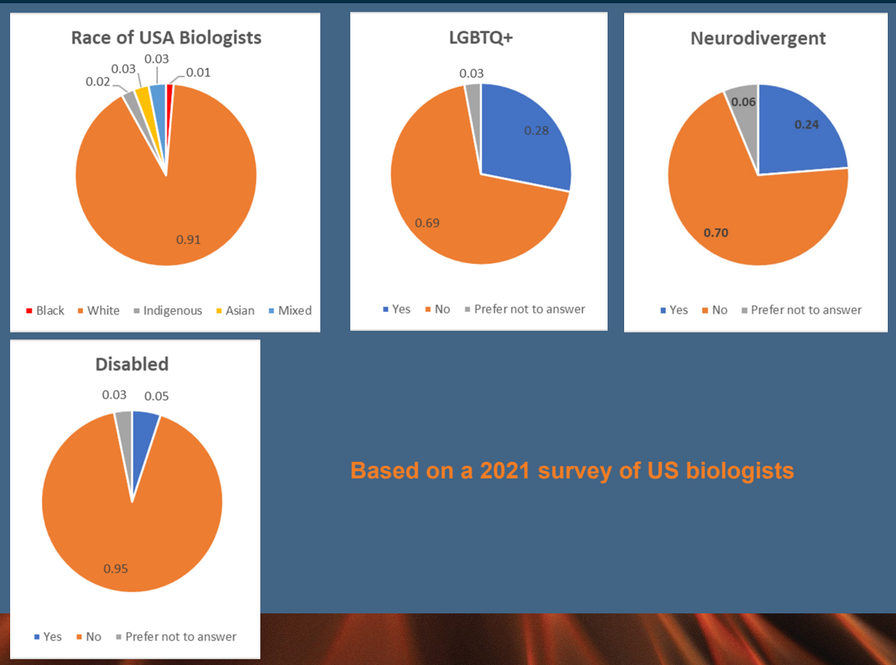
The BlackAFinSTEM Collective seeks to support, uplift, and amplify Black STEM professionals in natural resources and the environment through professional development, career connection, and community engagement. We aim to inspire new audiences to engage in nature and share the stories of Black conservationists from across the country.

Native American Fish & Wildlife Society

https://www.nafws.org/

The Native American Fish & Wildlife Society (NAFWS) is a national tribal organization established informally during the early 1980's. NAFWS was incorporated in 1983 to develop a national communications network for the exchange of information and management techniques related to self-determined tribal fish and wildlife management.

What does the field actually look like?



Based on a 2021 survey of US biologists

CACTUS QUOLL CREATIONS

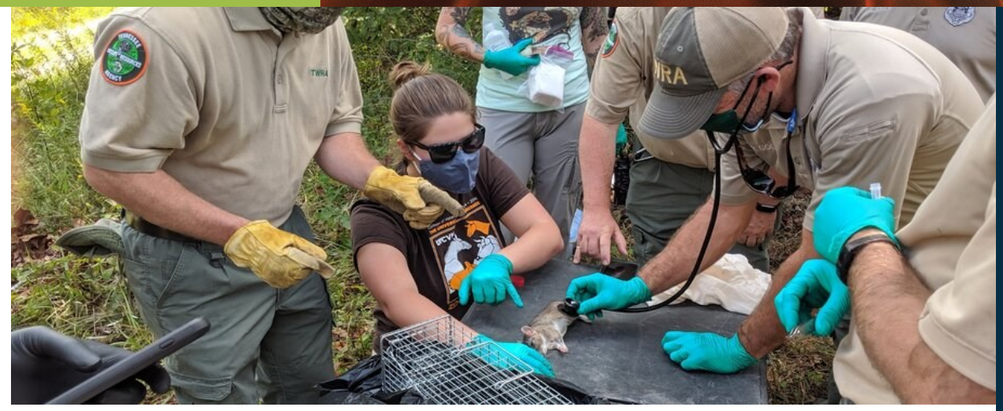
Suggest an edit or addition to this guide

This guide is ever growing and changing, as the field grows and changes. If you would like to suggest an edit or addition to this guide, please feel free to contact me through the information found on the first page.

I hope that this guide helped you in some way. Please share it far and wide so that it can continue to help others make their way into the field.

Contributors

The biologists who made this guide possible



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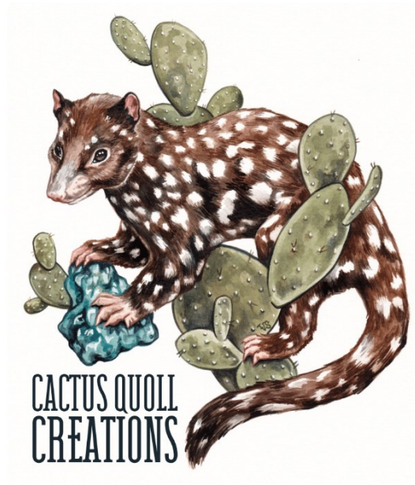
Have more questions?

Take part in Ask a Biologist Monday on my Instagram page. All past questions and answers can be found here:

https://www.cactusquollcreations.com/askabiologist



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