



## Associate Wildlife Biologist & Certified Wildlife Biologist Certification Programs through TWS

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## NOT related to CAB of BC

- In November 2018, the BC Government passed new legislation that will require mandatory registration with a self-regulating professional organization if individuals plan to take responsibility for applied biology work in the natural resources sector.
- In BC, the College of Applied Biology is the legislated self-regulating professional organization that is mandated to oversee the profession of applied biology.
- As early as 2020, biologists and biology technologists will be required to register as a Registered Professional Biologist (RPBio) or a Registered Biology Technologist (RBTech).
- If you plan to work as a biologist in BC, you need to meet CAB requirements, but the W&F degree as UNBC meets the course requirements.



- What I will cover ...
  - What is TWS certification?
  - Why consider applying for it?
  - What are the requirements?
  - Advice on filling out an application
    - No pre-approved curricula – you need to make your own case!
- But remember ...
  - The professional designations under TWS (AWB & CWB) are NOT equivalent to the professional designation under CAB in BC.
  - A professional designation under TWS is not required to work in Canada

## What is TWS Certification?

- Certification with CAB of BC needed in BC and through agreement exchangeable with Alberta
- No biological certification in other provinces, and some are considering TWS certification
- In 1977, TWS initiated Certified Wildlife Biologist program to promote and strengthen professional standards of wildlife biologists with the US, Canada, and abroad
- The American Fisheries Association (sister organization of TWS for fisheries) has a parallel certification process you may be interested in

## Why consider TWS Certification?

- The designation is recognized all over NA.
- It is the **ONLY** Professional Wildlife Biologist designation.
- Links you to a professional organization of Wildlife Biologists.



- TWS established a Certification Review Board
  - 8-member board with representation from all TWS Sections



### Canadian Section

- Alberta
- British Columbia
- Manitoba
- New Brunswick\*
- Newfoundland and Labrador
- Northwest Territories\*
- Nova Scotia\*
- Nunavut\*
- Ontario
- Prince Edward Island\*
- Quebec\*
- Saskatchewan
- Yukon Territory\*

## Levels of TWS Certification

- Associate Wildlife Biologist
  - An individual who has completed 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.

## Levels of TWS Certification

- 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

## Advantages?

- The only certification for Wildlife biologists
- May provide a hiring asset in some jurisdictions
- May eventually eliminate (most) jurisdictional barriers when working in Canada
- A link to your professional organization — TWS

## TWS Certification – a 2-stage process

- Associate Wildlife Biologist (AWB)
- Certified Wildlife Biologist (CWB)
- To apply for both, you must be a TWS member

## Associate Wildlife Biologist Requirements

- Educational requirements in semester hours
  - Canadian and US semester hours considered equivalent
- Applicants encouraged to make a case for courses, so there is no doubt about the relevance
- Hours from the same course can be split between requirement

## Associate Wildlife Biologist Requirements

- Applicants can make a case for using experience to clear course deficiencies
  - e.g., graduate work, workshops, tutorials, employment, volunteering (but be accurate in your assessments)
- Provide material on all of the courses that may be relevant, even if it looks like it is more than you need in any one category
  - CRB will suggest moving some material between categories if they think it is relevant

## AWB Course requirements

- Five biological course areas
  - Wildlife Management (6 hours)
  - Wildlife Biology (6 hours)
  - Ecology (3 hours)
  - Zoology (9 hours)
  - Botany (9 hours)

## AWB Course requirements

- Six non-biological course areas
  - Physical Sciences (9 hours)
  - Basic Statistics (3 hours)
  - Quantitative Sciences (6 hours)
  - Humanities (9 hours)
  - Communications (12 hours)
  - Policy, Administration, and Law (6 hours)

## Course specifics

- Much more detail on the Application form and on line
- Wildlife Management (6 hours)
  - Courses emphasizing the principles and practices of wildlife management, including conservation biology courses with a specific focus on management
- Wildlife Biology (6 hours)
  - Courses in the biology and behaviour of birds, mammals, reptiles, or amphibians
- Ecology (3 hours)
  - Courses in general plant and animal ecology

## Course specifics

- Zoology (9 hours)
  - Courses in the taxonomy, biology, physiology, anatomy and natural history of vertebrates and invertebrates
- Botany (9 hours)
  - Courses in general botany, plant anatomy, genetics, morphology, taxonomy, physiology and others
- Note:
  - At least one course must be primarily concerned with plant taxonomy or plant identification.
  - CRB have been known to allow extensive on-the-job experience, workshops, and on-line courses.
  - If plant ID is a substantial part of a graduate thesis/project, CRB may consider allowing this
  - One of the following—dendrology, silvics, or silviculture are acceptable.

## Course specifics

- Physical Sciences (9 hours)
  - Courses in Chemistry, Physics, Geology, or Soils
- Basic Statistics (3 hours)
  - A course in basic Statistics
- Quantitative Sciences (6 hours)
  - Courses in calculus, mathematical modeling, sampling, computer sciences, or other quantitative sciences like advanced (not introductory) GIS
    - Note GIS courses also can be used in areas like Wildlife Management, Ecology, and Policy, Administration and Law

## Course specifics

- Humanities and Social Sciences (9 hours)
  - Courses such as economics, sociology, psychology, political science, government, history, literature, or foreign language
- Communications (12 hours)
  - Courses designed to improve communication skills, such as English composition, technical writing, public speaking, or use of mass media

## Communication activities

- CRB considers:
  - BSc Honours/MSc/PhD thesis—up to 3 semester hours
  - Belonging to organizations, like Toastmasters International
  - Actual communications experience, such as presentations at public meetings, guiding birdwatching trips, speaking to school kids, involvement in TWS organizations—TWS Chapter involvement
  - Publications—peer-reviewed or not
- CRB has some flexibility to use the 1 course rule, i.e. will never turn down an applicant if short by 3 semester hours

## Course specifics

- Policy, Administration, and Law (6 hours)
  - Courses that demonstrate significant content, or focus on natural resources policy and/or administration, wildlife or environmental law, or natural resources/land-use planning
- Note
  - Courses that deal with understanding of social, political, and ethical decisions for wildlife and natural resources management
  - Up to three semester hours in classes dealing with human dimensions issues

## References for AWB or CWB

- Require 3 professional wildlife biologists as references
- At least one reference must be a CWB
- One reference from a professional employed in your own organization
- One reference must be from a professional employed outside your own organization

## Submitting an application for AWB

- Once the application has been completed, then it must be sent to the Certification Review Board (CRB). The fee for applying is \$115 (US)
- You will be asked whether your past activities have complied with the Code of Ethics and the Standards for Professional Conduct of The Wildlife Society. Therefore, you should review this section of the TWS website

## Certified Wildlife Biologist ...

- An AWB certification lasts for ten years. Within that time limit, the person should have obtained a minimum of 5 years of professional-level experience
- Once the 5 year experience target has been reached then an AWB® can submit an application to become a CWB®. Fee is \$155 (US)
- Three references similar to AWB application needed
- If the AWB has at least two years of experience at the end of the 10 year allotted time, then they can apply to TWS for a three-year extension.
- For a \$25 (US) fee, they can send an AWB Extension Application for consideration by TWS staff

## Acceptable Professional Level Experience

- CRB likes to see "graduation" of responsibilities. It's understood that at first the job may start out being more technician than professional, but it should show an increase in complexity.
- If a person is collecting the data and giving it to someone else for analysis and decision-making, it's "technician."
- If, however, a person is deciding why, how and where to collect that data and then summarizing it and making decisions, that's "professional".

## CWB Renewal (reviewed by TWS)

- To ensure that CWBs are working according to professional standards, they must submit a renewal application every 5 years
- Three requirements
  - Previously approved as a CWB with TWS
  - TWS membership in good standing
  - Complete a minimum of 80 contact hours that meet the requirements in at least 1 of 6 professional activity categories within the 5 year window

## CWB Renewal (reviewed by TWS)

- Participation in Organized Activities
- Leadership of Organized Activities Guidelines
- Mentorship Activities (maximum of 20 hours will be accepted)
- Publications Activities
- Self-Directed Activities
- Professional Service Activities
- Hours in 2 or more categories is encouraged.

## Course considerations

- The following spreadsheet suggest options based on current BSc Wildlife and Fisheries requirements
- Keep your options open for an AWB application by choosing electives and 'one-of' courses carefully
- If you are a transfer student, consider using previous courses from previous institutions
- If need more hours in an area, and are graduating, consider other ways of getting that material (i.e., online courses, experience, Toastmasters, etc.)

UNBC Courses required for BSc Wildlife and Fisheries Degree (2018)	A. Wildlife Management	B. Wildlife Biology	C. Ecology	D. Zoology	E. Botany	F. Physical Sciences	G. Basic Statistics	H. Quantitative Sciences	I. Humanities and Soc. Sci.	J. Communications	K. Policy, Administration, and Law	Notes
<b>Required in degree</b>												
BIOL 100-1 Evolutionary Biology I		1.5	1.5									Include both lecture and lab course together in box (total credits) and include both course descriptions in both the D and E categories. Also include the note "Counting 0.5 hours under Zoology and 0.5 hours under Botany".
BIOL 100-2 Evolutionary Biology II			0.5	0.5								Include both lecture and lab course together in box (total credits) and include both course descriptions in both the D and E categories. Also include the note "Counting 0.5 hours under Zoology and 0.5 hours under Botany".
BIOL 104-3 Evolutionary Biology II			1.5	1.5								Include both lecture and lab course together in box (total credits) and include both course descriptions in both the D and E categories. Also include the note "Counting 0.5 hours under Zoology and 0.5 hours under Botany".
BIOL 104-1 Evolutionary Biology I Laboratory			0.5	0.5								Include both lecture and lab course together in box (total credits) and include both course descriptions.
CHEM 100-3 General Chemistry						3						Include both lecture and lab course together in box (total credits) and include both course descriptions.
CHEM 100-1 Chemistry Lab I						1						Include both lecture and lab course together in box (total credits) and include both course descriptions.
CHEM 100-2 General Chemistry II						3						Include both lecture and lab course together in box (total credits) and include both course descriptions.
CHEM 101-1 Chemistry Lab II						1						Include both lecture and lab course together in box (total credits) and include both course descriptions.
PHYS 102-2 Calculus for Non-majors							3					Enter course description
PHYS 100-4 General Intro to Physics or PHYS 100-4 Intro to Physics							4					Enter course description
BIOL 200-3 Ecology			2						1			Entire tutorial to Ecology deals with how to write in science, so make clear in application. In addition to entering the course description in both the C and E categories, include the note "Only 2 of the 3 hours are counted in this category with 1 being used under Communications - a semester long tutorial with this class focuses exclusively on scientific writing".
BIOL 200-2 Genetics			1.5	1.5								1.5 credits hours counted under each of Zoology and Botany. In addition to including the course description in both the D and E categories, include the note "Counting 1.5 hours under Zoology and 1.5 hours under Botany".

UNBC Courses required for BSc Wildlife and Fisheries Degree (2018)	A. Wildlife Management	B. Wildlife Biology	C. Ecology	D. Zoology	E. Botany	F. Physical Sciences	G. Basic Statistics	H. Quantitative Sciences	I. Humanities and Soc. Sci.	J. Communications	K. Policy, Administration, and Law	Notes
FSTY 205-1 Terrestrial Ecological Classification			1									Needed in Ecology category because 1 credit hour of Biol 205 used in writing category
BIOL 200-3 Ecology			2						1			Enter course description
NRES 204-3 Introduction to Wildlife and Fisheries	1.5		1.5									Covers Fish and Wildlife so 1.5 in Wildlife Management and 1.5 in Zoology; in addition to including course description in both the A and D categories, include the note "Course is 3 credit hours covering 1.5 for wildlife management content". Note also that you may need to use the "additional space" block to include NRES 204 in the D category.
BIOL 300-3 Limnology				3								Enter course description
BIOL 300-2 Ornithology and Herpetology			1.5	1.5								Half of course associated with Herpetology using in Wildlife Biology with balance in Zoology. After entering the course description in both the B and D categories, include the note "Course is 3 credit hour with 1.5 counted in this category and 1.5 under Zoology to split out fish and herpetology subject matter".
BIOL 300-1 Ornithology and Mammalogy			3									Enter course description
BIOL 300-2 Animal Classes and Parasites			3									Enter course description
BIOL 300-3 Ecological Analysis								3				Because of 10 abstracts (marked for improvement in writing) could use 3 credits of BIOL 300 in Communications category if you have additional Quantitative Science courses (QTS does not count). If you have additional Humanities courses, then make case for 1 hour of BIOL 300 in category J.
BIOL 400-3 Fish Ecology				3								Enter course description
BIOL 400-2 Population and Communities			3									Enter course description
BIOL 400-1 Conservation Biology			3									Enter course description
BIOL 400-2 Wildlife Ecology			3									Enter course description

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<b>Select one of options</b>												
NRES 100-2 or BIOL 100-2										3		Either course acceptable in Communications category; presumably could take both
FSTY 205-3 Forest Plant Systems or BIOL 300-3 Systemic Botany				3								Either course acceptable in the Botany category to just enter the course description for the course you took
One of NRES 203-1 Ecological Perspectives on Land and Resource Management OR NRES 203-2 Ecology, Zoology, and Conservation										3		Either course acceptable in the Policy, Administration, and Law category
For one of ENVS 100-3, NRES 410-3 or ENVS 100-3, LAMB ENVS 100-3 (Nature, Resources, Environmental Issues and Public Engagement)										3		Take ENVS 100-3 for credit in the Communication category because of strong rhetorical writing requirements. Be sure to emphasize in comments the strong emphasis of this course on public engagement and learning to write.
For BIOL 402-3 or BIOL 400-3 (Part Ecology)				3								Could take BIOL 400-3 for Botany credit, but have 3 extra Botany credits if BIOL 402-3 taken
For one of NRES 400-4, NRES 410-3 or NRES 300-1, LAMB NRES 400-4 (Nature Resource Planning)										4		Select NRES 400-4 from this one-of choice

UNBC Courses required for BSc Wildlife and Fisheries Degree (2018)

UNBC Courses required for BSc Wildlife and Fisheries Degree (2018)										Notes	
Electives (total of 15)											
<b>NRES 401-0</b> (Undergraduate Thesis)											If taken, need to make the case for strong, mentioned writing component (learning to write). Course certainly use 3 hours of credit from an undergraduate thesis, but could argue for more on the basis of learning to communicate in science. For example, "students have to write both a detailed research proposal as well as their undergraduate thesis and then present the results in open to the public event at the end of the Winter semester".
<b>NRES 401-1</b> (Professional Writing)								1			The CRB indicated that all students should consider taking this course.
<b>NRES 411-0</b> (Consider taking NRES 411-3 as an elective and counting for 3 variables (2005)								3			NRES 411-3 could instead be used in the Policy, Administration, and Law category.
<b>NRES 411-1</b> (Nine hours of humanities if taken NRES 411) to meet 9 hours of humanities)								9			3 Humanities needed if NRES 411 not counted as a Humanities course
Required degree course not used for Certification											
<b>NRES 100-2</b> (Fast Sub)											These courses could be used in various categories, but the above curriculum requirements appear to cover off the educational requirements for AWB.
<b>NRES 101-2</b> (Wild Resource Management and Conservation)											
<b>BIOL 204-2</b> (Invertebrate Zoology)											
<b>BIOL 204-3</b> (Plant Biology)											
<b>NRES 210-4</b> (Integrated Resource Management)											
<b>GEOS 210-2</b> (Introduction to Earth Science)											
<b>GEOS 300-3</b> (Geographic Information Systems)											
<b>BIOL 416-1</b> (Fish Management)											

UNBC Courses required for BSc Wildlife and Fisheries Degree (2018)

UNBC Courses required for BSc Wildlife and Fisheries Degree (2018)										Notes		
Credits hours taken												
<b>Credit hours taken</b>											Additional Note: In the additional space for category L, indicate that there is significant additional writing across the Wildlife and Fisheries curriculum. For example in Biol 325 (Ecological Analysis) students write 10 scientific abstracts in which they scientifically present the results of statistical analysis. There are also substantial other writing requirements in many of our upper division courses.	
<b>Credit hours required</b>	9.5	7.5	3	15	32	21	3	6	9	10		7
<b>Total for Biological Science (Although 1) (08 credit hours required)</b>	8	6	2	7	7	21	6	9	12	8		

UNBC BSc Wildlife & Fisheries Program for Certification Review

Associate Wildlife Biologist® Application

**GENERAL INFORMATION**

FIRST NAME:  MIDDLE:  LAST:

MAILING ADDRESS:

THIS ADDRESS IS:  HOME  WORK

DATE OF BIRTH:  EMAIL:

HOME PHONE:  WORK PHONE:

MY NAME SHOULD BE LETTERED ON THE CERTIFICATE AS FOLLOWS:

Note: Certification policy does not allow the use of academic, honorary, or other titles or nicknames on the certificate

Associate Wildlife Biologist® Application

**EDUCATION**

List all post-secondary school educational institutions attended.

List all degrees earned starting with the least recent, and submit official transcripts showing conferral of each degree. Applicants must have at minimum completed a course of study in a college or university leading to a Bachelor of Science, Bachelor of Arts, or equivalent.

INSTITUTION	DATES ATTENDED (MM-YY-MM-YY)	DEGREE (B.S., M.S., etc.)	DATE CONFERRED (MM-YYYY)	MAJOR
1. University of Northern British Columbia	<input type="text"/>	BSc Wildlife and Fisheries	<input type="text"/>	N/A
2. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Associate Wildlife Biologist® Application

**A. Wildlife Management, minimum 6 semester hours**

Courses emphasizing the principles and practices of wildlife management.

**Course descriptions are required.** Courses should focus on understanding and manipulating wildlife habitats and population dynamics, in the context of human objectives and influences. Conservation biology courses count if they contain a specific focus on management and decision-making.

COURSE TITLE	DEPARTMENT	INSTITUTION	COURSE NUMBER	SEMESTER HOURS
1. Introduction to Wildlife and Fisheries	NRES	UNBC	204-3	1.5
<b>COURSE DESCRIPTION:</b> Introduction to principles of habitat and population biology and management, and human dimensions of wildlife management. Lectures will introduce the life requisites of individual species and compare aquatic and terrestrial systems, and provide an overview of the characteristics needed to estimate parameters of fish and wildlife populations. Labs will emphasize quantification of fish and wildlife habitats. (course is 3 credit hours, counting 1.5 for wildlife management content)				
2. Conservation Biology	BIOL	UNBC	411-3	3.0
<b>COURSE DESCRIPTION:</b> This course provides a broad exposure to the theory and techniques necessary for understanding and preventing threats and declines to biological diversity. The science and application of conservation biology draw from a wide range of disciplines including resource decision making and management. Thus, course and lab materials integrate perspectives from both the natural and social sciences. Students are advised to take this course in their final year of studies.				

### Other considerations

- For the "course description" section of the application, use the online course calendar of your graduating year and copy-paste to the application form.
  - Save a PDF of the course calendar you will be graduating with.

## FAQ ...

- How does the new Conservation degree fit into this application process?
  - It might work if you choose your courses very carefully, but this will also be true in trying to meet CAB requirements with this new degree.
- Is there a section on the application for volunteering with the UNBC Student Chapter of TWS?
  - Not specifically, but you could make a case some consideration under 'communication', for example.
- Do you specify which institution you got your credits from?
  - Yes. The first page of the applications has room for multiple institutions and you also specify the Institution for each course on the application form.
- Can credits be from any degree?
  - Yes. You have to make the case for any university level course.
- Does this apply for fisheries?
  - No. That would fall under the American Fisheries Society designation.
- Would you need this designation to work in fisheries in areas where TWS designation is a professional requirement?
  - My assumption would be that if provinces adopt requirements for professional associations, then many would be considered appropriate.