

## GENERAL ZOOLOGY (BIOLOGY 120) COURSE SYLLABUS

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Lecture Section: 040N

Lab Section: 0G1N



**Course description and general purpose:** Presents basic biological principles, emphasizes structure, physiology, and evolutionary relationships of invertebrates and vertebrates. This is a four-credit, one-semester course for science majors, or nonmajors. In it, students are introduced to the evolution of animals from the Paleozoic to the present. Emphasis is placed on evolutionary relationships, anatomical and physiological characteristics of major phyla, and how they fit into their respective environments. This course, coupled with botany, satisfies the biodiversity requirement for biology majors at GMU.

**Required text:** Miller SA, Tupper TA. 2019. Zoology, 11th Edition. McGraw Hill. Because the 11th edition is substantially different from the prior editions, it is required. (And the 12<sup>th</sup> is even more different!) This can be purchased at [the NVCC Annandale Campus bookstore](#).

**Field guide:** Alden P, Cassie B. 1999. [National Audubon Society Field Guide to the Mid-Atlantic](#), 1<sup>st</sup> Edition. Knopf. 0-679-44682-6. Available in the NVCC Annandale and Alexandria bookstores. You can purchase directly from the Audubon society too. Also, you can use alternate sources or field guides to learn the animals. Normally I have a lot of these to lend out to students. However, because covid hit, many of the copies that I lent out never made it back to campus. I recently purchased 9 new copies, and I can lend them out. Please be sure to return these at the end of the semester so that others who may be financially constrained can use them.

**Competencies:** The student should be able to read and express themselves both orally and in writing on a college freshman level as measured by a college English competency examination (ENG 111 or permission of instructor).

**Field trip:** We have a day-long field trip to the [Smithsonian Environmental Research Center](#). This field trip is led by me, and a highly accomplished Smithsonian biologist, Robert Aguilar. We will be conducting the SERC field trip using social distancing protocols and PPE. Please wear appropriate attire. This includes long sleeves, long pants, and hiking boots. If you have long hair, put it up, and under a hat. Lastly, please read the links posted on canvas about chiggers, Lyme disease, poison ivy, west Nile virus, and certain other tick-borne diseases. Bring a snack, water, and some hand sanitizer. September 25<sup>th</sup> is the potential field trip date. This is weather dependent, and we'll have to reschedule if there is inclement weather. This extra credit assignment is worth 25 points and corresponds with the extra credit quiz at the end of the semester.

**My personal research:** Please visit my website to learn [about me](#). You'll notice that I am pretty active in biology and that my area of interest is conservation biology, and biological inventory and monitoring (herpetology and herpetological diseases). Together with [Dr. Christine Bozarth](#), [Dr. David Fernandez](#), and Prof. Lauren Fuchs I have been able to create a functional research program at NOVA. As NOVA students, you have a chance to become involved in my work. However, there are some prerequisites that we can discuss in person should you be interested. You'll probably also notice that I am the co-author of our textbook. I get questioned about this repeatedly so I will just state this right here: I do not receive royalties for this work. I am not the lead author, and I was brought in to help improve the quality of work for the 10<sup>th</sup> edition. The reason that I require the latest edition of the book is that it is substantially different from prior editions. The field of zoology is dynamic. The evolutionary hypotheses and our understanding of phylogenetic relationships change rapidly. So, to give you the most accurate information, I require the 11<sup>th</sup> edition. I'd like you to know that I work very hard on this book, and it is incredibly time consuming. Please take the time to read the assigned chapters and, if you feel so inclined, provide us with some feedback. You'll notice that we acknowledge that the improvements made to

the 11<sup>th</sup> edition are in part due to questions raised by NOVA students. Your feedback is greatly appreciated, and it matters a great deal! Also take note that I either wrote or edited much of what you will read in the textbook, so you can rest assured that there will be congruity between what I teach in lecture, what is present in the lecture slides, and what shows up on your exams.

**Evaluation:** The lecture component of this course (totaling 75% of your final grade) will be based on 4 in-class exams. Exams consist of multiple choice and short answer questions. Your lecture grade = points received/points possible x 100. Your lab grade = points received/points possible x 100. There are three lab quizzes. Your overall course grade = (0.75 x Lecture %) + (0.25 x Lab %). There are no unexcused make-up exams, and no exam grades are dropped. All lecture exams are timed and are open notes. Notes must be handwritten hard copies (unless you have accommodations). All exams except exam 4 and your field identification quiz are take-home exams (and quizzes).

**Student needs:** Students who may require accommodations are encouraged to contact the [college center for accommodations and accessibility services](#). If you have an accommodation, please present that to me via email (or a hard copy). We can then discuss how I can best help you. [NOVA can help with food, bills, rent, childcare, and mental health needs](#). If you need other financial advice, please click [here](#). If you need a Sign Language interpreter or CART Captioning, contact Interpreter Services at: [interpreters@nvcc.edu](mailto:interpreters@nvcc.edu). If you need academic assistance or need college services but cannot make it to campus, please review NOVA's [remote student support services](#) to receive virtual assistance. Click on the following hyperlink if you are in the [military or are a veteran](#) and need assistance. If international students have specific questions, [click here](#). Complaints of sex-based discrimination, sexual violence, domestic violence, dating violence, and sexual or gender-based harassment can be [reported here](#). The campus police information is [here](#).

**Academic honesty and conduct:** At Northern Virginia Community College, we expect the highest standards of academic honesty. Academic dishonesty is prohibited in accordance with the Student Conduct, Rights and Responsibilities described in the [student handbook](#). NVCC's [policy](#) prohibits cheating on examinations, unauthorized access to examinations or course materials, plagiarism, and other proscribed activities. Students that violate plagiarism and academic honesty codes will be [reported](#). If a student behaves in a hostile or disruptive manner or presents any indication that they are a harm to themselves or others, a formal request for assistance to the [office of wellness and mental health](#) will be submitted, and the police may be contacted. Regarding covid: if you are feeling sick, please do not come to class. I will be unmasked while lecturing so that students can hear me. If I get sick and am out for an extended period, that will be problematic for all of us. [Click here for covid-19 updates](#).

**Cancellation dates:** In the event of class [cancellation](#), we will resume where we left off during the next meeting. For example, if we were to have an exam scheduled on September 1<sup>st</sup>, and there was a nationwide internet blackout, the exam would take place on our next scheduled meeting on September 7<sup>th</sup>. Since the college is not requiring covid vaccines for students, there is a chance we would have to transition to remote learning—at least temporarily. It would be best if you were ready to transition to that format beforehand. I will proctor all remote exams, so you will need access to a computer with a webcam, and you will need to download [respondus lockdown](#). [Please click here for emergency alerts](#).

**Important dates, audit policy and incompletes:** For critical dates regarding refunds, withdraw, holidays, etc., click [here](#). Auditing this course requires instructor permission. Incompletes are only granted if the student's circumstances are dire (e.g., health issues, family issues, documented work conflict) and if [certain criteria](#) are met. Incompletes must be approved by the division dean and provost. Health claims must be documented by medical professionals. Final exam times are different than your normal class meeting time. They are posted below.

**Comments on submitting written work:** I will not be assigning research papers this semester. Much of the lab work, however, is written. You can ask the [writing center staff](#) for help with written lab assignments and for other classes.

**Email policy and canvas discussions:** Please use proper English when composing emails and posting discussions. Please keep writing somewhat formal, free of slang, and as grammatically correct as possible. Please address me in the emails as Dr. or Professor Tupper, not as "hey." It is fine to call me by my first name if you are no longer taking courses with me. I will reply to your emails within 24-48 business hours from its sent time. There are times when I miss an email, or it gets

sent to my junkbox. If you do not hear from me within 48 business hours, please just email me again. That said, I may not reply to your emails unless you ask me a specific question. Here are some course email guidelines:

1. Email me if you have questions about the course content or if you want to set up a time to meet and discuss some of the course content. I am more than happy to help you learn the material.
2. Email me if there are serious circumstances that are beyond your control that may need my attention (i.e., health or job-related issues or conflicts that may result in a prolonged absence from class). Smaller and less serious questions can be answered by emailing a classmate, or by using canvas discussions.
3. You don't have to email me if you are going to be late to class.
4. You don't have to email me if you are going to miss a class, or if you have missed class.
5. Please first ask your classmates or use canvas discussions to find out about any logistics/instructions that I have explained in a previous class that you did not attend. Then email me if there still is a concern.
6. Please do not email me asking for extensions on labs and other assignments.
7. Please do not email me asking for extra credit.
8. Please only use your official vccs email account

**Introductory letter, general comments on success in this course, and miscellaneous rules:** Please write a brief statement and include something semi-personal about yourself, (e.g., a couple of hobbies/sports/major/favorite shows). Also, if you feel up for it let us know where (if) you work and how many hours you work per week. I am sure your classmates (myself as well) are interested to know a little about you. Also include your name, and what you preferred to be called. Post this in canvas discussions during the first week of the class. It's worth extra credit points but must be at least 100 words.

Doing well in this course requires a substantial commitment. This course covers evolutionary biology, animal systematics, taxonomy, natural history, anatomy, and physiology. By nature, these topics are challenging. You need to set aside quite a bit of time for reviewing lecture notes, reading, and studying after and before every lecture (probably around 9 hours per week in addition to class). A few last comments: please make use of canvas discussions and become friendly with other students in the class. It helps calm anxieties about the course if you have some peer support. Please be on time to class. Lectures are not recorded. Recording devices will only be permitted for students with accommodations.

Lastly, I like interactive courses. I tend to ask students a lot of questions. I do this because when a student explains a concept to other students (rather than just me), it can be quite helpful for learning. There's no penalty for getting a question wrong, and once you get used to my lecture style, you will see that we are in a judgement free zone where everyone is welcome to participate. That said, if you have serious social anxiety and would prefer not to be called on, just let me know. I understand.

**Tentative lecture schedule:** Please note that the lecture and exam dates are not fixed (except the final). Sometimes we take longer to get through the material than other times. The exam dates may change, but the material covered on each exam will not. I will let you know well in advance of each exam. We will only have review sessions if time permits. Please note that the final exam meeting time is different from your normal class session. The final exam schedule is hyperlinked below.

**Field identification:** Most people who take zoology are interested in wildlife. Below are some links below to wildlife sounds, and some species common to this area. Please go through and learn as much as you can. There will be a quiz on these animals (and on the animals we see at SERC) at the end of the semester.

[Smithsonian Environmental Research Center](#)—Trip will occur on September 24<sup>th</sup> or October 1<sup>st</sup> (weather permitting). Clear these dates now if possible. If the weather is good, we will go on the first available date. The trip depends on both the weather and the availability of Smithsonian biologist. We will meet in the education building parking lot at 10am. Bring AOR and COC forms, signed. Familiarize yourself with species below. The field trip will be confirmed by email on the morning of the trip. To receive points (50), you must attend the field trip, and submit the report. Extra credit.

HERPS	P#	BIRDS	P#	FISH	P#	MAMMALS	P#	INVERTS	P#	INVERTS	P#
American toad**	261	American robin**	323	American eel	250	Bobcat*	363	American copper	224	Snowy tree cricket**	210
Bullfrog*	262	Belted kingfisher	310	Atlantic menhaden	241	House mouse	354	Black widow	199	Sow/pill bugs	197
Gray tree frog*	262	Bald eagle	290	Atlantic needlefish	242	Chipmunk**	351	Bombardier beetle	<a href="#">RC</a>	Springtails	<a href="#">RC</a>
Green frog*	263	Barn swallow	316	Atlantic silverside	242	Coyote**	357	Bottle fly	217	Cicadas** (both)	211
Green tree frog	262	Barred Owl*	308	Brown bullhead	252	meadow vole	354	Carpenter ant	219	Termites	208
Marbled salamander	<a href="#">VHS</a>	Chickadees*	319	Bluegill	255	Downy woodpecker	311	Burrowing crayfish	197	Viceroy	228
E. cricket frog	<a href="#">VHS</a>	Black vulture	288	Brook trout	254	Eastern cottontail	350	Differential grasshopper	209	Water boatman	212
Pickerel frog*	263	Blue jay*	317	Chain pickerel	253	Flying squirrel	353	Dragonflies (various)	203+	Water strider	213
Red-backed salamand	260	Canada goose*	282	Green sunfish	<a href="#">RC</a>	Gray squirrel**	352	Dragonfly nymph	202	Whirligig beetles	214
Red spotted newt	258	Cardinal*	333	Hogchoaker	248	Groundhog	351	E. tiger swallowtail et al.	223	Wolf spider	199
Slimy salamander	260	Carolina wren	320	Bass (both lm/sm)	256	Muskrat	355	Fall field cricket**	210	Wooly bear	233
South leopard frog**	263	Common grackle	341	Mummichog	242	Raccoon**	357	Fishing spider	199	Yellow jacket	220
Spotted salamander	258	Eastern bluebird	321	Naked goby	<a href="#">RC</a>	Red fox**	358	Flat-backed millipede	197	Ticks/chiggers	200
Spring peeper**	262	Eastern towhee**	335	Norther pipefish	243	Shrews & moles	347	Giant water bug	<a href="#">RC</a>	Garden spider	199
Wood frog	263	European starling	324	Sea lamprey/hagfish	237	Striped skunk	360	Gladiator katydid	<a href="#">RC</a>	Damselflies	203
American alligator**	<a href="#">AO</a>	Fish/American crow	317+	Spiny dogfish shark	239	Bats	349	Caterpillar hunter et al.	214	Earthworm	196
Black racer	268	Gray catbird**	323	Striped bass	244	Virginia opossum	346	Harvestman	200	E. tent caterpillar	231
Black rat snake	268	Goldfinch*	343	Striped blenny	<a href="#">RC</a>	Weasels	361	Honey bee	220	Gypsy moth	234
Snapping turtle	265	Great blue heron	277	White perch	244	White footed mouse	354	Horse fly	217	Mantis	208
E. box turtle	266	Green-winged teal	283	3 spine stickleback	242	White tailed deer	364	House centipede	197	Micrathena	<a href="#">RC</a>
N. cottonmouth	<a href="#">VHS</a>	Hairy woodpecker	311	Summer flounder	249	Beaver/mound *	353	House fly	217	Milkweed beetle	215
E. painted turtle	265	Herring gull	304	Winter founder	249	Mammal tracks	345+	Leech	196	<b>MARINE INVERTS</b>	<b>P#</b>
E. worm snake	<a href="#">VHS</a>	Laughing gull*	303	Pumpkinseed	255	Black bear*	359	Leopard slug	197	Barnacle	191
Five-lined skink	267	Mallard duck	283	Redbreast sunfish	255			Luna moth	231	Blue crab	193
Garter snake	271	Mourning Dove	307	Golden shiner	251			Meadow Katydid*	<a href="#">AO</a>	Comb jelly	185
Hognose snake	269	Northern flicker*	312	Yellow perch	256			Mole cricket*	<a href="#">AO</a>	Common sea star	195
Milk snake	269	Northern mockingbird**	323	Parts of a fish	240			Monarch	229	Grass/sand shrimp	191
E. copperhead	271	Osprey*	290	Parts of a shark	237			Millipedes	197	Moon jelly	184
N. water snake	269	Red-bellied woodpecker*	311					Stink bug	213	WF Mud crab	<a href="#">RC</a>
Red-bellied turtle	266	Red-tailed hawk**	292					Northern true katydid**	210	Clam worm	185
Red-eared slider	<a href="#">VHS</a>	Red-winged blackbird*	339					Painted lady	227	Sea nettle	184
Ribbon snake	271	Song sparrow	337					Diving beetle	<a href="#">RC</a>	Lions Mane	184
Green snakes	<a href="#">VHS</a>	Tree swallow	315					Question mark	226	Parts of a crab	192
Spotted turtle	265	Tufted titmouse*	319					<i>Physa</i>	<a href="#">RC</a>	Mollusc shell parts	186
Timber rattlesnake**	271	Turkey vulture	289					Robber fly	217		
Wood turtle	265	Whip-poor-will**	309					Gastropod shell char's	186		
Parts of a turtle	264	White breasted nuthatch	318					6S Green Tiger Beetle	213		
Parts of a bird →	273→	White throated sparrow*	337					Beetle elytra and wings	213		
		Wood duck	282					Dragonfly parts & naiad	<b>202</b>		


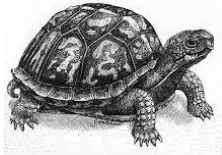


VHS = Virginia Herpetological Society Website; RC = Smithsonian Environmental Research Center Filed Trip. Not in field guide.

Please google image these animals and any other that we may find of the field trip that are not in the field guide.

AO = Audio Only; E. = Eastern; N. = Northern; + = Following Pages; \* = Audio Also \*\* = Audio will show up on final lab exam for sure

Table 1. List of animals we may see on our field trip. Page numbers are from [A Field Guide to the Mid-Atlantic States](#). (<https://www.inaturalist.org/> is awesome and can help you too).

Links to Animal Audio. There's a [book with a CD](#) containing these audio files if you're interested in purchasing a copy. These audio files contain common animals that we may hear on the field trip.

BIRDS	MAMMALS	REPTILES & AMPHIBIANS	KATYDIDS	CICADAS & CRICKETS
<a href="#">American Goldfinch</a> <a href="#">American Robin</a> <a href="#">Baltimore Oriole</a> <a href="#">Barred Owl</a> <a href="#">Black-Capped Chickadee</a> <a href="#">Blue Jay</a> <a href="#">Brown Thrasher</a> <a href="#">Carolina Chickadee</a> <a href="#">Carolina Wren</a> <a href="#">Chipping Sparrow</a> <a href="#">Common Yellow-throat</a> <a href="#">Common Muskrat</a> <a href="#">Downy Woodpecker</a> <a href="#">Eastern Phoebe</a> <a href="#">Eastern Screech Owl</a> <a href="#">Eastern Towhee</a> <a href="#">Gray Catbird</a> <a href="#">Great Horned Owl</a> <a href="#">House Wren</a> <a href="#">Mourning Dove</a> <a href="#">Northern Cardinal</a> <a href="#">Northern Flicker</a> <a href="#">Northern Mockingbird</a> <a href="#">Pileated Woodpecker</a> <a href="#">Red-Bellied Woodpecker</a> <a href="#">Red-Headed Woodpecker</a> <a href="#">Red-Shouldered Hawk</a> <a href="#">Red-Tailed Hawk</a> <a href="#">Red-Winged Blackbird</a> <a href="#">Song Sparrow</a> <a href="#">Tufted Titmouse</a> <a href="#">Whip-Poor-Will</a> <a href="#">White-Breasted Nuthatch</a> <a href="#">White-Tailed Deer</a> <a href="#">Wood Thrush</a>	<a href="#">American Beaver</a> <a href="#">Black Bear</a> <a href="#">Bobcat</a> <a href="#">Coyote</a> <a href="#">Eastern Chipmunk</a> <a href="#">Eastern Fox Squirrel</a> <a href="#">Eastern Grey Squirrel</a> <a href="#">Flying Squirrel</a> <a href="#">Gray Fox</a> <a href="#">Gray Wolf</a> <a href="#">Meadow Vole</a> <a href="#">Moose</a> <a href="#">North American Porcupine</a> <a href="#">Northern Raccoon</a> <a href="#">Northern River Otter</a> <a href="#">Nutria (Coypu)</a> <a href="#">Red Fox</a> <a href="#">Red Squirrel</a> <a href="#">Striped Skunk</a> <a href="#">Woodchuck (Groundhog)</a>	<a href="#">American Alligator</a> <a href="#">American Toad</a> <a href="#">Bull Frog</a> <a href="#">Cope's Gray Treefrog</a> <a href="#">Eastern Narrowmouth Toad</a> <a href="#">Eastern Spadefoot</a> <a href="#">Fowler's Toad</a> <a href="#">Green Frog</a> <a href="#">Green Treefrog</a> <a href="#">Northern Cricket Frog</a> <a href="#">Northern Leopard Frog</a> <a href="#">Pickerel Frog</a> <a href="#">Southern Leopard Frog</a> <a href="#">Southern Toad</a> <a href="#">Spring Peeper</a> <a href="#">Timber Rattlesnake</a> <a href="#">Western Chorus Frog</a> <a href="#">Wood Frog</a>	<b>False Katydids</b> <a href="#">Rattler Round-Winged Katydid</a> <a href="#">Oblong Winged Katydid</a> <a href="#">Greater-Angle Wing</a> <a href="#">Lesser Angle Wing</a> <a href="#">Broad-Winged Bush Katydid</a> <b>True Katydids</b> <a href="#">Northern True Katydid</a> <b>Meadow Katydids</b> <a href="#">Common Meadow Katydid</a> <a href="#">Handsome Meadow Katydid</a> <b>Conehead Katydids</b> <a href="#">Sword-Bearing Conehead</a> <a href="#">Nebraska Conehead</a> <a href="#">Slightly Musical Conehead</a> <a href="#">Round-Tipped Conehead</a>	<b>Cicadas</b> <a href="#">Scissor-Grinder Cicada</a> <a href="#">Swamp Cicada</a> <a href="#">Linne's Cicada</a> <a href="#">Periodical cicada</a> <b>Mole Crickets</b> <a href="#">Northern Mole Cricket</a> <b>Field Crickets</b> <a href="#">Fall Field Cricket</a> <b>Ground Crickets</b> <a href="#">Allard's Ground Cricket</a> <a href="#">Tinkling Ground Cricket</a> <a href="#">Carolina Ground Cricket</a> <a href="#">Striped Ground Cricket</a> <b>Tree Crickets</b> <a href="#">Snowy Tree Cricket</a> <a href="#">Broad-Winged Tree Cricket</a> <a href="#">Black-Horned Tree Cricket</a>
				



A docile timber rattlesnake that we were monitoring.

## Tentative Lecture Schedule

Lecture Unit	Lecture Topic	Chapters and Notes	Date
1. Introductory material, origins, and the basal phyla	Course intro and intro to the basal phyla. There will be some discussion on origins.	Browse chapter 1. Take note of figure 1.4 and know the answers to the end of chapter questions. Read chapter 8 and 9. <b>Chapter 9 is the important one here.</b>	September 7 <sup>th</sup>
	Second installment of the basal phyla	Chapter 9. Be sure you review end of chapter summary. If you know what these summaries mean, you are in good shape. <u>Do this for all chapters</u> . Read history of zoology document posted in canvas modules unit one materials.	September 12 & 14 <sup>th</sup>
	<b>Exam 1 (take home)</b>		<b>Exam 1—September 19<sup>th</sup>-23<sup>rd</sup></b>
2. Protostomia 1: The larger and lesser known lophotrochozoan (spiralian) phyla	Platyhelminthes and Selected Smaller Lophotrochozoan Phyla	Chapter 10	September 19 <sup>th</sup> and 21 <sup>st</sup>
	Molluscs, Annelids and Selected Lesser Known Lophotrochozoan Phyla	Chapters 11 & 12	September 26 <sup>th</sup> and 28 <sup>th</sup>
	<b>Exam 2 (take home)</b>		<b>October 3<sup>rd</sup>– 7<sup>th</sup></b>
3. Protostomia 2: Ecdysozoa	Cycloneuralia	Chapter 13	October 3 <sup>rd</sup> and 5 <sup>th</sup>
	Panarthropoda	Chapter 14	October 12 <sup>th</sup> , 17 <sup>th</sup> , and 19 <sup>th</sup>
	<b>Exam 3 (take home)</b>		<b>October 24<sup>th</sup>-28<sup>th</sup></b>
4. Deuterostomia	Ambulacraria and intro to the chordates	Chapters 16 & 17	October 24 <sup>th</sup> and 26 <sup>th</sup>
	Fishes	Chapter 18	October 31 <sup>st</sup> and November 2 <sup>nd</sup>
	Amphibians & reptiles	Chapter 19 & 20	November 7 <sup>th</sup> and 9 <sup>th</sup>
	Birds & mammals	Chapter 21 & 22	November 14 <sup>th</sup> and 16 <sup>th</sup>
	<b>Comparative Anatomy and Physiology</b>	TBA	<b>November 21<sup>st</sup> and 28<sup>th</sup></b>
	<b>Comparative Anatomy and Physiology</b>		<b>November 30<sup>th</sup></b>
	<b>Exam 4—2:00pm (in person)</b>		<b>December 7<sup>th</sup> @ 2pm</b>

Tentative Schedule of Lab Assignments				
Lab Week	Content	Field Identification (see table below)	Ethogram	Date
1	Initial lab meeting and field identification	Start from the marine invertebrates in column six and work backward. Mollusc shell parts to garden spider	1	September 7 <sup>th</sup>
2	Porifera and Cnidaria and field identification	Ticks and chiggers through question mark.	2	September 12 <sup>th</sup> and 14 <sup>th</sup>
3	Platyhelminthes and field identification	Diving beetle through flat-backed millipede	3	September 19 <sup>th</sup> and 21 <sup>st</sup>
4	Mollusca and field identification	Fishing spider to bats	4	September 26 <sup>th</sup> and 28 <sup>th</sup>
5	Annelida and field identification	Striped skunk to redbreast sunfish	5	October 3 <sup>rd</sup> and 5 <sup>th</sup>
6	Ecdysozoa and field identification	Pumpkinseed to Atlantic silversides	6	October 12 <sup>th</sup>
7	<b>Basal Phyla and Protostome Lab Quiz (take home)</b>	Atlantic needlefish to laughing gull	7	<b>October 17<sup>th</sup> - 21<sup>st</sup></b>
8	Echinodermata and field identification	Herring gull to American robin	8	October 24 <sup>th</sup> and 26 <sup>th</sup>
9	Chordata: Fishes and field identification	Parts of a bird through snapping turtle	9	October 31 <sup>st</sup> and November 2 <sup>nd</sup>
10	Chordata: Comparative anatomy and hominid Lab	Black rat snake through American toad	10	November 14 <sup>th</sup> and 16 <sup>th</sup>
11	<b>Deuterostome Lab Quiz (take home)</b>			<b>November 19<sup>th</sup> - 22<sup>nd</sup></b>
12	<b>Field Identification quiz (in person)</b>			<b>November 30<sup>th</sup></b>

