

# Fish & Wildlife Management

## Instructional Framework

An instructional framework provides educators with a list of benchmark statements aligned to Common Core and national content area standards for a given course or program. The Missouri Fish & Wildlife Management Instructional Framework lists a sequence of content, organized into distinct units of instruction. Sample activities and potential Common Core related enhancements are provided.

	Common Core Standards	National Standards (AFNR)	Activities	Enhancements
<b>A. Natural Resource Conservation</b>			(Those found in IML curriculum, including selected "Other Activities")	IML "Other Activities" or novel approaches for enrichment
1. Define and describe natural resource conservation	RST.11-12.4		1. Student should read text and answer basic review questions, including pertinent vocabulary	
2. Compare historical fish and wildlife trends and the public's response	RH.11-12.2 WHST.11-12.2.a			1. Have students create a timeline showcasing major events (laws, conservation movements, etc.) in Missouri's fish/wildlife history

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3. Outline the variety of jobs in conservation organizations, educational requirements, employment opportunities, and how to prepare for a professional conservation career	RST.11-12.7 W.11-12.7 W.11-12.8 SL.11-12.4		1. Assign small groups to research requirements for conservation jobs and present findings	1. Interview a conservation professional and produce a multimedia presentation with the information learned
4. Distinguish the difference between basic fish and wildlife legalities and ethics	SL.11-12.1 SL.11-12.3		1. Read ethics-based scenarios and have students rank their responses to each situation (Activity 4.1)	1. Listen to an informative speech by a fish or game officer or other related conservation law enforcement professional
<b>B. Fish and Wildlife Values</b>				
1. Calculate the commercial value of fish and wildlife resources and how it can benefit the economy and landowners	N-Q.1			1. Prepare a set of word problems so that students can calculate basic income from fish/wildlife related enterprises.
2. List the different recreational values of fish and wildlife resources	N-Q.1		1. Have students prepare a table showing the classes' preferences related to recreational fish/wildlife activities	

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3. Explain how naturally-occurring living organisms benefit humans and the environment	SL.11-12.5			1. Allow students to take digital images of ways that organisms benefit humans and environment and compile into a multimedia presentation (could include pictures of insect pollinators, humans using products, etc)
4. Describe the social values and benefits associated with fish and wildlife resources	N-Q.1			1. Survey community members and graph results to determine the most predominant benefits associated with fish and wildlife resources.
5. Describe the aesthetic value of fish and wildlife resources				
6. Describe the scientific and educational values of fish and wildlife resources				

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7. Evaluate the negative impacts wild animals have on humans and the objective of wildlife damage control	SL.11-12.3 W.11-12.2.a W.11-12.2.b		1. Invite a local veterinarian to speak on zoonotic diseases spread by wildlife.	1. Have students develop a brochure about one of the diseases or an informational brochure regarding methods to prevent wildlife damage.
<b>C. Habitat Management Principles and Techniques</b>				
1. Explain ecological principles and how they apply to fish and wildlife management	SL.11-12.3 N-Q.1		1. Tour an MDC wildlife area and have the specialist explain the management techniques being utilized.	1. Have students complete “Understanding Limiting Factors” worksheet (1.1)
2. Design a cropland management plan for wildlife	N-Q.1 RST.11-12.3		1. Guide students through completion of the “Cropland Habitat Appraisal” worksheet (2.2)	
3. Select grassland management practices that improve livestock forage and wildlife habitat				

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4. Assess how forest management can be used to improve wildlife habitat	N-Q.1 RST.11-12.3 WHST.11-12.1.a		1. Guide students through completion of “Forest Habitat Appraisal” worksheet (4.1)	1. Tour a local site with recent timber harvest. Use a table to record the pros and cons of the harvest on the overall habitat quality in order to write an overall summary opinion of the process or location.
5. Define and describe wetlands and their importance	RST.11-12.4 SL.11-12.1 SL.11-12.2 SL.11-12.3 SL.11-12.4		1. Tour a wetland area and collect samples of vegetation to identify using field guides, the internet, etc.	1. Visit a site of current or past wetland destruction. After additional research, break the students into 3 groups in order to do a structured debate. Groups will represent the maintaining of a wetland, the development of a wetland for other use, and the mediators.
6. Describe stream behavior and relate how it affects fish and wildlife habitat	N-Q.1 RST.11-12.3 RST.11-12.4 N-Q.1		1. Have students complete the “Stream Habitat Assessment Device” worksheet while visiting a stream habitat.	1. Guide students through completion of the “Estimating Stream Water Velocity” worksheet (6.2)

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7. Plan a pond using appropriate construction and management techniques	N-Q.1 RST.11-12.3		1. Have students complete the “Percentage Size Distribution” worksheet (7.1) to determine the fish population balance of the given scenario.	1. Using HO 7.2 or 7.3, guide students through construction of a weed grapple or Secchi disc for use in lab activities.
8. Describe the government conservation assistance available to Missouri landowners				
<b>D. Animal Life Histories</b>				
1. Outline life history of the bobwhite quail	W.11-12.10 N-Q.1		1. Instruct students to make early morning observations of quail courtship calls. They would prepare a report with date, time, location and any other pertinent information.	1. Utilizing student information from courtship call observations, compare population numbers over a period of years or identify certain locations where quail populations are thriving. Graphs or other charts could be created as visual aids.

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2. Outline life history of the white-tailed deer	SL.11-12.5			1. Take a field trip to scout for buck rubs and scrapes. Students can take digital photos in order to prepare a brochure or presentation on deer sign including tracks, etc.
3. Outline life history of the largemouth bass	RST.11-12.3			1. Bring in legally harvested largemouth bass. Based on pre-established procedures, students should dissect stomachs in order to analyze contents and chart their findings.

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4. Outline life history of the bald eagle	SL.11-12.4 SL.11-12.5 SL.11-12.6 W.11-12.1		1. Take a field trip to Missouri's Eagle Days if feasible (held during January). Have students observe eagles and take photos to turn into multimedia presentations with pertinent biological facts, etc. to display to their class or others as appropriate.	1. Have students construct an essay whether or not the bald eagle is a respectable national emblem.
<b>E. Fish and Wildlife Protection</b>				
1. Relate the reasons for fish and wildlife regulations and describe how they are made and enforced in Missouri	L.11-12.4 WHST.11-12.10		1. Give each student a copy of the Wildlife Code of Missouri. Students must list at least 10 regulations in their own words.	

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2. Describe the legal process associated with fish and wildlife violations	L.11-12.6			1. Have students construct a graphic organizer showing the different types of penalties with examples of code violations for each. Students should utilize appropriate legal terms.
<b>F. Leadership and Personal Development for Advanced Students</b>				
1. Develop a resume and complete a job application	L.11-12.1 L.11-12.2 W.11-12.10		1. Develop a Resume 2. Complete Sample Job Application	
2. Develop a plan for finding a job	W.11-12.4		1. Take a Career Interest Survey 2. Write a cover letter	
3. Describe how to apply and interview for a job	SL.11-12.6		1. Conduct Sample Job Interviews	
4. Describe the characteristics needed to develop desirable personal and social skills	SL.11-12.1		1. Verbal and Nonverbal Communication 2. Role Playing	
5. Describe the importance and process of developing better human relationships	SL.11-12.1		1. Role Playing 2. Group Discussion	

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UNIT: Explore a career area by investigating entry-level job opportunities at a local agricultural business and writing a résumé and letter of application for a position.				
<b>G. Using the <i>Missouri Agricultural Record Book for Secondary Students</i></b>				
1. Complete forms needed to open the <i>Missouri Agricultural Record Book for Secondary Students</i>			1. Form 100/101 (SAE Enterprises/Agreement)	
2. Complete a budget for the SAE program	N-Q.1		1. Complete Form 103 (Budget)	
3. Complete inventory and financial statement forms for the <i>Missouri Agricultural Record Book for Secondary Students</i>	N-Q.1		1. Complete Forms 6, 7, 8, 9, 10, 11, 12 (Financials)	
4. Complete receipt and expenditure forms in the <i>Missouri Agricultural Record Book for Secondary Students</i>	N-Q.1		1. Forms 1, 2, 3, 4, 5 2. (Income, Expenses, Cash Flow)	

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5. Complete additional forms in the <i>Missouri Agricultural Record Book for Secondary Students</i>	N-Q.1		<ol style="list-style-type: none"> <li>1. Supplemental (102, 104, 105, 106, 107)</li> <li>2. Leadership Pages (108, 109, 110, 111)</li> <li>3. Directed Lab</li> <li>4. Community Service Hours Log</li> </ol>	
UNIT: Demonstrate the ability to use selected forms in the <i>Missouri Agricultural Record Book for Secondary Students</i> by using a list of sample entries to complete the applicable forms in the book.				

**Codes for Common Core Mathematics are:**

- N = Number and Quantity
- A = Algebra
- F = Functions
- G = Geometry
- S = Statistics and Probability

**Codes for Common Core English Language Arts and Literacy are:**

- RL = Reading for Literature
- RI = Reading for Informational Text
- RST = Reading for Literacy in Science and Technical Subjects
- RH = Reading for Literacy in History/Social Studies
- W = Writing
- WHST = Writing for Literacy in History/Social Studies, Science, and Technical Subjects
- SL = Speaking and Listening
- L = Language