Wildlife Learning Framework

| **Topic** | **Learning Goals** | **Sample Learning Objectives** |
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| Wildlife Population Management | Animal ID: What traits and characteristics are diagnostic in identifying insects, amphibians, reptiles, birds, and mammals? | Identify animal species of the student’s local region. |
| Animal ecology: How do species interact with each other and their environment? | Describe how competition and predation impact wildlife populations.  |
| Defend the inclusion of community ecology concepts when managing a wildlife population.  |
| Explain the influence of animal behavior on species interactions and population management. |
| Explain predator prey dynamics. |
| Population management: How does setting harvest limits differ when using a maximum sustain yield model compared to an annual surplus model? | Describe the critical steps in the adaptive harvest management process.  |
| Evaluate the need for adaptive management in harvest management. |
| Declining or endangered populations: When habitat loss is not the cause of a population decline, what are other causes of decline to consider and how would management actions differ based on the cause of decline? | Explain how genetic drift and inbreeding dynamics contribute to the extinction vortex.  |
| Describe how a population viability model can be used to select management goals for species of conservation concern. |
| Analyze the connection between invasive species and threatened species. |
| Disease ecology and wildlife health: What actions can wildlife managers take to monitor and combat epidemics in wildlife populations and protect human health? | Incorporate a decontamination protocol into a standard field sampling protocol and into a response to mortality event.  |
| Describe when an epidemic in a wildlife population is a concern to human health. |
| Movement and habitat selection: How do animals select habitat when moving through their home range or territory? What field and analytical methods work best given a specific species or context? | Compare the specificity and effectiveness of trapping methods within a range of habitat types. |
| Compare home range estimation techniques. |
| Habitat Management | Plant ID: What traits and characteristics are diagnostic in identifying grasses, forbs, shrubs, and trees? | Compare the differences between grasses, forbs, shrubs, and trees. |
| Evaluate vegetation communities and recommend management strategies to maintain or improve habitat conditions for target wildlife. |
| Plant ecology and succession: How do plant communities transform through succession from pioneer species to climax communities in different ecosystems? | Describe the different stages of succession and detail the species present at each stage in a given ecosystem. |
| Evaluate vegetation communities and recommend management strategies to maintain or improve habitat conditions for target wildlife. |
| Habitat requirements: What are the habitat requirements for different wildlife species? | Describe the potential wildlife community given habitat characteristics in an ecosystem. |
| Compare the habitat requirements for several wildlife species in a given ecosystem. |
| Habitat manipulation tools: How are tools and techniques used to manage land for wildlife habitat? | Explain the tools and techniques used to remove invasive plant species from a forest ecosystem. |
| Evaluate the efficacy of prescribed fire in management of a given tract of land in relation to the management goals for that land. |
| Conduct a habitat suitability survey using the appropriate tools and techniques for a given area and species. |
| Landscape management: What are the direct and indirect influences of land management on wildlife habitat? | Assess vegetation communities and recommend management strategies to maintain or improve habitat conditions for target wildlife. |
| Appraise the effects of human actions such as development or agriculture on components of habitat for target species. |
| Soils, geology, hydrology: How does soil composition, geology, and hydrology influence wildlife habitat? | Explain how different soil types affect suitability of habitat for different wildlife species. |
| Examine the differences in biodiversity in areas with differences in the nature of the underlying rock. |
| Compare the available habitat features in areas with different types of hydrological features. |
| People and Wildlife | Policy: How does policy affect management of wildlife populations and related natural resources? | Describe how planning processes of state and federal agencies result in unique policies for each agency.  |
| Contrast how key environmental laws and policy affect wildlife on public and private lands.  |
| Provide an opinion of the adequacy of current policy processes that affect wildlife on public and private lands in the US? |
| Human dimensions: How are social sciences used in effective management of wildlife? | Explain how the experiences of individuals influence their beliefs and values.  |
| Recommend ways that wildlife managers can influence behaviors of the public on matters of conservation based on understanding of the importance of individual’s beliefs and values. |
| Laws and regulations: How are laws and regulations for wildlife enacted, and how do they impact management of wildlife and related natural resources? | Explain the process that is used to set harvest regulations for game animals.  |
| Examine the potential flaws in the system for listing species under the Endangered Species Act? |
| Connect NEPA to other federal and state laws that influence fish and wildlife management in the US? |
| Outline the history of wildlife management. |
| Communication: How can wildlife management be enhanced by implementing effective communication strategies? | Prioritize ways that wildlife managers can effectively incorporate stakeholders in the management process.  |
| Describe the structure of a wildlife management plan. |
| Explain how a wildlife management plan is used to communicate to stakeholders. |
| Evaluate an oral presentation used to communicate to scientific and public audiences. |
| Conflict resolution: How do we resolve conflicts between important stakeholder groups on issues related to wildlife management? | Explain the steps followed by wildlife professionals to resolve conflicts in underlying objectives of stakeholders. |
| Structured decision making: How can we make better decisions for management of wildlife and habitats and people? | Explain the steps in the formal "PROACT" structured decision process.  |
| Develop a management plan using the structured decision process. |
| Suggest how the value of diverse stakeholders can be incorporated in the decision-making process for wildlife management. |
| Quantitative Skills | GIS: How can spatial data be displayed and analyzed in a geographic information system? | Compare the advantages that vector and raster data convey to spatial data analyses. |
| Describe the dynamics that affect precision of estimates of location from global positioning systems. |
| Rank the importance of basic tools used in geographic information systems for spatial inquiries for wildlife species and habitats. |
| Contrast the key tradeoffs among the main types of projections used to display spatial data in a geographic information system. |
| Statistics: How can we draw inference from data regarding a research question? | Compare the assumptions of various statistical models that are useful in the analysis of ecological data. |
| Describe statistical theories for methods of analysis for ecological data. |
| Choose an appropriate statistical method for a given data set and research question. |
| Show how statistical methods provide inference needed to make decisions. |
| Experimental design: How can we design an ecological experiment to guide management? | Show how the scientific method is incorporated into the process of experimental design. |
| Discuss how experimentation and design are reflected in the process of adaptive resource management. |
| Explain the key statistical concepts that are reflected in a robust experimental design. |
| Justify the modifications needed for experimentation in field ecology. |
| Population modeling: How can we predict the size and structure of populations in the future?  | Contrast the types of models used to predict population size under different management scenarios. |
| Describe how the effects of harvest and uncertainty are incorporated into population models used to assess differences in proposed harvest management regulations. |
| Explain the outputs of a population viability model constructed for species of conservation concern. |
| Population estimation: How do we estimate the size of populations and other demographic parameters such as survival? | Defend the use of indices for management of populations. |
| Justify the reasons for the assumptions of estimation models for estimation of population size and survival. |
| Describe how incomplete detectability influences the estimation of population size and/or density from survey data or mark-recapture data. |
| Compare how estimation of survival differs from mark-release-recapture and radio-telemetry data. |
| Leadership and Professionalism | Professional interactions: How do we combine and engage conflict management, leadership, and teamwork skills to achieve a group goal? | Understand how personal traits can impact you and other people when working in a team setting. |
| Differentiate among behaviors or strategies that support positive interactions with other wildlife professionals. |
| Implement behaviors or strategies to complete a group task or project. |
| Develop strategies to achieve a common goal. |
| Develop and practice written and oral communication for collaboration, outreach, and education. |
| Professional ethics: How do we apply professional ethics and standards to wildlife work? | Incorporate ethical measures into project or research study design. |
| Identify negative outcomes for incorrect application or neglecting ethics in professional wildlife work. |
| Differentiate between ethical and legal requirements/policies. |
| Diversity, equity, and inclusion: How do we prioritize and improve diversity, equity, inclusion, and belonging in the wildlife profession? | Define diversity, equity, and inclusion (DEI). |
| Identify the importance and benefits of DEI in professional wildlife work. |
| Develop self-awareness to address bias and support diversity. |
| Analyze the role of institutions and culture within the wildlife field that create inequality among students and professionals. |