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ODOT’s Habitat Value Approach to Compensatory Mitigation Debit/Credit Calculations

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Abstract

In 2004, the Oregon Department of Transportation (ODOT), Parametrix, and several partnering agencies developed a statewide Banking Program to improve fundamentally ODOT’s approach for addressing habitat mitigation and conservation and species recovery. As part of the Banking Program, a debit/credit accounting system was developed to ensure that compensatory mitigation and conservation actions adequately address impacts to species, habitat, and functions. The resulting Habitat Value metric represents a comprehensive view of ecosystem function and is the currency of the Banking Program. It constitutes a new approach to resource evaluation, and can be characterized as a new language that enables project-permitting discussions to move beyond a narrow focus on regulatory requirements.

Most mitigation and conservation bank programs measure debits and credits in acres or linear feet. Ratios are often applied as a surrogate means of addressing habitat quality and function. The Habitat Value approach moves away from using dimensions and ratios in favor of focusing on changes in the ecological function of the site. This type of analysis provides an opportunity to evaluate where systems may be most vulnerable to impacts and where management activities should be focused to protect or enhance overall ecosystem integrity.

Habitat Value is determined by using database correlations to predict which species will occur at a site based on field inventories of habitat characteristics. These correlations are the basis for determining which key ecological functions are likely to be performed. Because many project sites are adversely influenced by the presence of invasive plant species, it is necessary to incorporate an adjustment factor that reflects the fact that such sites are not functioning at their ecological potential. These habitat-species-function relationships are integrated to determine Habitat Value. There are two methods for determining Habitat Value, both of which utilize GIS and automated databases: a rapid assessment for use at low quality/low severity impact sites and a more detailed approach for high-quality/high-severity impact sites.

The Habitat Value approach can accommodate different types of impacts and mitigation/conservation activities, and is useful for alternatives analysis and impact assessments. The accounting system assesses debits and credits by predicting how species will respond to habitat modifications (i.e., changes in the extent or character of available habitat). Based on anticipated post-project conditions, a post-project Habitat Value is calculated and subtracted from the baseline Habitat Value in order to determine the debit or credit amount. Techniques have been developed to quantify the debit value of temporary direct, permanent indirect, and permanent direct impacts, as well as the credit value resulting from habitat restoration, creation, enhancement, and preservation.

As an interim measure to ensure that regulatory requirements are satisfied, accounting modules address the extent and abiotic function of wetlands and the extent and quality of habitat for certain ESA-listed species. These backstops make use of the Habitat Value accounting framework, but incorporate additional information relating to wetland function or species-specific habitat suitability. Additional modules can be added as needed to address water quality or other resources of specific regulatory interest (e.g., additional ESA-listed species, migratory birds).

Through the Habitat Value approach, the value of all habitat types (not just jurisdictional wetlands) can be quantified. When coupled with Ecoprovince Priorities that reflect regional restoration/conservation objectives, the Habitat Value approach accommodates out-of-kind mitigation. This new system provides the flexibility needed to focus on regional priorities while implementing the Clean Water Act, the ESA, the Fish and Wildlife Coordination Act, and the ODFW Habitat Mitigation Policy. This approach has been developed in close coordination with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Federal Highway Administration, the Oregon Department of Fish and Wildlife, Oregon Environmental Quality, and the Oregon Department of State Lands, in addition to ODOT.

As with the Banking Program in general, the debit/credit accounting system will incorporate new ideas and techniques to build on successes and address shortcomings. Further research will include the development of additional species-specific accounting modules for ESA-listed salmon species, vernal pool communities, Fender’s Blue Butterfly, and threatened and endangered plants. Additionally, analysis may be modified to address abiotic functions and to incorporate landscape connectivity metrics. Finally, it may be possible to integrate the Habitat Value metric with other models, such as hydrogeomorphic models and the NMFS Five-Step Wetland Mitigation Ratio Calculator.

Biographical Sketch: William Warncke is the mitigation and conservation program coordinator for the Oregon Department of Transportation (ODOT). His primary focus is developing an integrated mitigation and conservation banking program for the agency. He has worked at ODOT for six years. Mr. Warncke has worked as a biologist for multiple state and federal agencies prior to his work with ODOT. Mr. Warncke has a B.S. degree in natural resource management from the University of Maryland and a M.S. degree in fisheries from Oregon State University.