

# The Evolution of the Washington State Forestland Database Project

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**T**he Washington State Forestland Database (WSFD) is a well-developed and evolving tool used to analyze forest ownership and management patterns and model forestry economics at a statewide scale. Started in 2001, it combines land ownership, land use, and assessment information with physical characteristics for every parcel in the state.



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In 1999 the Washington State legislature passed the Salmon Recovery Act and established the Washington Department of Natural Resources (DNR) Small Forest Landowner Office, which was tasked with, among other things, collecting and reporting every four years the number of small forest landowners (SFLO) and the size of their land holdings. The Washington State Forestland Database was initially developed in response to this need, in order to provide a comprehensive platform for understanding the spatial characteristics of all private forestland ownership in the state; it was a forest ownership census.

The backbone of the WSFD is parcel-level assessment records collected from Washington's 39 county assessors, combined and standardized into a seamless, statewide dataset. Much of the original parcel data lacked specific spatial information, but there has been a strong push by the county assessors to improve their data by making it spatial. This move toward Geographic Information Systems (GIS) in the county parcel data has greatly increased the potential of the database to provide answers to an array of research and policy questions.

## The past: what has changed between the 2001 and 2007 database versions

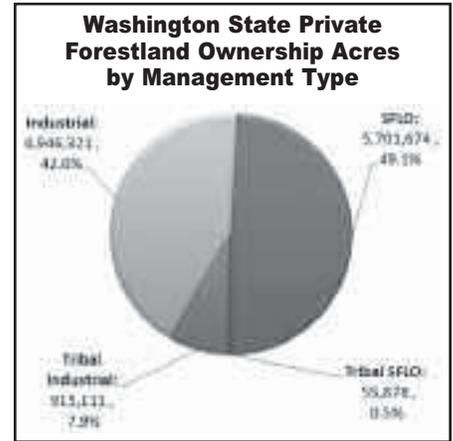
Over the last 10 years, three versions of the database have been developed. The initial version, the Small Forest Landowner Database, was completed in 2001, and was focused on identifying small landowners. It attempted to answer the question "Who owns the forestland?"

In the second version, in 2007, most of the data provided by the county assessors was now spatial (maintained in a GIS database) and also included parcel values. The spatial component made it possible to model the potential of forestland parcels to grow timber over time. The addition of parcel values made economic analysis possible by comparing the present value of potential future timber harvests to the present value of developing the parcel to a non-forestry use. This comparison highlighted parcels where the future harvest value was lower than the current market value. These parcels were considered more likely to convert to a developed land use. With this additional information, the database moved beyond the original forestland ownership census to the projection of possible economic and physical changes to the forestland base in Washington.

## How the 2007 database has been used

The 2007 WSFD was the basis of the October 2008 Northwest Environmental Forum that focused on retaining working forestland. Information derived from the database drove the forum discussion, and guided the recommendations that the forum submitted to the Washington State Senate in the report: *Retention of High-Valued Forest Lands at Risk of Conversion to Non-Forest Uses in Washington State*.

In 2009, the WSFD was highlighted in the Database Final Report to the US Forest Service. The report provided background on the database, and statistics about the ownership of Washington's forestland base. Statistics derived from the database reveal that



215,000 small forest landowners own 5.7 million acres of forestland (see chart above), half of the 11.6 million acres of private forestland in the state. Over 89,000 of those small forest landowners have ownerships greater than 10 acres and 55,000 own more than 20 acres.

While creating the 2007 WSFD, it was recognized that making it publicly available could greatly increase its utility and thus its potential value. A public version of the database was built that retained parcel land use information while protecting private ownership details. This version of the database has been distributed through the Rural Technology Initiative (RTI) website and has been downloaded by 65 different organizations.

## The present (2009 version): new updates and components

The 2009 Washington State Forestland Database was created to support projects with the Washington DNR and the USDA. Lessons learned from the creation of the 2001 and 2007 versions were applied to improve the consistency of the data collection and normalization process. Feedback from users of the previous databases was used to create new features and to increase its functionality. As a result, the 2009 WSFD is a more robust tool that can be used to answer a broader base of research and public policy questions.

The greatest improvement in data consistency came from developing a more rigorous data integration methodology. Parcel datasets from counties were supplemented with

datasets from state and federal agencies. Sometimes the same parcel record was included in multiple data sources, so it became necessary to identify and remove duplicate parcels from different sources. A system was developed to prioritize data sources depending on the type of ownership; for instance, DNR parcel records took priority over county parcel records for DNR lands. The inclusion of state and federal data sources for the first time made the 2009 WSFD a true border-to-border inventory including all private and public lands.

The addition of data from a new rigorously tested inventory dataset (GNN Mapping of Existing Vegetation, Pacific Coast States) made it possible to use the 2009 WSFD to estimate timber and biomass inventories for all of Washington. By importing current forest inventory data into a well-established growth model, the available biomass was calculated over the next 30 years. The available biomass has been requested by the Washington DNR; it is an important factor in determining the viability of creating a biofuel industry to help replace the use of imported fossil fuels.

Another important component included in the 2009 WSFD is a road network dataset. This spatial dataset was developed by combining the Environmental Systems Research Institute (ESRI) Streetmap data on intrastate roads and highways with the Washington DNR data on forest roads. The combination of the two datasets was critical to model transportation from every parcel to any location. The road network dataset is used extensively in calculating the costs associated with forest harvests and the costs of hauling biomass to potential biofuel refineries.

### The future

The Washington Forestland Database began as a static snapshot of the small forest landowners in Washington state. It answered the question “how many forest landowners are there?” As the use of GIS based assessment data increased, it became possible to use the database to answer “where are the forestlands located?”

The future of the WSFD project involves broadening the scope to

include a more complete picture of Washington’s agricultural and forest resource lands and their interaction with urban areas. These resource lands account for over 70 percent of the state’s land base. The database is a powerful source of information and can be used for research and to investigate public policy questions on the economy, air quality, water quality, bioenergy, homeland security, and forest industry to name a few. Over the past 10 years the Washington State Forestland Database has continued to evolve to meet new challenges and answer new questions. ♦

*A more detailed background on the development of the Washington State Forestland Database can be found in two articles in the March/April 2006 issue of Western Forester.*

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