

A Watershed Perspective

Historian Bob Sandford recently stated that Canadians once knew their landscape by watershed divides. The heights of land that determined the courses of streams and rivers also dictated their travel routes. The spines of the continent, however subtle or majestic, were ingrained into the memories of those who traveled or made a living off the land. Trains and automobiles eventually superseded canoes and horses and the internal map of watershed divides transformed into a grid marked by highways and townships. However, when considering hydrologic and ecological processes, this map of linear features has one major flaw. It fails to recognize that water flows downhill, regardless of our transportation infrastructure or political boundaries. All people within a watershed share and influence the quality of their water resources, regardless of the political boundaries. Therefore the group of players within any watershed is pre-determined and all members are challenged with the task of learning to get along as they work towards ensuring sufficient water quantity and quality to meet their own specific needs. Re-imagining our historical perspective of the land can be an important first step in the watershed management process and the Foothills Model Forest (FMF) has developed a tool to help people once again view their landscape by watershed divides.

If you live or work within an area that is shaded green on Figure 1, walk out to any stream that you are interested in. Within 300m of the point at which you are standing, we have created a map of the height of land that forms your watershed boundary. Using GIS and these boundaries you could efficiently determine the landowners or land managers with whom you share your watershed with, or you could evaluate levels of land-use. Geographical attributes for each watershed including drainage area, average slope and dominant aspect are available along with the watershed boundaries.

To create these watersheds, we divided the stream network into segments of uniform stream slope and stream size and then determined the height of land at the downstream end of each segment. We built upon a standard Alberta Environment procedure and in addition to providing the watershed boundary, we have geographical information for each watershed and uniform stream segment. Technical reports for the three individual projects that comprise the classified areas are available on our website.

To date, the FMF has used watershed divides for two projects. For a study on the effects of the 2001 Dogrib fire on stream channel stability and large woody debris recruitment, we stratified all 300 m long stream segments within the study area based on stream slope and drainage area and then randomly selected sample sites (Figure 2). We've also used watershed information to help understand how three species of trout select habitat based on basin characteristics within the FMF (Figure 3).

With a height of land perspective, there are an infinite number of ways that you can increase your understanding of your land and water resources. If you are interested in attending a workshop on how to begin to use our watershed maps, please contact Richard McCleary. A one-day information session is planned for Tuesday, January 20, 2004 at the Hinton Training Centre. At the workshop we will assess the needs and interests of potential users and then plan for a more in-depth training session on applications of our watershed and stream classification data.



Figure 1. Portions of Alberta with FMF stream and watershed classification data.

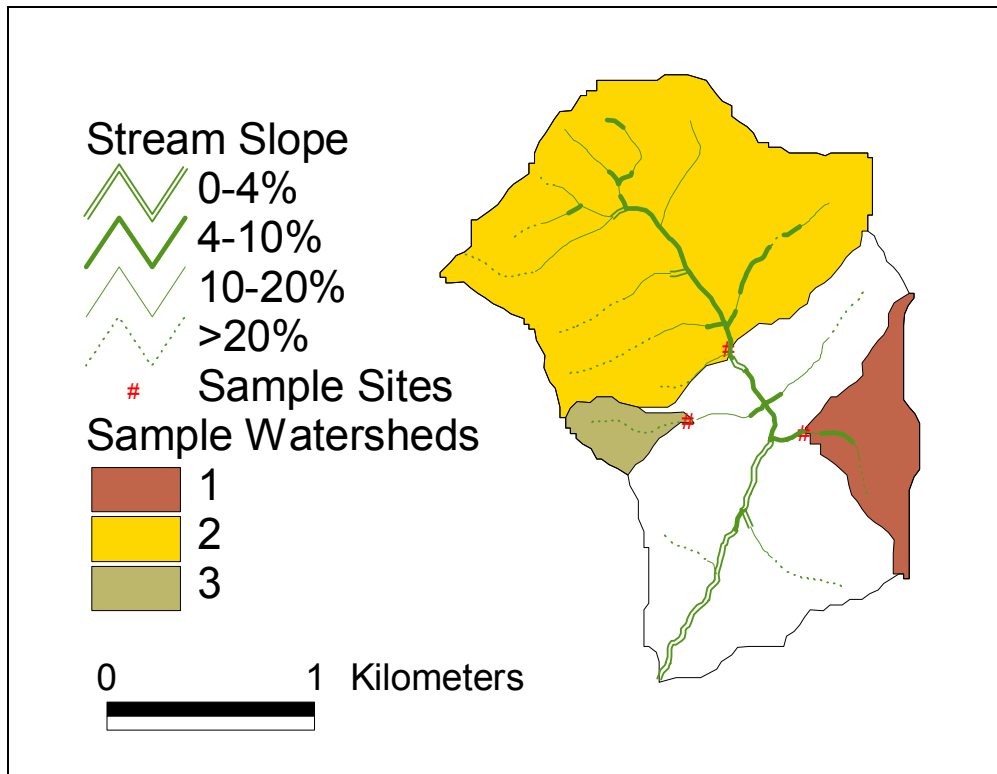


Figure 2. Example of randomly selected sample reaches (Population stratified by upstream drainage area and stream slope).

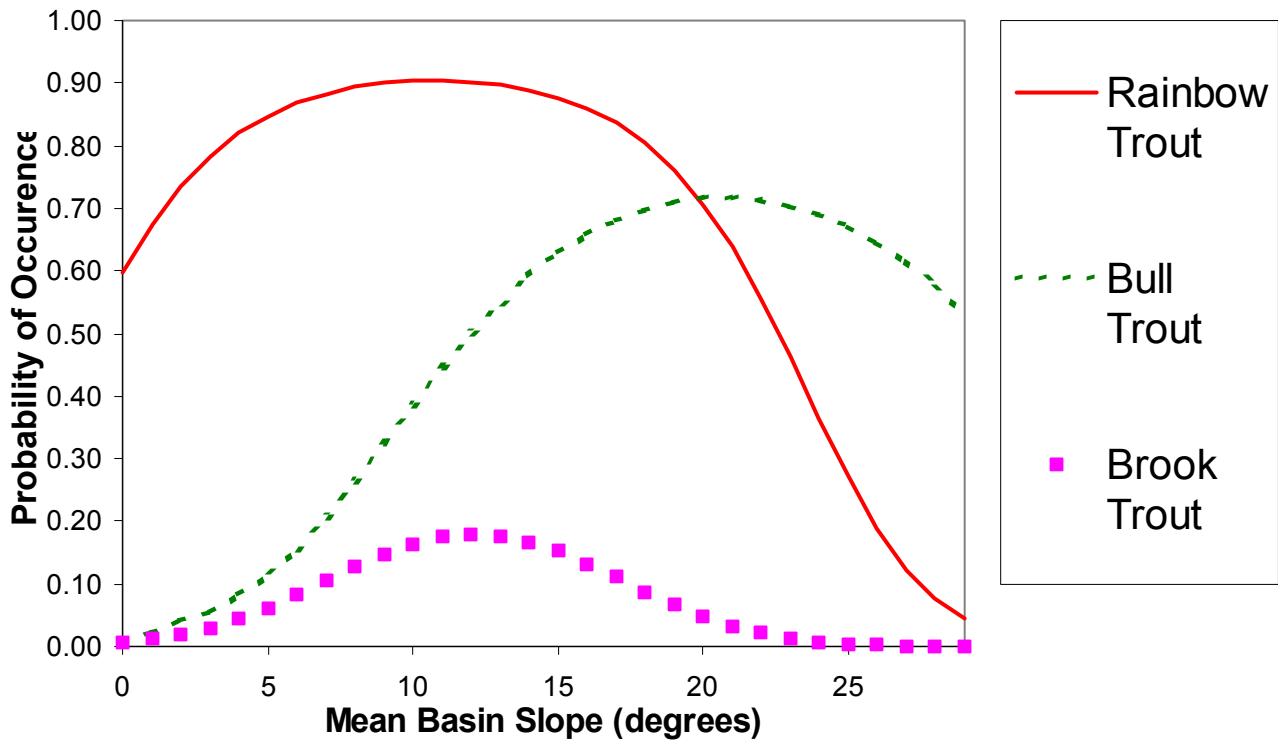


Figure 3. Habitat selection probability model for three Foothills Model Forest fish species based on basin slope from FMF stream and watershed classification data.