

Chapter 3: Results

Results of the assessment were presented for the entire Northwest Forest Plan (the Plan) area and by land use allocation. Information on the current status of inchannel attributes was presented for the Plan area only because the number of watersheds measured (55) was not sufficient to divide into multiple land use allocation categories. Road and vegetation results for each of the land use allocations were based on a poststratification of the 250 watersheds. The land use allocation categories presented here are the same as those described by Tuchmann et al. (1996); however, we added a key watershed category because these areas are an important component of the strategy. Key watersheds are an overlay of the other land use allocations; thus, the categories are not mutually exclusive. We also collapsed some of the land use allocations that have similar guidelines for management (table 3). For example, administratively withdrawn areas were added to the congressional reserve category. Riparian reserves were not included because they have not been mapped. Results for upslope and riparian attributes are based on the riparian buffers described in chapter 2. Boundaries for land use allocations (including key watersheds) did not follow watershed boundaries; consequently multiple land use allocations may have been present in individual watersheds. Watersheds were classified according to the predominant land use allocation (>50 percent of the watershed area), including a nonfederal class. Nine of the watersheds could not be classified according to the described protocols because they contained several land use allocations of similar size. Information on these watersheds is presented in the Planwide analysis only.

Plan Area

Current Status

We could not develop a baseline for the condition of watersheds across the Plan area based on a full set of data because inchannel data have been collected in only 55 of the 250 watersheds. We therefore used condition scores of the “driving” variables for which data were available (roads and vegetation variables) both separately and aggregated into a drivers condition score. The possible watershed condition scores range from -1 to 1. Watershed condition scores are positively related with the condition of water-

Table 3—Collapsed land use allocation categories used in this analysis (category) and the land use allocations (described by Tuchmann et al. 1996 and the aquatic conservation strategy) included in each category

Category	Land use allocation
Adaptive management areas	Adaptive management areas
Congressional reserves	Congressional reserves Administratively withdrawn areas
Key	Tier 1 key watersheds Tier 2 key watersheds
Late-successional reserves	Late-successional reserve 1 Late-successional reserve 2 Late-successional reserve 3 Managed late-successional reserves Adaptive management reserves
Nonfederal	None
Non-key	All federal lands not designated as key watershed
Matrix	Matrix lands and riparian reserves ^a

^aRiparian reserves have not been mapped; therefore, we were unable to separate them from matrix lands.

sheds: watersheds in good condition have higher scores than those in poor condition. Condition scores from the 55 watersheds were clustered in the center of the distribution (fig. 10). Maps are presented for the current (time 2) condition of the 55 watersheds (fig. 11), roads scores (fig. 12), vegetation scores from the 250 watersheds (fig. 13), and drivers scores (aggregate of roads and vegetation; fig. 14).

The questions the monitoring program is charged with answering are related to upslope, riparian, and in-channel conditions. Condition scores for upslope vegetation (median 0.35) were generally higher than roads (median 0) in upslope areas (fig. 15). Riparian vegetation had lower condition scores than did riparian roads (fig. 15). Upslope attributes generally have higher condition scores than do riparian attributes. Nearly half of the watersheds had condition scores less than -0.75 for riparian vegetation (fig. 16). Forty percent of the watersheds had condition scores less than -0.75 for riparian roads. In contrast, a maximum of 16 percent of the watersheds had condition scores for either of the upslope attributes that were less than -0.75.

Land Use Allocations Under the Plan (from Tuchmann et al. 1996)

The Plan allocated all federal lands into one of seven land use categories. Specific standards and guidelines for management activities such as timber harvest were developed for each land use allocation. The allocations include:

Congressionally reserved areas: These lands have been reserved by acts of Congress for specific land uses such as wilderness areas, wild and scenic rivers, national parks, and other lands with congressional designations.

Late-successional reserves: These reserves, in combination with the other allocations and standards and guidelines, are designed to restore a functional, interactive, late-successional and old-growth forest (older forest) ecosystem over time. They also serve as habitat for terrestrial and aquatic species that depend on these older forest characteristics. Not all of the reserves are currently in older forest condition. Pending scientific oversight and approval, some silvicultural treatment is allowed to enhance development in stands less than 80 years old and where fire played a dominant role.

Managed late-successional reserves: These lands are either mapped to protect areas where spotted owls are known to exist, or they are unmapped protection buffers. Protection buffers are designed to protect certain rare and endemic species.

Adaptive management areas: Ten areas were identified to develop and test innovative management approaches to integrate and achieve ecological, economic, and other social and community objectives. Each area has a different emphasis, such as maximizing the amount of late-successional forests, improving riparian conditions through silvicultural treatments, or

maintaining a predictable flow of harvestable timber and other forest products. Each area considers learning a principal product of their adaptive management activities.

Administratively withdrawn areas: These areas are identified in current forest and district plans and include recreation and visual areas, backcountry, and other areas where management emphasis does not include scheduled timber harvest.

Riparian reserves: Riparian reserves are areas along all streams, wetlands, ponds, and lakes, and on unstable and potentially unstable lands vital to protecting and enhancing the resources that depend on the unique characteristics of riparian areas. These areas also play a vital role in protecting and enhancing terrestrial species.

Matrix: The matrix includes all federal lands not falling within one of the other categories. Most of the scheduled timber harvested will be from matrix lands. They include nonforested as well as forested areas that may be unsuited for timber production.

Key watersheds: This land use allocation was designated as part of the aquatic conservation strategy, and was overlaid on the other land use allocations. Therefore in addition to being in one of the land use allocations above, areas will also be designated as key or non-key watershed. The strategy includes two designations of key watersheds. Tier 1 key watersheds were selected to directly contribute to the conservation of anadromous salmonids, bull trout, and other resident fish species. Tier 2 key watersheds were selected as sources of high-quality water and may not contain at-risk fish stocks.

Roads—

The density of riparian roads in the 250 randomly selected watersheds ranges from 0 to 0.41 mi of road per mile of stream. The evaluation criteria for most of the provinces rate 0 mi of road in watersheds as good condition with respect to riparian roads and 0.1 mi of road per mile of stream as poor condition. In other words, watersheds that have roads next to 10 percent or more of the stream channel (as identified by the 1:24,000 densified stream layer) are in poor condition with respect to roads. The median riparian road den-

sity was 0.15 mi of road per mile of stream (fig. 17). Nearly 4 percent of the watersheds have no riparian roads. More than two-thirds of the 250 watersheds had riparian road densities greater than 0.1 mi of road per mile of stream.

The frequency of road-stream crossings in the 250 randomly selected watersheds ranges from 0 to 4.2 crossings per mile of stream. The evaluation criteria for most of the provinces rate watersheds with no road-stream crossings as good condition and watersheds with one to three crossings per mile of stream (depending on the province) as poor condition. Just over 4 percent of the watersheds contain no road-stream crossings (fig. 17). Nearly 53 percent of the watersheds have more than one crossing per mile of stream, and 15 percent have more than two crossings per mile of stream. In these watersheds, roads cross streams about once every half mile. Less than 1 percent of the watersheds have at least three crossings per mile of stream.

Vegetation—

When evaluating riparian vegetation, we looked for the percentage of the riparian area that has conifers of >20 in diameter at breast height (d.b.h.). In the 250 randomly selected watersheds, the riparian area with large trees ranges from 0 to 93 percent. The evaluation criteria for most of the provinces rate watersheds with large conifers in at least 50 percent of the riparian area as good condition with respect to riparian vegetation, and watersheds with only 30 percent

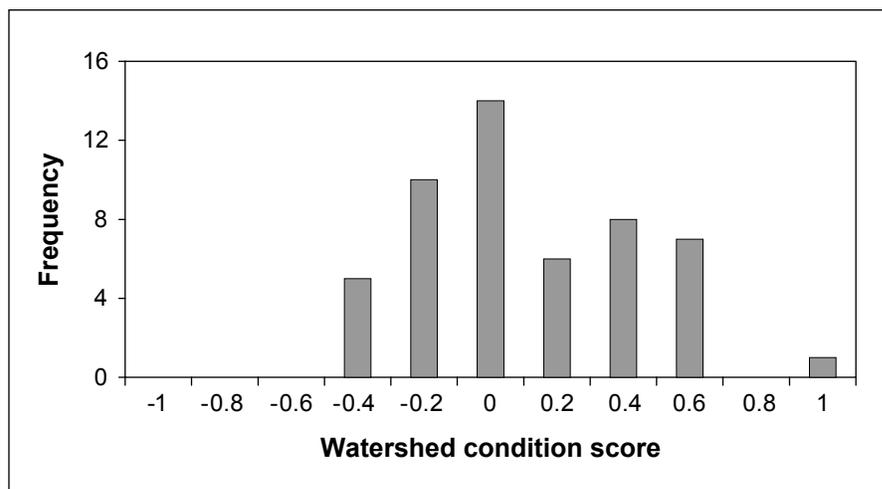


Figure 10—Distribution of watershed condition scores in time 2 for the 55 watersheds for which we have inchannel data. These condition scores are the aggregate of the evaluation scores for roads, vegetation, and inchannel physical and chemical attributes.

as poor condition. The median value for percentage of riparian area with large conifers is 40 percent (fig. 17). Nearly 38 percent of the 250 randomly selected watersheds have large conifers in at least 50 percent of the riparian area. Twenty-nine percent of the watersheds have large conifers in less than 30 percent of the riparian area.

Inchannel—

Reach condition scores, which are aggregates of the inchannel attributes including wood, pools, and substrate, ranged from -0.9 to 1.0. Reach condition scores tended to be fairly high; fewer than 15 percent of the 281 reaches sampled had condition scores less than 0, which is the center point of the possible range of condition scores (fig. 18). The median reach condition score was 0.4 and about 75 percent of the reach condition scores fell in the 0 to 0.6 portion of the range.

The inchannel habitat variables had fairly high scores overall. Many of the sampled reaches had high condition scores with respect to pools (fig. 19a); nearly 75 percent of the reaches received a condition score of 1. Substrate condition scores were also generally high. Thirty-eight percent of the sample reaches had condition scores equal to +1 (fig. 19b), which suggests that these reaches had median particle sizes that were suitable for spawning habitat and low levels of fine sediment. In contrast, 12 percent of the sample reaches had condition scores equal to -1. These

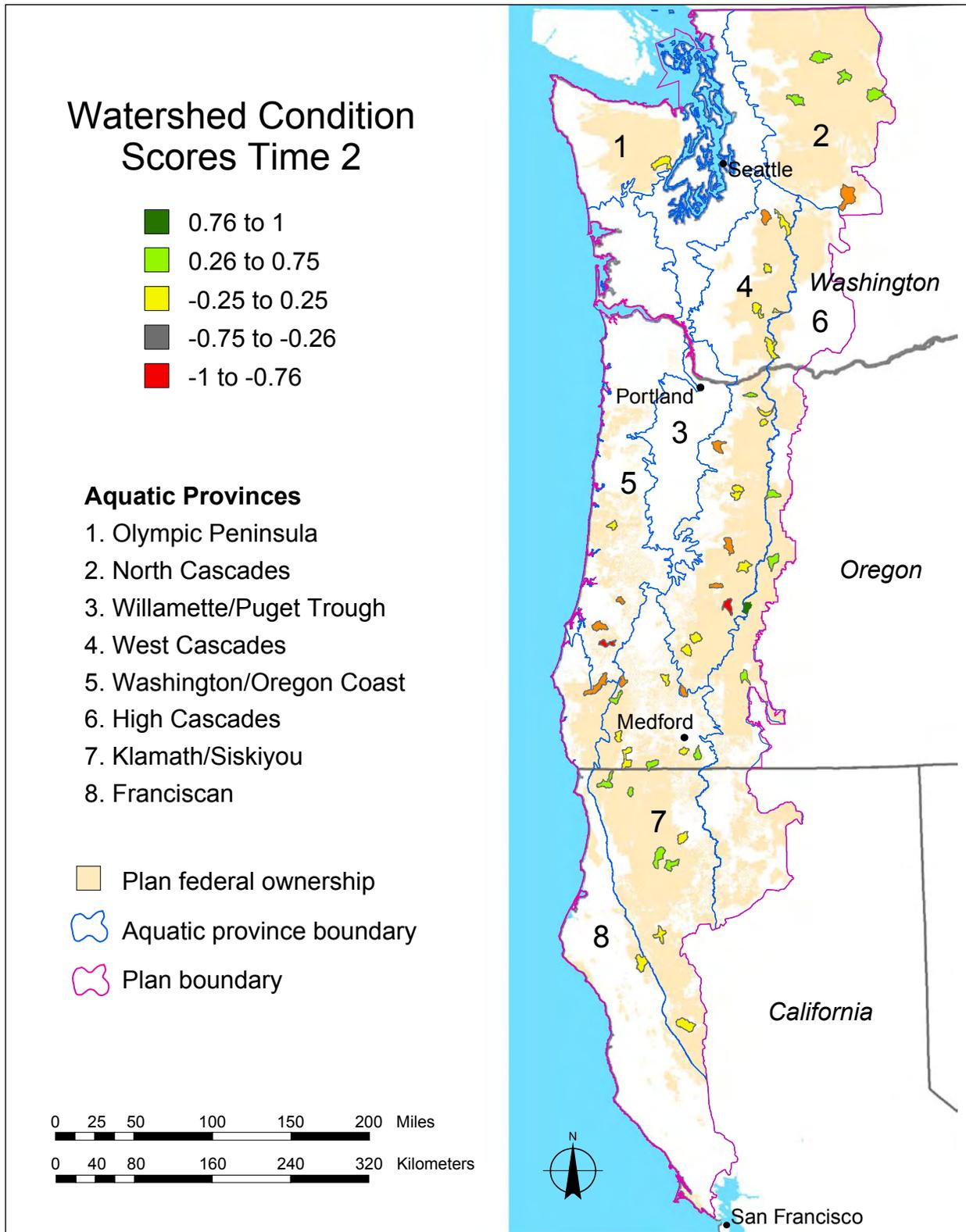


Figure 11—Time 2 watershed condition scores for 55 randomly selected watersheds in the Plan area that have been sampled as of 2003. The watershed condition scores are the aggregate of the evaluation scores for roads, vegetation, and inchannel physical and chemical attributes.

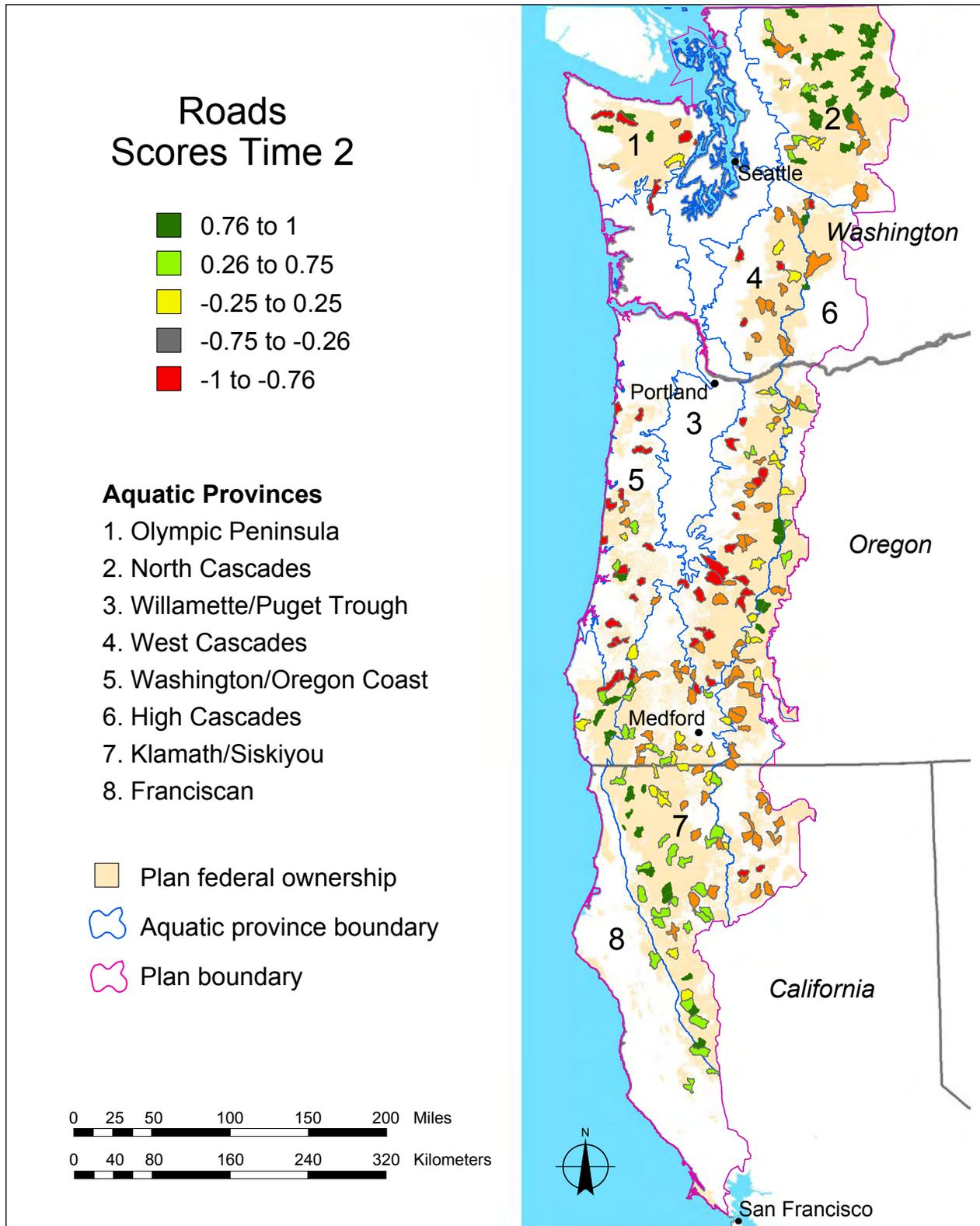


Figure 12—Time 2 road condition scores of 250 randomly selected watersheds in the Plan area. The road condition scores are the aggregate of the evaluation scores for all roads attributes, including density of roads in upslope, riparian, and hazard areas and frequency of road-stream crossings.

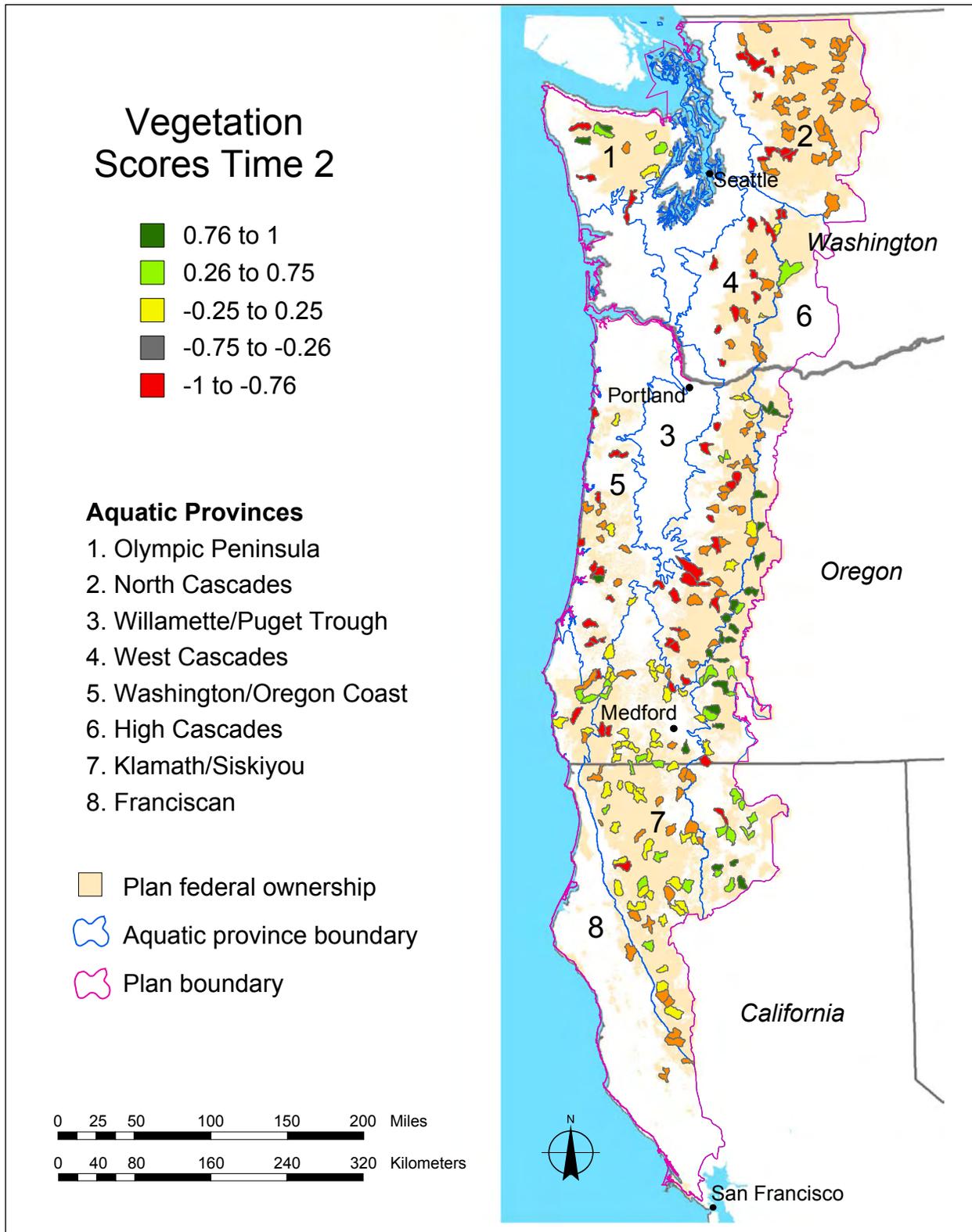


Figure 13—Time 2 vegetation condition scores of 250 randomly selected watersheds in the Plan area. The vegetation condition scores are the aggregate of the evaluation scores for all vegetation attributes, including percentage of cover of conifers greater than 20 in diameter at breast height (d.b.h.) in the riparian area and percentage of cover of conifers less than 10 in d.b.h. in the upslope area.