Date: February 14, 2001

Attachment 2

Survey and Manage Microsite Guidance
Botanist and Wildlife Biologist

I first became aware that we had some issues with microsite considerations for survey and manage species when presented with some alternative approaches to harvesting near where known locations of Malone's Jumping slugs occurred. The abundance of Malone jumping slugs, *Hemphillia malonei*, on many of our project areas necessitated the need to provide guidance on management strategies where this species is found. In discussing this situation with other specialists, we found we needed a scientific approach to determining retention for survey and manage species. I consulted with Tom Burke, regional mollusk taxa expert, and Kim Mellen, wildlife ecologist, on what approaches we should use in managing for *H. malonei*. The question revolved around whether it was imperative to manage ten plus acres per site. Tom and Kim agreed that the intent of the management recommendations is to provide the proper microsite conditions for the species and that area was not the critical factor. Both Tom and Kim felt that depending on aspect, moisture regime, and surrounding management that the area could be varied. They felt that management should be dealt with on a site-specific basis. This same approach should be applied to many of our other survey and manage species.

Following the Mt. Hood Biologist Meeting on February 7, 2001, I reviewed the **Management Recommendations for Survey and Manage Terrestrial Mollusks, Version 2.0, October 1999**, hereto after referred to as the Management Recommendations, the **ROD and S&G for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines**, January 2001 hereto after referred to as the ROD and S&G, and two publications by Jiquan Chen et al.on microclimate (**Growing-Season Microclimatic Gradients from Clear-cut Edges into Old-Growth Douglas-fir Forests, 1995** and **Modeling Air Temperature Gradients Across Managed Small Streams in Western Washington, 1998**). I will highlight what I feel are the important issues in these publications.

In the Management Recommendations for Malone's jumping slug the management recommendation for *H. malonei* is: "The Habitat Area will be identified as the area around known site locations including all habitat features that contribute to environmental conditions important to the species at the known site. <u>In most cases, this could be achieved by areas up to tens of acres</u> (ROD – C-5)." On pages 23-24 of *H. malonei* it states, "Management considerations should focus on maintaining the temperature and moisture regime of these microsites. This requires that overstory crown cover and understory vegetation be retained to shade the ground, provide humidity through evapotranspiration, condense fog and dew, intercept underground water and hold it on the site, and impede air movement that would tend to displace cool moist air. Available crown cover information for these habitats is meager, but observations recorded in some western hemlock/Douglas-fir stands indicated summer crown cover of 70-90% plus."

In the ROD and S&G under Standards and Guidelines Section V, Management Recommendations, page 20 there is a discussion on habitat parameters that states; "The size of the area to be managed depends on the habitat requirements for the species. Management may range from maintaining one

or more habitat components (such as down logs or canopy cover) to complete exclusion from disturbance for many acres, and may allow loss of some individuals, areas, or elements not affecting continued site occupancy."

Based on the guidance in the Management Recommendations, recommendations from Tom Burke and Kim Mellen, and the ROD and S&G it appears that some flexibility in size below the "tens of acres" may be applied depending on site conditions and surrounding management. Therefore, it is important to look at the research on microsite to see how this could be applied to all of our survey and manage species.

In looking at Chen et al, the soil moisture, temperature, and humidity can be influenced as deep as 120 m to >240 m into the forest. Southwest facing edge orientations have the greatest depth of edge influence. After reviewing the literature, the Forest felt we should contact Dr. Jiquan Chen, discuss the effects of management with him and Tom Burke to determine some approaches to buffering our survey, and manage species when maintaining microsite was the main objective to achieve species persistence. It is my recommendation that we use Dr. Chen's guidance when developing recommendations for wildlife and botany species that require maintenance of microsite conditions.

Dr. Chen made several recommendations and observations based on his research that is worth documenting to aide us in determining retention area widths. Dr. Chen felt that many factors affect microsite and that no one number should be used to determine retention area widths. He felt that in the Pacific Northwest, during July and August, we could probably maintain our microsites with a southwest facing edge orientation with a 120 meter radius from the known site (Chen et al found that edge orientations of 240 degrees were the most affected by openings). On a northeast edge orientation, we could reduce our retention area radius to 60 meters in most cases.

Dr. Chen pointed out that canopy height (the distance from the ground to the base of the canopy or where the branches where leaves first occur) played an important role in the maintenance of the microclimate. He indicated that we could use 5 to 6 times the height from the ground to the bottom of the canopy as a way to determine retention area radius widths on the south and west orientation. He mentioned that older stands that had higher canopies would allow more sunlight and air movement and would be more influenced by openings. Therefore using this strategy for determining the retention area width based on canopy would take into account this difference, especially in younger stands.

Because many of our projects involve thinning instead of clearcutting, adjacent to our survey and manage sites, we had some questions about retention area widths adjacent to thinned areas. We presented Dr. Chen with the example that we would thin a stand by approximately 40-50% percent of its canopy and wanted to know how much retention area we would need (our example was taking a stand that had a canopy closure of eighty five percent down to approximately forty percent). Dr. Chen felt that we could reduce the retention area in this case by fifty to sixty six percent. This also corresponded well to a strategy that was developed by Carl Frounkfelker, the Wildlife Biologist for the Siuslaw National Forest.

Because many of our survey and manage sites have been found in drier conditions than were previously thought we asked Dr. Chen how we might try to recreate these conditions. He indicated

that we could measure the relative humidity at these sites, find where in the stand we could find similar conditions, and adjust our retention area s accordingly. In the case of the Dalles sideband, *Monadenia fidelis minor*, and Malone's jumping slug some adjustments may be in order where the species appears to be using sites near edges or in relatively dry conditions. Tom Burke agreed that these adjustments could be made to adapt our management to the site conditions present by the mollusk species of concern.

Based on this review of the current knowledge on microsite I recommend that specialists use a flexible approach to prescribing retention areas surrounding known sites for survey and manage species. As a rule, approximately 60 meters to 120 meters radii should be used depending on the orientation of the edge you are creating. Factors such as stand age, canopy heights, adjacent stand conditions, as well as the microsite conditions being used by the species in the local area should be considered. This could result in your reducing or increasing the retention area width to account for site-specific conditions. Making continuous blocks of habitat where there are clusters of known sites is preferred. Clumps of continuous habitat will allow better interaction among individuals and assist in persistence. Clustering of sites will allow for more buffering of microsite conditions ensuring that some sites will have better ability to withstand extreme conditions.

Initially it would be good to go over your recommendations for retention areas with the HQ staff so we can maintain some consistency with what other districts and forest are doing. I appreciate your innovation and insights for these unique and valuable species.

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Wildlife Biologist