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20 February 2004

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Dept. Comm. Devel.

FEB 23 2004

Re: WDFW's Kitsap Habitat Assessment

Vivian:

This week Department of Fish & Wildlife analysts came to Port Orchard to brief county staff and me on this study. They were respectively Mary Linders and Erik Neatherlin; Jim Bolger and Paul Nelson.

It was a good session. In brief, most of the concerns expressed in my 26 December letter to you have either been recognized already and overcome, remain to be dealt with by whomever uses the WDFW product, or are invalid. What follows is particulars about these themes. But first, I was impressed by the competence and professionalism of Linders and Neatherlin. They're a credit to their Department.

What it's about--The project's intent is, first, to provide vegetation maps (a forester would say type maps) in considerable detail, across the county, augmented with already-mapped or already-identified features like salt marshes, mudflats, and cliffs. There are 5 vegetation categories, ranging from mature forest through 3 other forest categories to grass/forb/bare. There are land-use classes and classes relating to kinds of stream channels, kinds of marshes, and so on. Perhaps 20 classes are distinguished.

This information comes primarily from LIDAR imagery, which can readily distinguish the density of the forest and its height. As you know, LIDAR can deliver 12-inch resolution but these images are averaged so that actual resolution is about 82 feet.

This means that the map has, in effect, a grid of 82-foot squares, within which a computer averaged the veg density and height and placed the square into one of the 5 cover classes. Each class-colored 'pixel' appears on the map as a tiny square with its own color.

If a single forest tract covers, say, five acres it produces some 32 of these little colored squares that appear on the map as a single polygon. This process has generated a large number of variously colored polygons on the Kitsap Peninsula map; quite impressive. Some LandSat images are also used to identify grass/forb/bare lands, and this too is not close resolution, as mentioned in my letter.

As always in such maps, small wetlands are not always spotted.

There's a gap in the LIDAR coverage, over part of Bainbridge. The LandSat and LIDAR mapping meshed well, so that concern on my part was not valid.

Second, this map, which is completed for the Kitsap Peninsula, is supplemented with overlays that have auxiliary information such as eagle nests. This sort of data obviously isn't revealed by LIDAR and LandSat, but nest sites and similar wildlife-related locations are known and verified so they're mapped.

Third, a list of vertebrate wildlife (amphibians, reptiles, mammals and birds) has been assembled. They are chosen either because they are species of special interest or because they represent a segment of the wildlife spectrum. Some 42 are listed. Some are known to be in Kitsap; some are presumed to be there, based on modeling of the sort mentioned in my letter.

Of the 42, 18 are currently involved in the maps. Each species is assigned to one or more cover classes. Not surprisingly, river otters are identified with rivers; others are assigned to classes based on the wildlifers' knowledge of preferred habitats. Bobcats fall in a number of cover classes, as would any wide-ranging animal.

Fourth, a second map is generated from the first, showing in color the polygon classes that account for one species, another color for cover polygons that account for two species, another color for three-species classes, and so on. If a dozen species use the same cover class, that class's polygons will have its own color, which may appear at various places on the map. The number of species assigned to a class is called its 'priority'.

This map has also been generated, in a tentative way. One can spend a long time looking at this map, sensing the total area in each priority level, seeing how the polygons associated with that level are big or small and close together or far apart, and whether they are clustered in certain parts of the county. Too, the computer that generates the map can presumably put numbers on average sizes, distances apart, and so on.

This second map, now a draft version, reflects the ultimate objective of the project so far, to map the cover classes, after sorting them according to the number of featured species they support.

Whether these classes reflect the actual presence of the kinds of listed wildlife depends on the knowledge of the analysts: what they know about local associations and whether it's valid to extrapolate from similar circumstances beyond the County. That's because this project is a desk job; it doesn't involve field checking. I suspect that the analysts are right on about the preferred vegetation classes of the various species.

One can fuss about whether the 'priority' levels really reflect relative habitat values. It may be, for instance, that a small number of polygons with only one very-rare or endangered species may be more vital than a large number of polygons each of which has seven more-secure species. There is also the matter of whether, say, 7-species

polygons have different mixes of species and if so, whether one batch outranks others in political or practical importance. But I'll let others fuss if it's important.

The intrusion matter--Because it's office- and computer-driven, with aerial imagery already widely available, there doesn't seem to be an intrusion issue. The LIDAR product is available commercially, and somebody might use it for a negative purpose, but the 82-foot averaging precludes such invasion in this venture.

Where from here?--The plan is to repeat this process within the Puget Sound ecoregion and for other ecoregions within the state. There is no plan, at least for now, to expand the work from habitats to on-the-ground censuses of vertebrates in each habitat polygon or even sampling each habitat priority group. Ground truth would be an expensive and demanding process, as described in my December letter. However the density of these featured species may vary greatly from polygon to polygon, and could even be zero. That would open new questions about the actual relevance of particular assumed habitats and why the critters aren't there at the time we call. Similar questions arise if head counts vary among polygons--what factors are at work? Are they pertinent to elements of the local habitat or attributable to outside factors like rainfall patterns, or invading predators or competitors?

Another concern is that the system cannot track species density changes over time, just changes in the shapes and amounts of cover classes, as the maps are updated.

Nor does the system address the interesting question of whether, given a large number of sites considered to be good for species X, emphasis should be given to building up the census of X in low-count sites or rather preserving high-count sites.

Questions like these can be viewed either as problems or opportunities. Always, answers to one set of questions lead to others. For sure, without answers to the questions this project answers, my 'where from here' issues can't be pursued.

Don Flora

cc: Mary Linders
Erik Neatherlin
Jim Bolger
Paul Nelson
Steve Morse, City of Bainbridge Is.