Climate Gradient Corridor Report: Frequently Asked Questions

1. How can I prioritize among corridors - which ones are the best?

2. When would you use the "climate-only" vs the "climate-plus-Landscape Integrity" corridors?

3. How wide should climate gradient corridors be?

4. "Climate" gradient corridors? But you only included temperature! What about precipitation and other important climatic variables?

5. If I overlay focal species and climate gradient corridors, won't this tell me where to direct my connectivity conservation efforts to facilitate a given species' future range shift?

6. Are the core areas well protected and relatively homogenous? Should we only be concerned with connectivity conservation between cores?

7. I just loaded the climate gradient layers onto ArcGIS; why do they look so different from the ones in the report?

8. Why not use a non-cost distance connectivity model that isn't restricted to modeling corridors between patches, and instead focuses on centrality metrics that look at the importance of areas relative to movement across the entire study area?

1. **How can I prioritize among corridors - which ones are the best?**

There is no single answer to this question; it will depend on what it is you are trying to accomplish by using the analysis. To identify which corridors might be most valuable to you:

- **Consider your objectives**. If your goal is to promote the persistence of a particular species, you're likely to prioritize very different corridors than if you're trying to facilitate adaptive regime shifts across a large area.
- **Take a moment to understand what the model represents.** Read the supporting documents, brush up on the fundamentals of ecological connectivity and corridors, and only then ask yourself how a corridor identified by this particular approach might promote your goals.
- **Take advantage of low-hanging fruit.** Generally speaking, your job becomes easier when there's only one corridor across a given area, and when that corridor is relatively narrow. It becomes harder to prioritize connectivity areas when there are many possible routes between cores or very wide routes between cores.

- **Let other conservation values help guide you.** There are likely to be other considerations, e.g., land ownership status, which inform your decisions and can therefore help you prioritize particular corridors.
- **Take your potential corridors for a test drive.** Don't trust the models to be a true reflection of the situation on the ground; they merely provide an educated starting point for identifying high value connectivity conservation areas. It's critical to get outside and see what the landscape actually looks like in an area of interest.

2. **When would you use the "climate-only" vs the "climate-plus-Landscape Integrity" corridors?**

Answering this question will depend on your goals. For example, if you are interested in the conservation of a species that is sensitive to climate but not land use, it might be more appropriate to use the climate-only map. But if you are interested in identifying connectivity restoration opportunities, you might want to compare the two models to see where restoration would be most effective in preventing land-use driven detours around the most direct routes along climate gradients (see Figure 6 in the report).

3. **How wide should climate gradient corridors be?**

The model does not specify corridor width, and cannot, for several reasons:

- **How wide a corridor needs to be will depend on your conservation goal.** For example, if you're interested in the conservation of a particular species, the answer will vary depending on its movement ecology and climate sensitivity (e.g., a corridor dweller will likely require a wider corridor than a highly mobile species).
- **The climate base layers underlying the climate-gradient corridor models become unreliable below 4km**. Thus, it would be best to see these corridors as representing connectivity conservation "zones" rather than discrete "corridors." In other words, the models identify fairly large areas that could be managed for wildlife permeability through many different means, e.g., a stepping stone system of reserves, wildlife-friendly agricultural practices, or riparian restoration.

4. **"Climate" gradient corridors? But you only included temperature! What about precipitation and other important climatic variables?**

The model can in fact be run using other climatic variables, such as precipitation or soil moisture, which may be more critical drivers of range migration for certain species (e.g., plants – see Nuñez 2011 for an example and discussion). We are currently developing an automated climate-gradient corridor tool that should eventually make it possible for users to run the model themselves with different input variables.

5. **If I overlay focal species and climate gradient corridors, won't this tell me where to direct my connectivity conservation efforts to facilitate a given species' future range shift?**

No. Areas of congruence between climate gradient and focal species corridors will identify areas that are valuable both today for the movement needs of particular species and in the future for the movement needs of a variety of species, but *it will not identify climate corridors for individual focal species*. By this same token, there are a variety of other conservation values, which haven't been captured by WHCWG analyses (e.g., current conservation status), that could be overlaid with our layers to further prioritize important connectivity conservation areas (see Question 1).

6. **Are the core areas well protected and relatively homogenous? Should we only be concerned with connectivity conservation between cores?**

The core areas used in this analysis identify areas on the landscape that currently bear a relatively low human footprint (e.g., roads, agriculture). Though significant portions of these areas are indeed protected in some way, much of it is private and/or working land that could be converted to a non-natural state at any time. And though the map layers suggest the landscape within each core to be homogenous, they can in fact be very heterogeneous in terms of both climate and land cover (see Figure 7 in the report). The analysis should be interpreted only at a broad and coarse landscape scale.

7. **I just loaded the climate gradient layers onto ArcGIS; why do they look so different from the ones in the report?**

The parameters you set for display have a major influence on the appearance of the layers. If you want your layers to look like the ones in our report, we've created a map package that, when opened in ArcMap 10, will display the layers with the same symbology as they appear in the report.

8. **Why not use a connectivity model that isn't restricted to modeling corridors between patches, and instead uses centrality metrics that look at the importance of areas relative to movement across the entire study area?**

While centrality-based connectivity metrics are an important advancement in the field, movement in response to climate change is directional, running from warmer to cooler areas of the landscape. In this context, it doesn't make sense to measure the centrality of areas relative to the whole landscape.

More information at www.waconnected.org

The full Climate Gradient Corridors Report including data layers is available at
http://waconnected.org/climate-change-analysis/