Alternative Pre Class Poll

What are some of the challenges of using Isotope analysis when exploring ecosystem linkages?

Model Answer

One issue an observer could have is that of noise in the Isotope signal. The readings point out how Nonpoint source pollution from urban areas is reflected in stable isotope signals and C:N ratio of seston. This reflects how hard it can be sometimes to track the signals from various ecosystems especially with pollution from urban environments for instance, which tend to have higher nutrient concentrations. Another example is the destruction of natural ecosystem linkages by human intervention, an example was how widespread degradation of stream ecosystems caused by land-use effects has prompted stream restoration efforts in recent years. Unfortunately, far less investment has been made in monitoring the **effectiveness of restoration than in implementing engineered structure**s designed for restoration purposes. This thus makes it hard to trace the natural ecosystem linkages as humans have messed things up without taking the time to understand the very ecosystems they are trying to restore.

Justification for Model Answer

There was an extensive potential application for #scales, #disturbances and #measuringmonitoring in the answer. A student could touch on reduction in isotope concentration over time which makes it hard to trace isotopes especially as more pollution is added to the streams and ecosystems which adds noise to the stable isotope concentration from our subjects eg Pacific salmon. Measuringmonitoring is easy to justify here as the whole point of tracing stable isotopes is keeping track of the levels of said isotopes. Other ways to justify this include the failure of humans to trace the ecosystem linkages correctly which ends with them implementing engineering solution wrongly. The disturbance is also very easy to justify. One, pollution as a result of urbanization and human land use can be talked of as it introduces noise, which is the most direct challenge to isotope analysis. Potential HCs that could be used include #levelsofanalysis and #modelling which all compliment #observationalstudies. The whole project entails analyzing isotope data and Its flow across various ecosystems, and the non-interventional nature of the study makes #observationastudies justifiable. Levels of analysis could be touched on by talking of the possible inferences along spatial and temporal. What does the inter-ecosystem flow tell us about Pacific

Salmon migration? On a bigger scale, can we observe a nutrient cycle based on the whole linkage map? Modelling is evident as what we are doing is creating box models of ecosystems and trying to trace what moves in and out of them while abstracting the media of transfer, salmon in our case.

Reflection Poll

Did the marine-derived nutrients case study (in Activity 2) or the Glacier Bay example (the hook) cause you to rethink your concept map configuration? If yes, explain how you would refine your map. If not, explain how either example provided a good illustration of your concept map.

Yes, it did., mainly because landscapes and the ecosystems they change are clearly dynamic and as such, maps should be made to reflect this change. They should be static. As Katja pointed out when discussing the linkage shift, we see a clear variation wherein the short term, abiotic factors determine the nature of the linkages within the marine intertidal environment at Glacier bay but as out temporal #scale gets bigger and our critters have had time to settle, biotic factors take over. Even the glacier itself is moving. As a result, maps should be updated to reflect the dynamic nature of the ecosystem and environmental shifts, at least for ecological mapping purposes.