Lab 4

Lab 4 Lecturer: Biomagnifications through a Food Chain Data analysis

Column DDT Acquired Copepod: A DDT ingested (Ppm):

(2+2+2+2+3+0+4+5+5+5+2+3+2+4+3+2+4+4+5+5)/20= 3. 2

Minnows: DDT ingested (Ppm): (6+18+9+16+18)/5= 13. 4

Eels: DDT ingested (Ppm): (23+45)/2= 34

Osprey: DDT ingested (Ppm): (69)/1= 69

Column 2: Energy Acquired

Phytoplankton; 200Kcal, Copepod; (200*100)/20= 100, Minnows; 40*5= 40,

Eel#1; (200/10)*0. 4= 8, Eel#2; 200*0. 6/10= 12, Osprey; (8+12)/10= 2

Column 3: Total energy Acquired

Phytoplankton; 200*100= 20000Kcal, Copepod; 100*20= 200, Minnows;

40*5= 200, Eel#1; 8*1= 8, Eel#2; 12*1= 12, Osprey; 2*1= 2

Figure 1: Energy pyramid

Figure 2: DDT concentration pyramid

Discussion and conclusion

The amount of DDT found in Phytoplankton (0. 8ppm) is less than that found in Osprey (69ppm). The concentration of chemicals is lower in the base of the food chain pyramid, but increases as the chain progress upwards. The osprey consumes all the chemicals consumed by all the primary producers. The pyramid of energy flow above establishes energy distribution within the food chain. However, the energy amounts consumed by the succeeding trophic level upwards reduce since energy pockets are lost to heat and resulting deaths. About 10of the energy at each trophic level is absorbed and passed on to the next. In addition, the biomagnifications points out to cumulative concentrations of DDT which is the reverse of energy absorption.

I have learned that energy is lost at each ascending trophic levels. However, concentrations of chemicals increase through bio-accumulations and biomagnifications in increasing trophic levels. The aim of the lab report was achieved since the energy requirements and absorption in the food chain was achieved. Assumptions taken here are; consumption patterns can only be traced to the subjects in the experiment. A chemical concentration on each trophic level is only attributed to those in the control experiment. The possible source of error was in finding the exact amount of energy loss in every trophic level which was assumed to be 10%. In most research experiments, the proportion ranges from 10-15%. Performing more than five similar experiments eliminates the random assumption of the error.

Works Cited

Egerton, Ferns. N. " Understanding food chains and food webs, 1700-1970". Bulletin of the Ecological Society of America (2005): 50–69. Print