Organic matter processes in arboreal Histosols of the coast redwood rainforest. (S07-allen153722-Poster)

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Abstract:

Organic soils have developed on massive branches and in crotches within the canopies of old growth coast redwood (Sequoia sempervirens) forests. These Histosols have formed from redwood litter and epiphytic biomass, primarily leather leaf fern (Polypodium scouleri), and have very little (4% by weight) mineral ash content. They can be up to 1.8 m deep and are an important habitat for plants and animals. We have sampled two different soil profiles in order to gain insight on humification processes and pedogenesis within redwood canopies. The bulk soil was physically fractionated with 2mm and 6.3 mm sieves; each physical fraction was then chemically extracted into nonpolar, polar, acid soluble, and acid insoluble fractions. The C:N ratios of the <2mm soil fractions range from 38-59 and do not show any clear trend with depth. However, preliminary data from C-13 solid-state NMR spectroscopy reveal changes in carbon chemistry, namely the alkyl C and carbonyl C increase with increasing depth within the soil profiles. A decrease in the acid and water soluble fractions provides further evidence of increasing humification with depth.

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