I mentioned in my opening lecture that much of the early conservation biology literature was dominated by discussion of genetics. Well, much of the literature that wasn’t devoted to genetics was devoted to using the theory of island biogeography to design nature reserves - or to disputing its utility. The most heated of these debates even earned its own acronym: the SLOSS debate.

Suppose you had money to purchase 10,000 hectares of land. Assume for the moment that you can ignore all management problems and that your only concern is the spatial configuration of that 10,000 hectares. Would it be better to have a single large reserve or several small reserves? Would it make more sense to buy a single piece of property 10,000 hectares in extent or 10 pieces of property each of 1,000 hectares?

Early advocates of the use of island biogeography theory, notably Soulé, Wilcox, Terborgh, and Lovejoy, argued that a single large reserve is generally better able to preserve more and larger populations than an equal area divided into a collection of small reserves.

As human population increases and development continues unfettered, loss of habitat and fragmentation of remaining habitat will continue to be the primary causes of the world-wide biodiversity crisis (Wilson 1992). Fragmentation results in a patchwork of native habitat “islands” embedded in a matrix of variously disturbed sites. Diamond (1975) applied the theory of island biogeography (MacArthur and Wilson 1967) to the concept of fragmentation, pitting the merits of a single large nature reserve against the pitfalls of several small nature reserves as two ends of a continuum, spawning the “SLOSS debate” (Simberloff and Abele 1976, 1982). Whereas large reserves are clearly more beneficial when a species require extensive core habitat, metapopulation theory predicts that for many species, several small reserves are no less viable than are large uninterrupted tracts of land (Hanski 1999).

So: which is it? A single large, or several small nature preserves? Consider the following pairs of designs for nature reserves:
Advocates of ‘several small’ contend that in each case, the design on the left is superior to the design on the right.

Design and carry out experiments, using either META-X or EcoLab to test the SLOSS claims.