

ABSTRACT OF THE THESIS

The Adaptive Architecture of Shrub Canopies:

Leaf Display and Biomass Allocation

In Relation to Light Environment

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Leaf display features and biomass allocation were investigated for four dominant shrubs of forest and old-field habitats in central New Jersey, to determine whether differences exist in species which reach optimum development in different successional environments. Late-successional shrubs were found to possess larger leaves, greater leaf area expansion (ratio of leaf area to leaf weight), and increased allocation of total energy to leaves versus wood, compared to early-successional shrubs. The shrubs appeared to deviate from expected patterns of biomass allocation in trees, possibly as a result of relative ease of horizontal exploitation of space through cloning. In addition, variation in the amount of foliage overlap (ratio of non-overlapping foliage area to total leaf area) within individual species suggests that flexibility in features of leaf display may play an important role in shrub adaptation to particular light regimes.