

# Landscape ecology

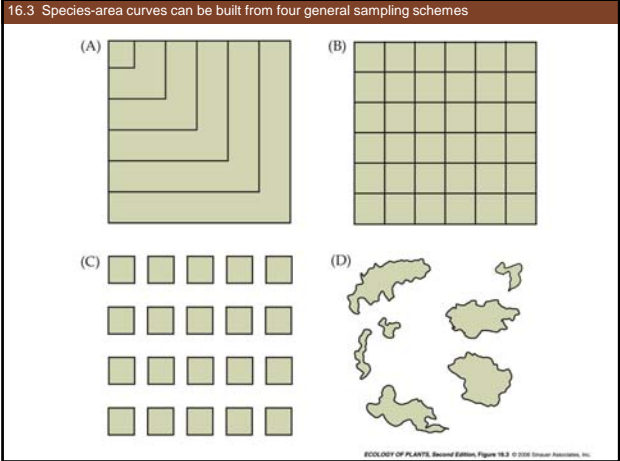
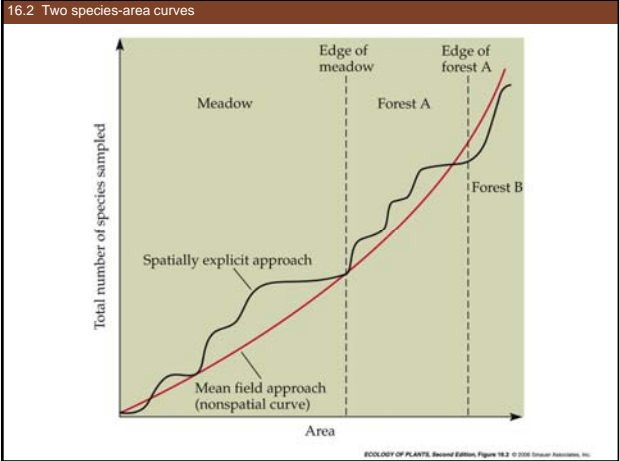
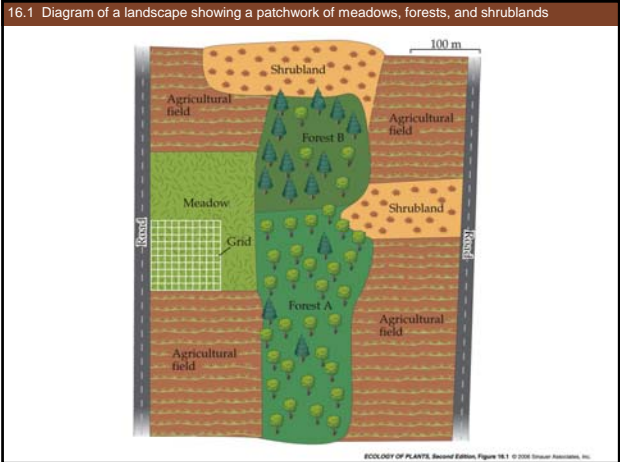


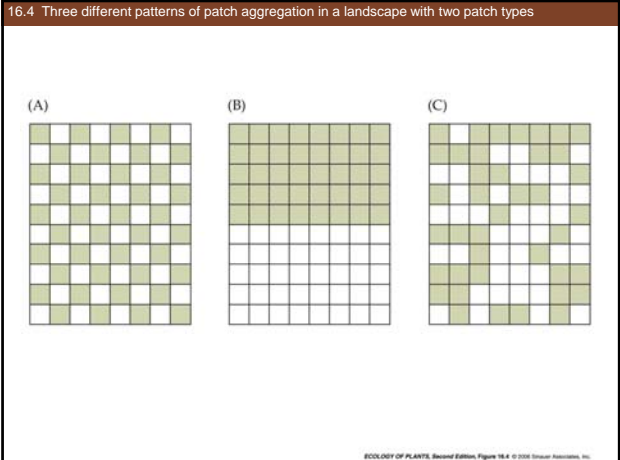
TABLE 16.1 Six types of species-area curves

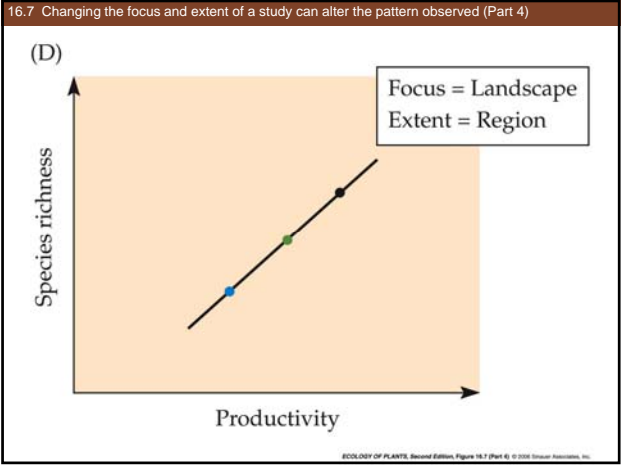
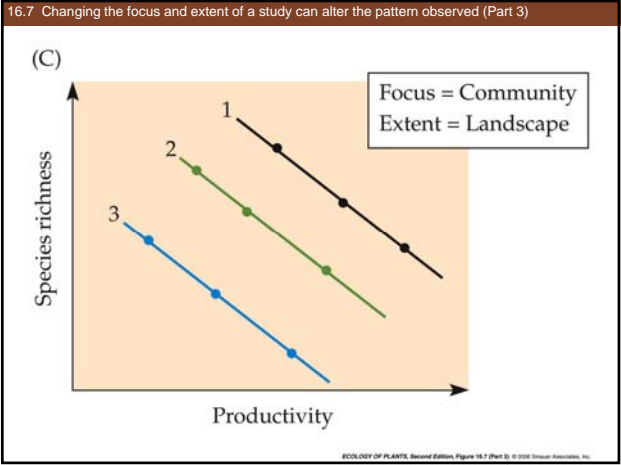
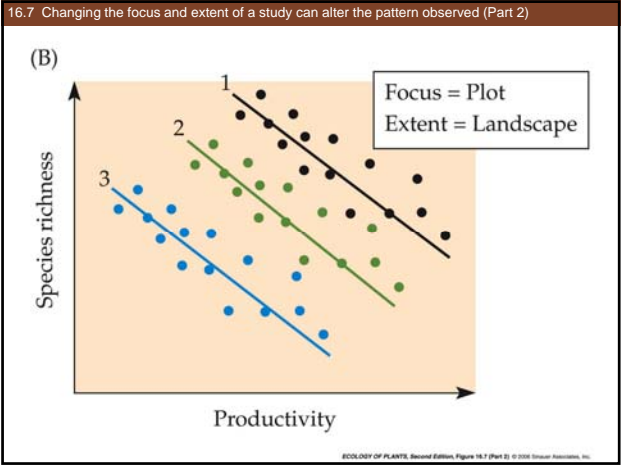
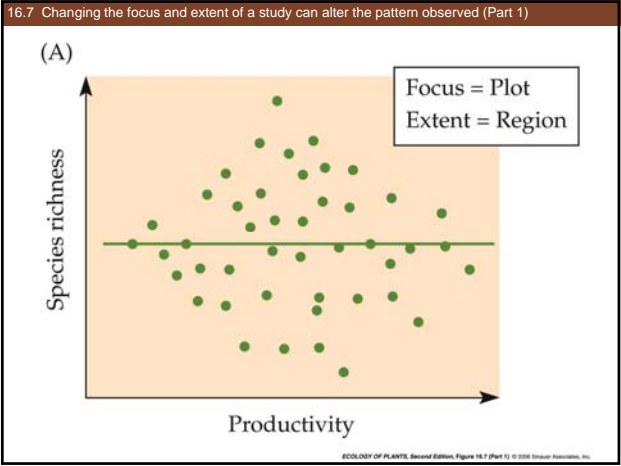
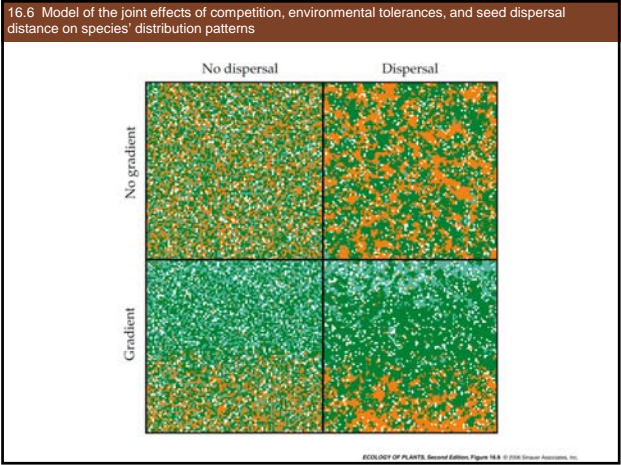
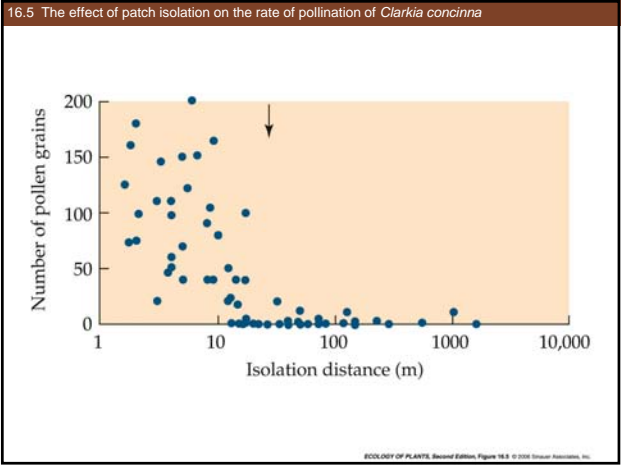
Type	Method of construction		Properties			
	Sampling scheme	Spatially explicit?	Analysis method	Shape	Nondecreasing?	Function of*
I	Nested	Yes	Single points	Stairstep	Yes	$\alpha$ and $\beta$
IIA	Contiguous	Yes	Means	Smooth curve	Yes	$\bar{\alpha}$ and $\bar{\beta}$
IIIB	Contiguous	No	Means	Smooth curve	Yes	$\bar{\alpha}$ and $\bar{\beta}$
IIIA	Noncontiguous	Yes	Means	Smooth curve	Yes	$\bar{\alpha}$ and $\bar{\beta} +$
IIIB	Noncontiguous	No	Means	Smooth curve	Yes	$\bar{\alpha}$ and $\bar{\beta} +$
IV	Island	No	Single points	Smooth curve	Not necessarily	$\alpha^*$ and $\beta^*$

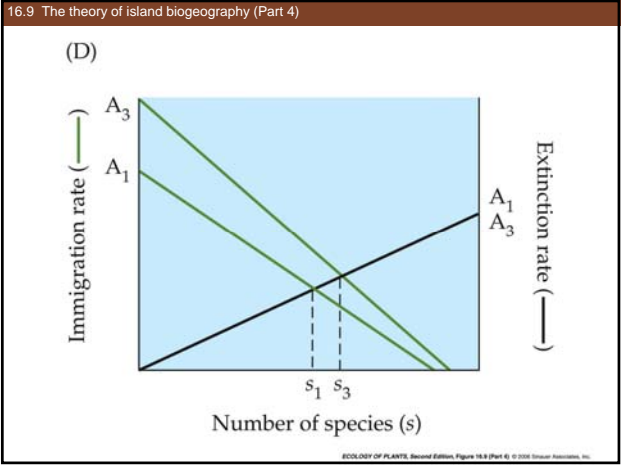
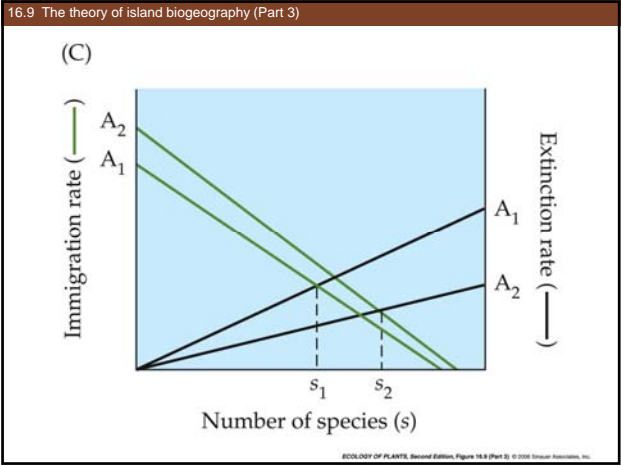
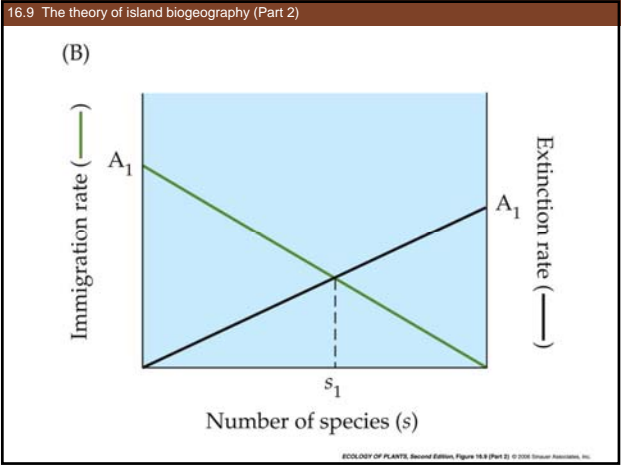
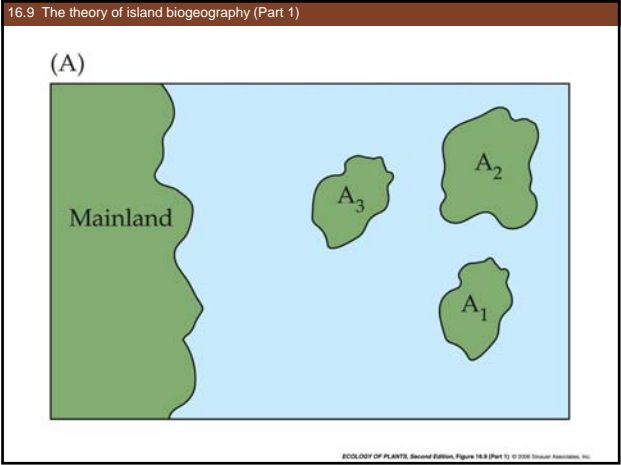
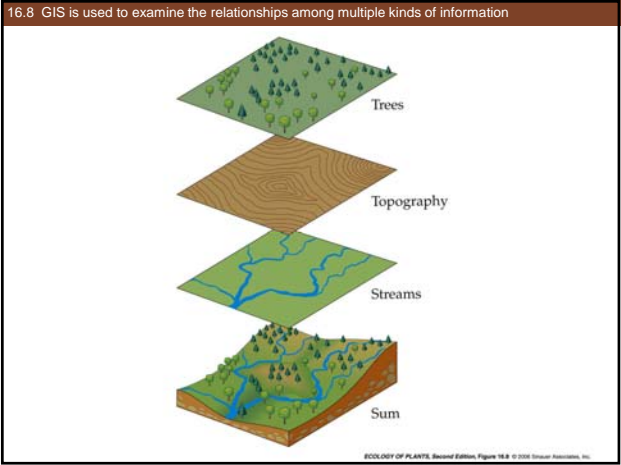
Source: Scheiner 2003.

Note: The six types of species-area curves differ in their method of construction and their resultant properties. All six are functions of  $\alpha$  diversity (the diversity of species contained within a sampling unit) and  $\beta$  diversity (the extent to which species composition changes from one sampling unit to another), although in different ways.

\*A bar over a symbol indicates that the measure is averaged over the sample; brackets indicate that the measure is averaged over all distances; a plus sign indicates that the effect includes the area between the quadrats; an asterisk indicates that the averaging also includes variation in the pattern of environmental heterogeneity.







**TABLE 16.2** Predictions about the correlation between the frequency of occupied patches and species abundance and the shape of the frequency distribution from four different versions of metapopulation models

Model <sup>a</sup>		Predictions		
Immigration	Extinction	Correlation	Distribution	Source
Dependent	Dependent	Positive	Bimodal	Hanski 1982
Dependent	Independent	Zero	Single interior mode	Levins 1969
Independent	Dependent	Positive	Single interior mode	Gotelli 1991
Independent	Independent	Zero	Single interior mode	Gotelli 1991

<sup>a</sup>The models are classified by the dependence of immigration and extinction rates on the fraction of sites that are occupied (see text for details).

ECOLOGY OF PLANTS, Second Edition, Table 16.2 © 2008 Sinauer Associates, Inc.

