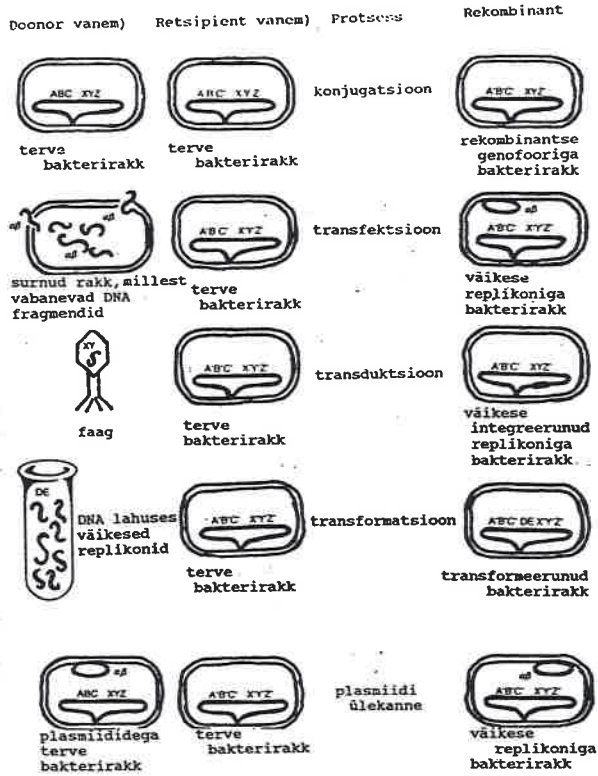


Seksi tuubid bakteritel
(Sonea, Panisset, 1960 ja
Margulis, Sagan, 1981. jargi)

∩ DNA (väike replikon)
— DNA (genofoor)
○ DNA (plasmiid)



8-1

23

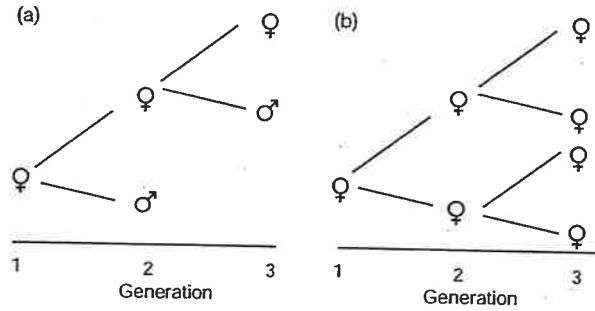


Fig. 7.6 The twofold cost of sex. A mutation that suppressed meiosis and allowed eggs to develop parthenogenetically would enjoy a twofold increase relative to its standard sexual allele, if sexual and asexual females produced on average the same number of offspring with the same average fitness. Here it is assumed for convenience that each female produces two offspring: a sexual female (a) one son and one daughter; and an asexual female (b) two daughters.

8-4

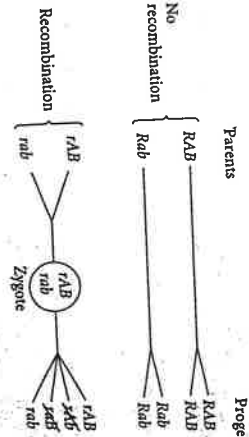
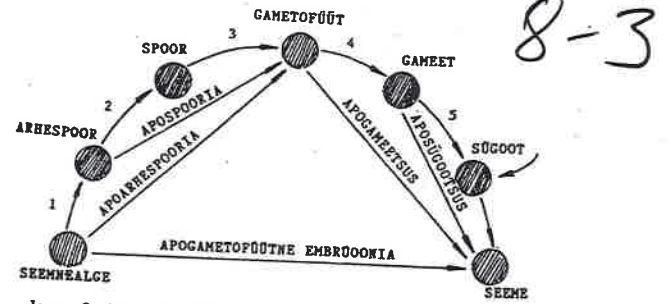
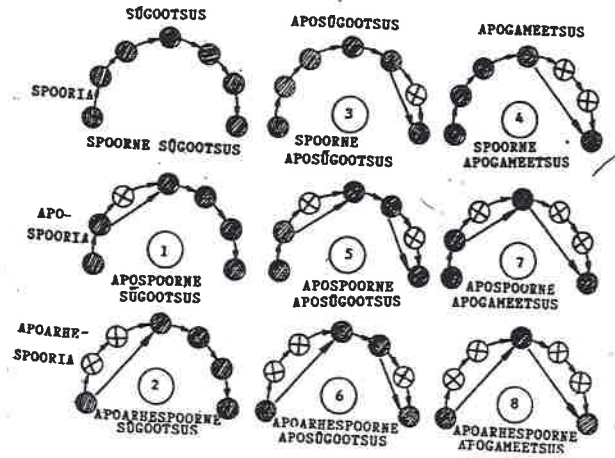


FIGURE 21.2 Selection against an allele (*r*) that promotes recombination. If allele combinations *Ab* and *ab* have lower fitness than *AB* and *AB*. Allele *R*, which suppresses recombination, increases in frequency because of its association with the favored genotypes *AB* and *ab*. The diagram pictures an organism, such as some algae, in which a diploid zygote undergoes meiosis, and the dominant part of the life cycle is haploid. The same principle holds for organisms in which the diploid phase of the life cycle is dominant.

8-5



Joon. 2. Munaeraku moodustumise ja viljastamise tsükliline käik õistaimedel ja sellest kõrvalekaldeid (seletus tekstis).



Joon. 3. Põhilised apomiksetüübid.

79

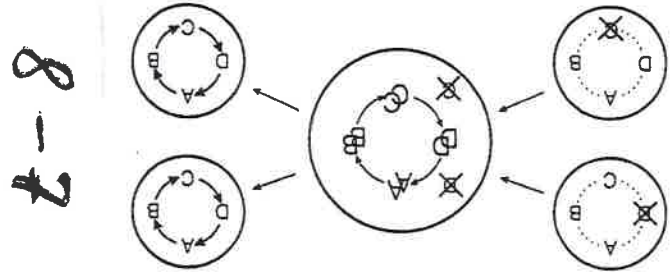
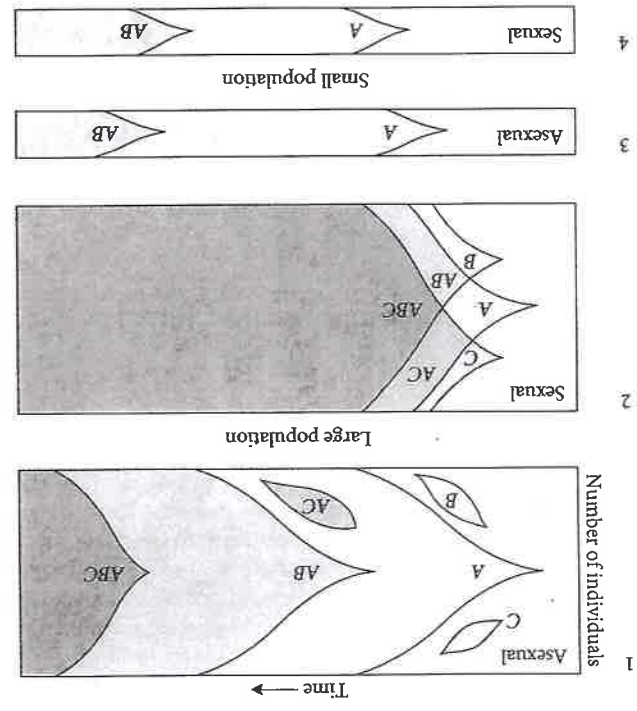


Figure 6. Sex between damaged haploid cells

FIGURE 21.4 Effects of recombination on the rate of evolution. A, B, and C are new mutations that are advantageous in concert. In asexual populations (1 and 3), combination AB (or ABC) is not formed until a second mutation, such as B, occurs in a lineage that already bears the first mutation, A. In a large sexual population, independent mutations can be assembled more rapidly by recombination, so adaptation is more rapidly achieved. In small populations, however (panels 3 and 4), the interval between the occurrence of favorable mutations is so long that a sexual population does not adapt more rapidly than an asexual population. (After Crow and Kimura 1965.)



9-8

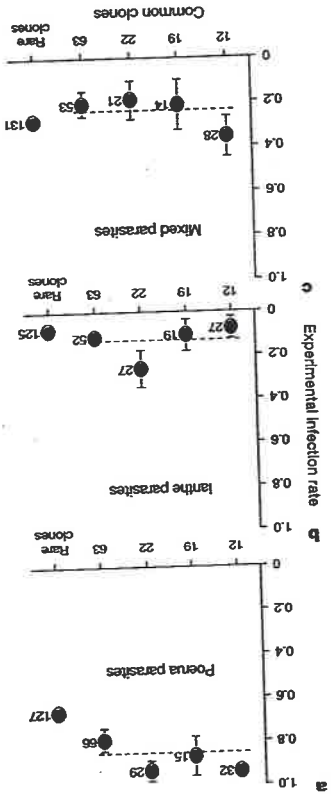
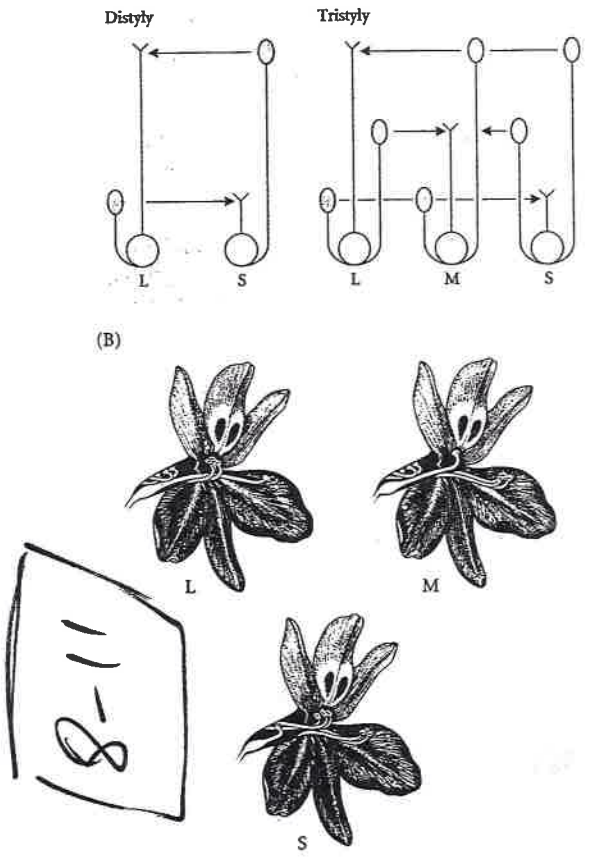
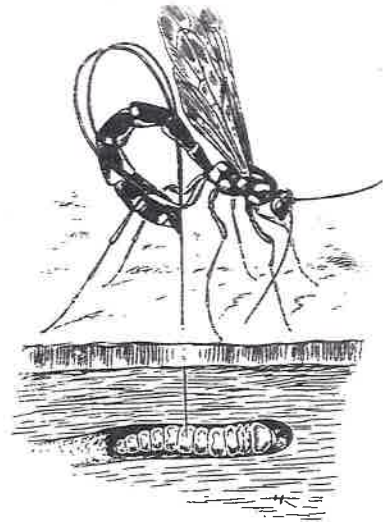


Figure 2 Infection rates of Lake Poena clones that have been common (12, 19, 22, and rare between 1992 and 1996 by sympatric, allopatric and mixed parasite sources. Dashed line is the average infection rate of the four common clones. Bars indicate one binomial standard error, and symbol labels give sample size. a, Lake Poena parasites. Common clones were infected at significantly higher rates than rare clones (85.9% and 66.1%, respectively) ($\chi^2 = 14.81$, d.f. = 1, $P < 0.0001$). The four recently common clones were infected at statistically indistinguishable rates ($\chi^2 = 5.935$, d.f. = 3, $P = 0.1148$). b, Lake fanthe parasites. Common clones and rare clones were infected at statistically indistinguishable rates (13.6% and 8.0%, respectively; $\chi^2 = 2.056$, d.f. = 1, $P = 0.1517$). Although the infection rate of clone 22 is slightly higher, the difference in infection rates among the four common clones was not statistically significant ($\chi^2 = 4.267$, d.f. = 3, $P = 0.2341$). When clone 22 is removed, the infection rates of the other three common clones and rare clones are nearly identical (9.5% and 8.0% respectively). c, Mixed parasites. Rare clones and common clones were infected at statistically indistinguishable rates (28.2% and 24.1%, respectively; $\chi^2 = 0.537$, d.f. = 1, $P = 0.467$). and the four recently common clones were infected at statistically indistinguishable rates ($\chi^2 = 1.770$, d.f. = 3, $P = 0.6215$).

FIGURE 21.16 (A) A diagram of flower morphs in distylous and tristylous species. Ovals represent anthers; forks, stigmas. Compatible pollinations are shown by arrows; other pollinations usually produce little or no seed due to incompatibility. L, M, and S refer to long-, mid-, and short-styled morphs. (B) The long-, mid-, and short-styled morphs of the tristylous species *Eichhornia paniculata*. (A after Barrett 1992b; B courtesy of S. C. H. Barrett; drawings by E. Campolin.)



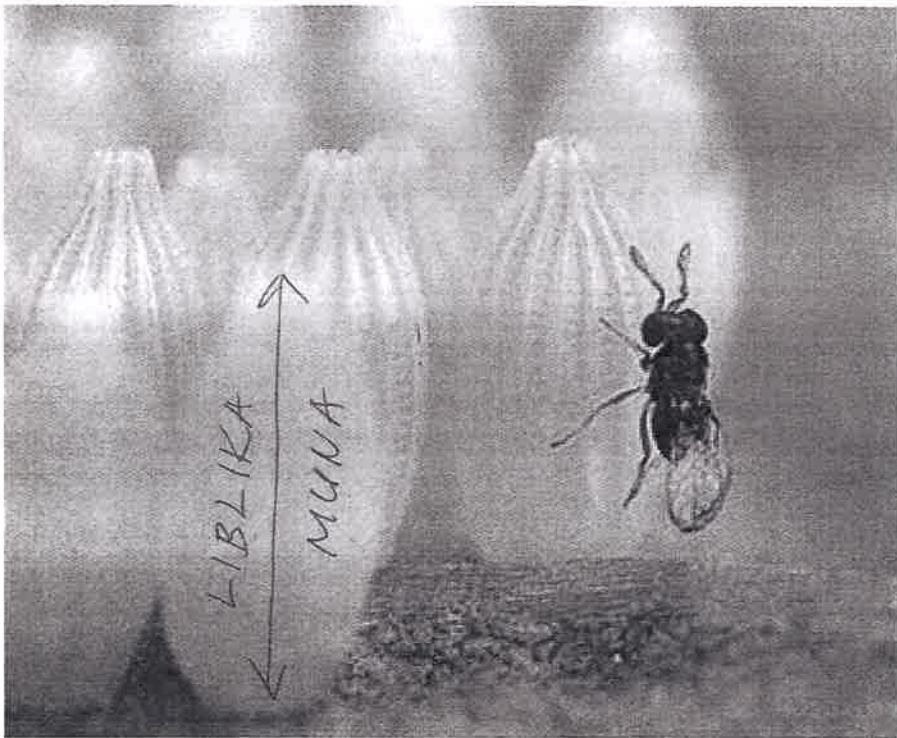
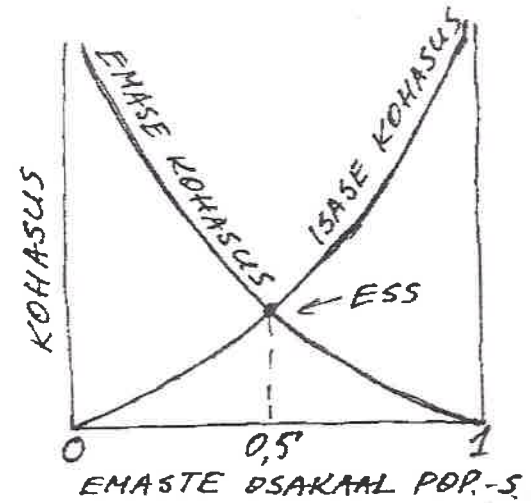
11-8



Joon. 364. Munev käguvamplane *Thalesa lunator*.

8-12

11-8



8-13

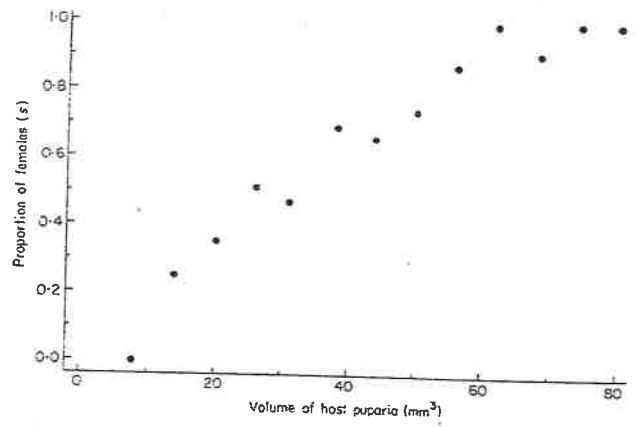
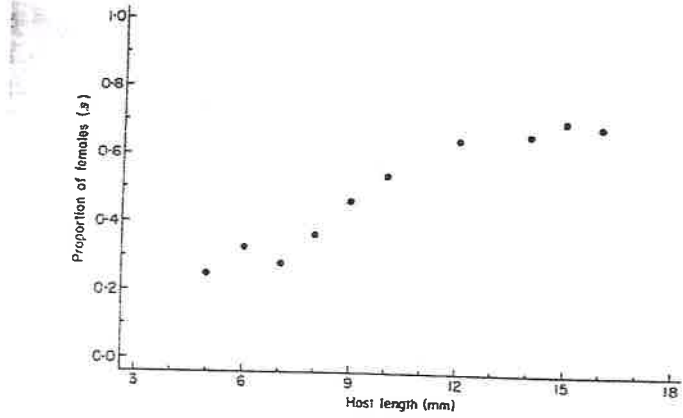
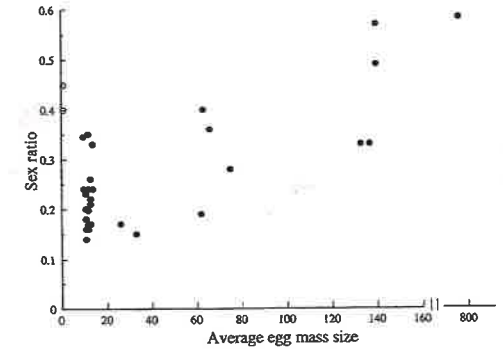


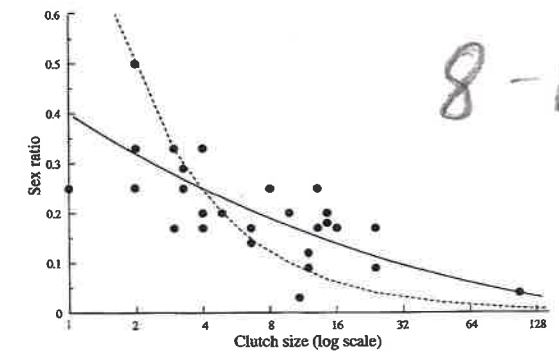
FIG. 1. (a) The relationship between the proportion of female progeny (s) and the length of host puparia: *Coccygomimus turinella* parasitizing various lepidopteran hosts (after Sandlan 1979). (b) The relationship between the proportion of female progeny (s) and the volume of host puparia: *Alysia manducator* parasitizing various dipteran hosts (after Holdaway & Smith, 1932).

8-17



8-14

Figure 4.2 The average sex ratio, and average host egg mass size, for thirty-one species of Scelionidae. The unfilled circles represent the sex ratio of two species attacking hosts which lay solitary eggs. (From Waage 1982a.)



8-15

Figure 4.3 Sex ratio and clutch size from twenty-seven studies of twenty-three species of bethylid wasp. The solid line is a fitted weighted regression through the data (in some of the original papers, clutch size is given only as a range and not a mean, and these points are given less weight in the regression). The broken line is the reciprocal of clutch size, the predicted sex ratio if every clutch contains a single male. (From N. Griffiths & Godfray 1988.)

8-16

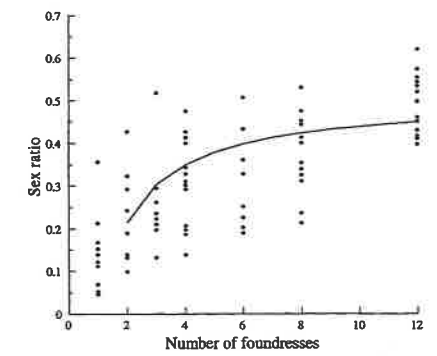
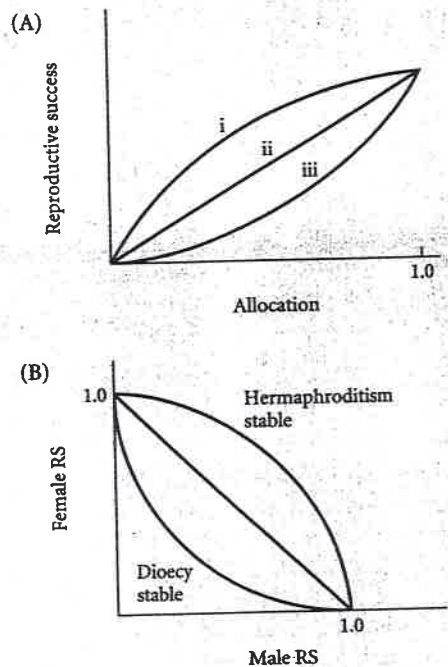


Figure 4.4 The sex ratio produced by groups of female *Nasonia vitripennis* ovipositing together in the laboratory (from Werren 1983), with the predicted sex ratio from LMC theory (Hamilton 1979).

FIGURE 21.13 The theory of sex allocation. (A) Reproductive success of an individual as a function of the fraction of resources allocated to one sexual function (say, female) rather than the other. Increasing allocation to that sexual function may yield decelerating (i), linear (ii), or accelerating (iii) gains in reproductive success. (B) Reproductive success (RS) gained through female function, plotted against that gained through male function. Because resources are allocated between these functions, there is a trade-off between the reproductive success an individual achieves through either sex function. This trade-off is linear, and the sum of female RS and male RS equals 1.0 at each point on the trade-off curve, if RS is linearly related to allocation (curve ii in A). If the gain in RS is a decelerating function of allocation to one sex or the other (curve i in A), then the fitness of a hermaphrodite exceeds that of a unisexual individual (with RS = 1.0 for one sexual function and 0 for the other). If RS is an accelerating function of allocation (curve iii in A), then the trade-off curve is concave, and dioecy is stable—that is, a hermaphrodite's fitness is lower than that of either unisexual type. (After Charnov 1982 and Thomson and Brunet 1990.)



8-18

8-19

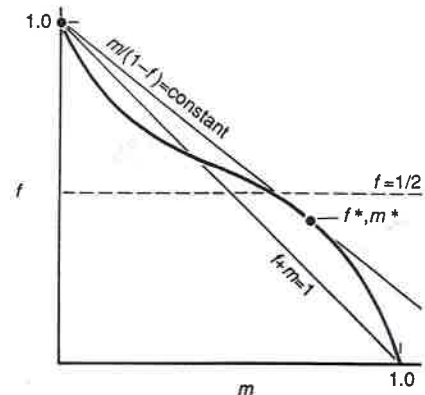
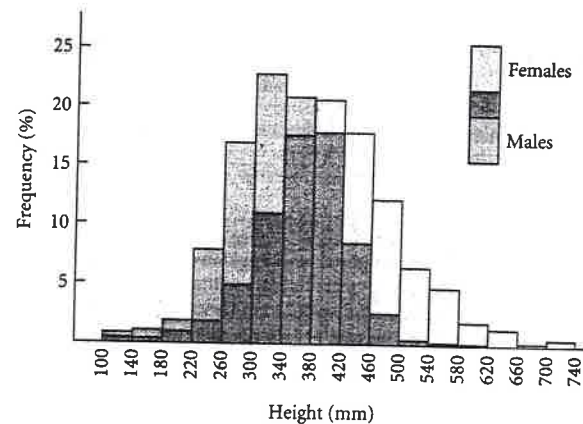


Fig. 2.3 An ESS which is a mixture of sexual types. If the curve is convex-concave, it may be possible for a pure sex (in this case a female) to invade the hermaphrodite population. The resulting mixture, here hermaphrodites and pure females (called gynodioecy), is evolutionarily stable if three conditions are met. First the hermaphrodite's allocation to male versus female function is at point m^*, f^* ; this is the place on the trade-off curve which maximizes $m/(1-f)$. Imagine drawing a line out from the point $f = 1, m = 0$ and rotating it upwards until it intersects the most outward possible point on the trade-off surface; this yields f^*, m^* as shown in the figure. The second and third conditions for gynodioecy to be an ESS are $m^* + f^* > 1$ and $f^* < 0.5$. From Charnov *et al.* 1976.

FIGURE 21.12 The size-frequency distribution of male and female jack-in-the-pulpit plants (*Arisaema triphyllum*). Plants switch from male to female as they grow in size. (After Policansky 1981.)



8-20