



FIGURE 18.6. The probability that a single copy of an allele with selective advantage s will be fixed in a population of effective size N_e is $2s(N_e/N)/(1 - \exp(-4N_e s))$, where N is the actual number of individuals. The graph shows this probability plotted against $N_e s$, for $N_e = N$. If the allele is strongly favored ($N_e s \gg 1$), then $P \sim 2s(N_e/N)$. If $N_e s$ is small, then drift is much stronger than selection ($1/2N_e \gg s$), and so the allele is effectively neutral (*shaded strip*). Because each of the $2N$ genes in the population has the same chance of ultimately fixing, $P \sim 1/2N$ (see p. 425). Finally, if the allele is deleterious ($N_e s \ll -1$), then the probability of fixation becomes very small: $P \sim 2|s|(N_e/N)\exp(-4N_e |s|)$, where $|s|$ is the positive magnitude of selection (i.e., $-s$ if $s < 0$).