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 $2s(N_e/N)/(1 - \exp(-4N_es))$, 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 ($N_es \gg 1$), then $P \sim 2s(N_e/N)$. If $N_es$ 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 ($N_es \ll -1$), 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 $s < 0$).

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