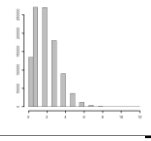
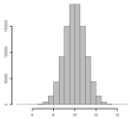
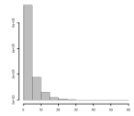
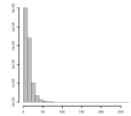
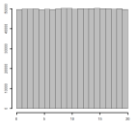
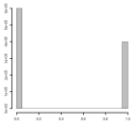
Statistical distributions

alabama cooperative fish and wildlife research unit

Distribution	Parameters	Continuous or Discrete	Bounds	R equations	Shape	Biological examples
Poisson	mean	Discrete	0, ∞	rpois(n,mean)		Count data
Normal	mean, SD	Continuous	-∞, ∞	rnorm(n, mean, sd)		Linear regression
Negative Binomial	mean, dispersion	Discrete	0, ∞	rnbinom(n, size, prob)		Surveys with lots of zeros
Log-Normal	mean	Continuous	0, ∞	rlnorm(n, meanlog, sdlog)		Population-level productivity
Beta	alpha, beta	Continuous	0,1	rbeta(n, a, b)	*Very flexible—can be any shape you want!*	Population rates
Uniform	min., max.	Continuous	0, ∞	runif(n, min, max)		Projections, variety of applications
Bernoulli and Binomial **Bernoulli when n = 1*	n, p	Discrete (two outcomes)	0,1	rbinom(n, size, p)		Occupancy, Survival
Multinomial Categorical **Multinomial when n = 1*	n, p (vector)	Discrete (>2 outcomes)	0, ∞	rmultinom(n, size, p[])	*Similar to Binomial but when there are multiple discrete outcomes*	State transitions