Quantity	Estimate quality				Opportunities for improvement
Individual vital rates	**Strong** (robust estimates available across multiple locations)	**Moderate** (less robust estimates; maybe available for many populations)	**Weak** (indirect estimates or estimates from other sources)	**No estimate**	
Yearly survival probability of year 1 tadpoles			Year 1 tadpole stages cannot be reliably counted with VES and individuals cannot be tracked. Current estimates are based on extrapolating from tadpole counts in one year to newly recruited subadult counts in the next year.		
Yearly survival probability of year 2 tadpoles		Year 2 tadpoles can be reliably counted with VES, but individuals cannot be tracked. Current estimates are based on extrapolating from counts of a single cohort over time (e.g., number of 1st year tadpoles in year 1 versus number of 2nd year tadpoles in year 2)			
Yearly survival probability of year 3 tadpoles		Year 3 tadpoles can be reliably counted with VES, but individuals cannot be tracked. Current estimates are based on extrapolating from counts of a single cohort over time (e.g., number of 2nd year tadpoles in year 2 versus number of 3rd year tadpoles in year 3)			
Yearly survival probability of subadults		Current estimates are based on extrapolating from counts of a single cohort over time (number of 1st year subadults in year 1 versus number of 2nd year subadults in year 2).			
Yearly survival probability of adults	Estimates are available from 10 populations for 3-17 years using capture-mark-recapture methods				
Duration of tadpole stage	Yearly visual encounter surveys can track progression of tadpole cohorts until metamorphosis. Estimates are available from 10 populations for 3-17 years				
Duration of subadult stage	Yearly visual encounter surveys can track progression of subadult cohorts until reproductive maturity. Estimates are available from 10 populations for 3-17 years				
Probability of an adult female reproducing in a year			Egg laying is very rarely observed. Current assumption that females lay eggs every year is a best guess. [TODO: See Bradford papers]		Following Bradford et al, females could be injected hormones to determine whether eggs are present. Given current status of species, not likely a viable option.
Number of eggs produced by an adult female			Estimates are available from reproduction at zoo facilities. Despite extensive surveys, egg masses have only been found at a few sites in the field.		Target surveys at sites where eggs have been found to get clutch size estimates.
Survival probability of eggs				Few egg masses have been found in the field	Use repeat counts to estimate survival at sites where eggs can be found.
Duration as egg before hatching			Estimates are available from animals reproducing at zoo facilities		Obtain from repeat counts at those sites where egg masses can be found. Duration will be influenced by temperature.
Population measures					

Adult abundance	Visual encounter surveys, cmr studies and statistical modeling provide population size estimates for 10 populations over 3-17 years				
Subadult abundance		Yearly VES surveys provide abundance metrics, but models have not been used to disentangle abundance and detection error for this stage class			Integrated population models and N-mixture modeling could disentangle detection error and subadult abundance to get estimates of true subadult abundance
Tadpole abundance (year 1 - year 3)		Yearly VES surveys provide abundance metrics, but models have not been used to disentangle abundance and detection error for this stage class			Integrated population models and N-mixture modeling could disentangle detection error and tadpole abundance to get estimates of true tadpole abundance
Egg mass abundance				Egg masses have only been found at a few sites	