Cal/Ecotox
Exposure Factors for Desert Tortoise (Gopherus agassizi)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Age at Sexual Maturity			13.8 - 15.7	yr	F	Adult		a	1
Age at Sexual Maturity			17-20	yr	F	Adult	NV	b	2
Age at Sexual Maturity			12-20	yr	F	Adult	UT	c	3
Body Fat (total or %)	6.13			%	NR	Embryo	San Bernardino; CA	d	4
Body Weight - Mean	1128	57.6 SE	968-1243	g	NR		Lab	e	5
Body Weight - Mean	1452	99.4 SE	1156-1580	g	NR		Lab	f	5
Body Weight - Mean	BW = 0.00049(CL)^2.795			g	NR		Lab	g	5
Body Weight - Mean	413	25.3 SE	371-485	g	NR		Lab	h	5
Body Weight - Mean			0.87 - 3.05	kg	F	Adult	Riverside; CA	i	6
Body Weight - Mean	2.65	0.39 SD		kg	F	Adult	AZ; UT	j	7
Body Weight - Mean	1578	244 SD		g	F	Adult	San Bernardino; CA	k	4
Body Weight - Mean	2.29	0.05SE	1.69-3.27	kg	F	Adult	San Bernardino; CA	l	8
Body Weight - Mean			0.99 - 4.99	kg	M	Adult	Riverside; CA	m	6
Body Weight - Mean	3.28	0.56 SD		kg	M	Adult	AZ; UT	n	7
Body Weight - Mean	3.17	0.12SE	2.10-4.34	kg	M	Adult	San Bernardino; CA	o	8
Body Weight - Mean	BW = 0.000505(CL)^2.826			g	B	Both Adult and Juv.	NV	p	9
Body Weight - Mean			500 - 2200	g	B	Both Adult and Juv.	NV	q	10
Body Weight - Mean	32.9	5.1 SD		g	NR	Embryo	San Bernardino; CA	r	4
Body Weight - Mean			20 - 40	g	NR	Embryo	Lab	s	11
Body Weight - Mean			0.02 - 0.70	kg	NR	Juvenile	Riverside; CA	t	6
Body Weight - Mean			15 - 30	g	NR	Juvenile	Lab	u	11
Body Weight - Mean			34.4 - 54.7	g	NR	Juvenile	San Bernardino; CA	v	12
Body Weight - Mean	BW = 0.000258(PL)^2.98			g	B	NR	NV	w	13
Body Weight - Mean			1840-3820	g	B	NR	San Bernardino; CA	x	14
Body Weight - Mean			722-5228	g	B	NR	UT	y	3
Clutch or Litter Size	3		1-9	eggs/nest	F	Adult	Kern; CA	z	15
Clutch or Litter Size	3.56	1.94 SD		eggs/female	F	Adult	San Bernardino; CA	aa	4
Clutch or Litter Size	4.68	0.3 SE	2-7	eggs/female	F	Adult	Lab	ab	16
Clutch or Litter Size			4-5	eggs/clutch	F	Adult	NV	ac	2
Clutch or Litter Size			4.17 - 5.12	eggs/clutch	F	Adult	San Bernardino; NV	ad	17
Clutch or Litter Size	4.17	0.22SE	1-7	eggs/clutch	F	Adult	San Bernardino; CA	ae	18
Clutch or Litter Size			4.4 - 5.2	eggs/clutch	F	Adult	NV	af	19
Clutch or Litter Size			3.0-4.6	eggs/clutch	F	NR	San Bernardino; CA	ag	14
Clutch or Litter Size			3-7	eggs/clutch	F	NR	UT	ah	3
Clutches or Litters per year			1-2	clutches/yr	F	Adult	Lab	ai	16
Clutches or Litters per year			1.57 - 1.89	clutches/yr	F	Adult	San Bernardino; NV	aj	17
Clutches or Litters per year	1.9	0.1SE			F	Adult	San Bernardino; CA	ak	18
Clutches or Litters per year			1.10 - 1.60	clutches/yr	F	Adult	San Bernardino; CA	al	8
Clutches or Litters per year	8.2	0.5 SE		eggs/yr	F	Adult	NV	am	19
Dietary Composition	grasses (3.6-33%); cacti (37.0-86.9%); annuals (5.0-18.6%); perennials other than cacti (0.8-2.7%); seeds (3.3-16.0%); other (0.4-2.6%)			%	B	Adult	San Bernardino; CA	an	8
Dietary Composition	Langloisia setosissima (39.5%); Camissonia munzii (34%); Oryzopsis hymenoides (14.5%); Bromus rubens (11.5%); other (0.5%)			%	B	Both Adult and Juv.	NV	ao	10

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Dietary Composition	Foxtail brome (Bromus rubens, 64 +/- 4%); Redstem filaree (Erodium cicutarium, 23 +/- 5%); Common winterfat (Eurotia lanata, 6 +/- 4%) and Vetch (Astragalus and Oxytropis, 4 +/- 2%)			%	NR	NR	UT	ap	20
Dietary Composition	Threeawn (Aristida spp., 22 +/- 6%); Globemallow (Sphaeralcea spp., 21 +/- 6%); Slim tridens (Tridens muticus, 20 +/- 7%); Foxtail brome (Bromus rubens, 19 +/- 3%); Red grama (Bouteloua trifida, 6 +/- 3%) and Sedge (Carex spp., 3 +/- 1%)			%	NR	NR	AZ	aq	20
Dietary Composition	Threeawn (Aristida spp., 16 +/- 5%); Globemallow (Sphaeralcea spp., 6 +/- 3%); Slim tridens (Tridens muticus, 50 +/- 8%); Bush muhly (Muhlenbergia porteri, 17 +/- 7%); and Slender janusia (Janusia gracilis, 11 +/- 5%)			%	NR	NR	AZ	ar	20
Duration of Incubation or Gestation	124.7 (25C); 103.8 (27C); 87.1 (28C); 84.2 (29C); 78.2 (31C)			d	NR	Embryo	Lab	as	21
Duration of Incubation or Gestation	125 (26C); 89 (28.1C); 72 (30.6C); 68 (32.8C); 73 (33C); 85 (35.3C)			d	NR	Embryo	Lab	at	11
Food Ingestion Rate	4.52		0 - 15.6	g dry matter/kg/d	B	Both Adult and Juv.	NV	au	10
Food Ingestion Rate	160			g	NR	Juvenile	San Bernardino; CA	av	12
Growth Rate			9.1 - 11.2	mm/yr	B			aw	1
Growth Rate			9.1 - 10.4	mm/yr	B			ax	1
Growth Rate			6.0 - 7.9	mm/yr	B			ay	1
Growth Rate			9.9 - 10.9	mm/yr	B			az	1
Growth Rate			8.4 - 12.3	mm/yr	B			ba	1
Growth Rate	9.1	0.4 SE	4.3 - 14.4	mm/yr	B		NV	bb	13
Growth Rate	324		188-387	g/yr	NR		Lab	bc	5
Growth Rate	715		597-775	g/yr	NR		Lab	bd	5
Growth Rate	45.6 (0-hatching); 78.2 (0-5 yrs); 122.6 (5-10 yrs); 164.2 (10-15 yrs); 232.0 (15-20 yrs); 257.3 (20-25 yrs); 274.0 (25-30 yrs)			mm	NR		Lab	be	22
Growth Rate	PL(mm) = 7.25(Age) + 50.1				B	Both Adult and Juv.	NV	bf	2
Hatching Success	53% (25C); 89% (27C); 83% (28C); 100% (29C); 85% (31C)			%	NR	Embryo	Lab	bg	21
Hatching Success	50% (26C); 96% (28.1C); 93% (30.6C); 90% (33C); 29% (35.3C)				NR	Embryo	Lab	bh	11
Home Range	19	4.6 SE	3 - 53	ha	B	Adult	AZ	bi	23
Home Range	22		2.9 - 88.6	ha	B	NR	San Bernardino; CA	bj	14
Home Range			12.7 - 72.1	ha	B	NR	NV	bk	24

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Home Range	50		10-100	acres	B	NR	UT	bl	3
Home Range	21		8-46	ha	F	NR	CA	bm	25
Home Range	53		39-77	ha	M	NR	CA	bn	25
Home Range	review				NR	NR	AZ; CA; NV; UT	bo	26
Longevity	52			yr	M	Adult	Lab	bp	27
Longevity			48 - 53	yr	NR	Adult		bq	28
Metabolic Rate			4.38 - 50.45	kJ/d	F	Adult	San Bernardino; CA	br	4
Metabolic Rate	see citation			L CO2/kg/d	M	Adult	CA	bs	29
Metabolic Rate	35.9		12.5-58.3	kJ/kg/d	B	Both Adult and Juv.	NV	bt	10
Metabolic Rate	FMR (ml CO2/d) = 2.2 g^1.02			ml CO2/d	NR	Juvenile	San Bernardino; CA	bu	12
Population Density			75-80	#/mi2	B	Both Adult and Juv.	Riverside; CA	bv	6
Population Density	59	19-173 (95% CI)		#/km2	B	Both Adult and Juv.	NV	bw	9
Population Density			120-283	#/km2	B	Both Adult and Juv.	CA	bx	30
Population Density			42-94	#/km2	B	Both Adult and Juv.	CA	by	30
Population Density			15-27	#/km2	B	Both Adult and Juv.	CA	bz	30
Population Density			64-155	#/km2	B	Both Adult and Juv.	CA	ca	30
Population Density			0-25 (55% of area); 25-50 (39.7% of area); 50-250 (5% of area)	#/mi2	B	Both Adult and Juv.	CA	cb	31
Population Density	0.25			#/acre	B	NR	UT	cc	3
Population Density	300			#/mi2	NR	NR	Kern; CA	cd	15
Population Density			0-10	#/km2	NR	NR	San Bernardino; CA	ce	32
Population Density			16 - 30	#/km2	NR	NR	AZ; UT	cf	33
Population Density			20-250 (10% of area); <20 (90% of area)	#/mi2	NR	NR	CA	cg	34
Population Density	review				NR	NR	AZ; CA; NV; UT	ch	26
Survival/ Mortality			4.4 - 18.4	%	B	Adult	San Bernardino; CA	ci	8
Survival/ Mortality			0.08 - 0.21	/yr	B	Both Adult and Juv.	NV	cj	9
Survival/ Mortality	2.2			%/yr	B	Both Adult and Juv.	CA	ck	30
Survival/ Mortality	2.3			%/yr	B	Both Adult and Juv.	CA	cl	30
Survival/ Mortality	2.9			%/yr	B	Both Adult and Juv.	CA	cm	30
Survival/ Mortality	4.8			%/yr	B	Both Adult and Juv.	CA	cn	30
Survival/ Mortality	97.8			%	F	Both Adult and Juv.	San Bernardino; CA	co	18
Survival/ Mortality	20% (25C); 33% (27C); 81% (28C); 84% (29C); 73% (31C)			%	NR	Embryo	Lab	cp	21
Time of Hatching or Parturition	autumn				B	Hatchling	San Bernardino; CA	cq	18
Time of Mating/ Laying	Apr.-May and Aug.-Nov.				B	Adult	Lab	cr	16
Time of Mating/ Laying	July - Oct.				B	Adult	San Bernardino; CA	cs	18
Time of Mating/ Laying	review				B	Adult		ct	35
Time of Mating/ Laying	May - June				F	Adult	San Bernardino; NV	cu	17
Time of Mating/ Laying	early summer				F	NR	UT	cv	3
Time of Nesting	May-July				F	Adult	Lab	cw	16
Time of Torpor or Hibernation	Oct. - Dec. (begin), Mar.-June (end)				B	Adult	AZ	cx	36
Time of Torpor or Hibernation	Oct. - Apr.				B	Adult	Lab	cy	16
Time of Torpor or Hibernation	Sept. - Mar.				F	Adult	San Bernardino; CA	cz	4
Time of Torpor or Hibernation	Nov. - Mar. (151 d)				B	Both Adult and Juv.	NV	da	10
Water Ingestion Rate	2.2		0 - 11.0	ml/kg/d	B	Both Adult and Juv.	NV	db	10

Notes

a	determined from ages at which females exceeded the minimum carapace length for tortoises with eggs; N=NR; Western and Eastern Mojave, Sinaloan and Sonoran deserts
b	N=NR; Rock Valley, Nye County (elev., 1020m)
c	N=NR; Beaver Dam Slope, Washington County (elev., 3200-3500 ft)
d	% lipid content of fresh egg mass; N=6; Fenner Valley, Goffs (elev., 680m) {lat., 34^o51'N; long., 115^o09'W]
e	N=4; Age=2 yr post-hatch
f	N=4; Age=3 yr post-hatch
g	Body Weight (BW;150 - 1500 g) and carapace length (CL; 100-300 mm) relationship; N=7 data points, each based on the average of 4 animals; Age=0-3 yr post-hatch
h	N=4; Age=1 yr post-hatch
i	maximum carapace length range = 161 - 243 mm; N=18; Mar. - Nov.; South West Pinto Basin, Joshua Tree National Monument
j	median carapace length = 237.6 mm; N=20; May; City Creek and Paradise Canyon, Washington County, UT and Littlefield, Mohave County, AZ
k	annual, time-weighted body mass; N=9; yr-round; Fenner Valley, Goffs (elev., 680m) {lat., 34^o51'N; long., 115^o09'W]
l	N=51 animals; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
m	maximum carapace length range = 169-279 mm; N=19; Mar. - Nov.; South West Pinto Basin, Joshua Tree National Monument
n	median carapace length = 254.3 mm; N=55; May; City Creek and Paradise Canyon, Washington County, UT and Littlefield, Mohave County, AZ
o	N=24 animals; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
p	regression of carapace length (CL; 80 - 260mm) to body weight (BW; g); N=53; Piute Valley
q	N=11 animals; March; Rock Valley, Nye County; see citation for figure depicting seasonal changes in body mass
r	egg weight; N=6; Fenner Valley, Goffs (elev., 680m) {lat., 34^o51'N; long., 115^o09'W]
s	egg mass; N=NR; Age=egg
t	maximum carapace length range = 60 - 145 mm; N=9; Mar. - Nov.; South West Pinto Basin, Joshua Tree National Monument
u	range estimated from figure; N=NR; Age=hatchling
v	range of mean body weight measured over 2 years during different seasons; N=4-22/sampling; Age=1-2 yr; Fort Irwin National Training Center, Barstow
w	Body weight (BW; 30-3000g) to plastron length (PL; 30-300 mm) relationship; N=83; Rock Valley, Nye County; see citation for figure of weight to length relationship
x	N=24; Apr.; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
y	N=41 animals; Beaver Dam Slope, Washington County (elev., 3200-3500 ft)
z	estimated from eggshell fragments in nest; N=15 nests; Oct.; Fremont Valley
aa	estimated by x-raying females; N=9; Fenner Valley, Goffs (elev., 680m) {lat., 34^o51'N; long., 115^o09'W]
ab	eggs/female; N=19; tortoises were exposed to ambient lighting and weather conditions
ac	determined by x-ray examination of females; N=3 animals; Rock Valley, Nye County (elev., 1020m)
ad	range of means for 3 yrs; based on x-ray examination (overall range = 1-8); N=20-26 animals; Ivanpah Valley, Goffs
ae	estimated by x-ray examination; N=35 clutches; Fenner Valley, Goffs (elev., 732m)
af	range of mean clutch size over 3 years in two sample groups; N=10-25; Yucca Mountain, Nye County (elev., 1000-1500m) [lat., 36^o51'; long., 116^o25' W]
ag	range of mean clutch size; N=7-15; May-June; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
ah	N=NR; Beaver Dam Slope, Washington County (elev., 3200-3500 ft)
ai	N=19; tortoises were exposed to ambient lighting and weather conditions
aj	range of means for 3 yrs; overall range = 1-3; N=20-26 animals; Ivanpah Valley, Goffs
ak	N=19 animals; Fenner Valley, Goffs (elev., 732m)
al	range of means for 2 yr period; N=15-40 animals; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
am	mean annual fecundity for tortoises with mean carapace length of 247.4 mm; N=30; Yucca Mountain, Nye County (elev., 1000-1500m) [lat., 36^o51'; long., 116^o25' W]; see citation for figure of regression of annual fecundity vs carapace size
an	relative frequency of material in fresh scat, range for 2 sampling periods over 2 years; N=189-195 scat samples/yr; Mar.-July; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
ao	% total fresh volume (weighted annual mean) estimated from observations of feeding animals; N=11 animals; May-Sept.; Rock Valley, Nye County; see citation for seasonal patterns
ap	% of each food item in fecal pellets (mean +/- SD); N=30 fecal pellets; Beaver Dam Wash, Washington County (elev. 1000 m)
aq	% of each food item in fecal pellets (mean +/- SD); N=66 fecal pellets; Lower Grand Canyon, Mohave County (elev. 450 m)
ar	% of each food item in fecal pellets (mean +/- SD); N=18 fecal pellets; New Water Mountains, Yuma County (elev. 490 m)
as	mean incubation times at various temperatures (25-31C); N=10-37 eggs/temperature
at	incubation time at various temperatures (26-35.3C); N=10-29

au	annual weighted mean; N=11 animals; yr round; Rock Valley, Nye County; see citation for seasonal changes in food intake
av	estimated amount fresh food consumed during first year of life (average body mass = 35 g); N=NR; Age=1 yr; Fort Irwin National Training Center, Barstow
aw	mean yearly growth rates using calculated carapace lengths over 4 yr intervals; range of 4 site-specific means; N=36 - 105 animals/site; Age=8-12 yrs; Western and Eastern Mojave, Sinaloan and Sonoran deserts; see citation for growth curve figures and growth model parameters
ax	mean yearly growth rates using calculated carapace lengths over 4 yr intervals; range of 4 site-specific means; N=25-69 animals/site; Age=12-16 yrs; Western and Eastern Mojave, Sinaloan and Sonoran deserts; see citation for growth curve figures and growth model parameters
ay	mean yearly growth rates using calculated carapace lengths over 4 yr intervals; range of 4 site-specific means; N=12 - 41 animals/site; Age=16-20 yrs; Western and Eastern Mojave, Sinaloan and Sonoran deserts; ee citation for growth curve figures and growth model parameters
az	mean yearly growth rates using calculated carapace lengths over 4 yr intervals; range of 4 site-specific means; N=33 - 101 animals/site; Age=0-4 yrs; Western and Eastern Mojave, Sinaloan and Sonoran deserts; see citation for growth curve figures and growth model parameters
ba	mean yearly growth rates using calculated carapace lengths over 4 yr intervals; range of 4 site-specific means; N=38 - 112 animals/site; Age=4-8 yrs; Western and Eastern Mojave, Sinaloan and Sonoran deserts; see citation for growth curve figures and growth model parameters
bb	average annual growth rate estimated from plastron length; N=22; Age=3.3 - 10.1 yr; Rock Valley, Nye County
bc	N=4; Age=3 yr post-hatch
bd	N=4; Age=2 yr post-hatch
be	mean carapace length for tortoises aged 0 - 30 yrs.; N=1-6 animals/age group; Age=0 - 30 yrs
bf	linear regression equation relating plastron length (PL; 48-221 mm) to Age (1-26 yrs); N=15 animals; repeated measurements; Age=0-26 yrs; May-June; Rock Valley, Nye County (elev., 1020m); data obtained from repeated annual measurement of tagged individuals over a 24 yr period
bg	hatching success rates at various temperatures (25-31C); N=13-46 eggs/temperature
bh	hatching success at various temperatures (26-35.3C); N=10-29
bi	N=14; year-round; Picacho Mountains, Pinal County
bj	N=55; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
bk	minimum convex polygon home ranges determined from telemetered tortoises recaptured at least 17 times, corrected for # of sightings; N=15 animals; June-Oct.; Desert Tortoise Conservation Center, Las Vegas (elev., 800 m)
bl	N=NE
bm	N=NR; Argus; originally cited in Berry (1974) unpublished report
bn	N=NR; Argus; cited from Berry (1974) unpublished report
bo	N=NR
bp	N=1
bq	age estimated from scute annuli; oldest individual measured; N=574; Mojave, Sonoran and Sinaloan deserts; see citation for carapace length vs age regression
br	range of mean field metabolic rates, estimated using doubly labeled water; N=9; yr-round; Fenner Valley, Goffs (elev., 680m) {lat., 34^o51'N; long., 115^o09'W]; see citation for annual energy budget
bs	figure of seasonal changes in metabolic rates; N=6-11; yr-round; Desert Tortoise Natural Area, California City (elev. 869-945 m) [lat., 35^o10'N, long., 118^o10'W] and Ivanpah Valley (elev., 866-914 m) [35^o39'N, 115^o15' W]
bt	field metabolic rate, annual weighted mean; N=11 animals; yr-round; Rock Valley, Nye County; see citation for seasonal variation in metabolic rate
bu	field metabolic rate during active seasons as a function of body mass; N=4-22/sampling; Age=< 2 yr; Fort Irwin National Training Center, Barstow; see citation for table of seasonal variations in FMR and figure of FMR vs body mass
bv	N=NR; Mar. - Nov.; South West Pinto Basin, Joshua Tree National Monument; see citation for age class distribution
bw	May - Aug.; Piute Valley
bx	range of 95% confidence intervals; N=2 yrs; spring; Colorado desert, Chuckwalla Bench; based on 60-day censuses of 2.59 - 3.37 km2 plots; see citation for age class distribution
by	range of 95% confidence intervals; N=2 yrs; spring; Colorado desert, Chemehuevi Wash and Valley; based on 60-day censuses of 4.7 km2 plot; see citation for age class distribution
bz	N=2 yrs; spring; western Mojave desert, Fremont Peak; Based on results of 30- or 60-d censuses of 2.59 km2 plot; see citation for age-class distribution
ca	range of 95% confidence intervals; N=2 yrs; spring; western Mojave desert, Kramer Hills; based on 60-day censuses of 2.59 km2 plot; see citation for age-class distribution
cb	population density ranges in % of area (605 mi2) surveyed; N=NR; Chocolate Mountains Aerial Gunnery Range
cc	N=NR; Beaver Dam Slope, Washington County (elev., 3200-3500 ft)
cd	N=NR; Fremont Valley
ce	N=NR; June; China Lake Naval Weapons Center
cf	N=NR; Beaver Dam Slope
cg	range of population densities in % of area (800 mi2) surveyed; N=NR; Fort Irwin National Training Center and Goldstone Space Communication Center, Barstow
ch	N=NR
ci	range of annual mortality rates from 1980 and 1981; N=NR; Ivanpah Valley [lat., 35^o23'N; long., 115^o18'W]
cj	range of per capita mortality rates (k) for 2 time periods; N=115-130 animals/time period; Piute Valley; see citation for mortality rates for specific age classes
ck	annual mortality rate for subadults and adults from 1975 and 1982; N=NR; Colorado desert, Chemehuevi Wash and Valley

cl	annual mortality rate for subadults and adults from 1973 and 1982; N=NR; Colorado desert, Chuckwalla Bench
cm	annual mortality rate for subadults and adults between 1980 and 1982; N=2 yrs; western Mojave desert, Kramer Hills
cn	annual mortality rate for subadults and adults between 1973 and 1985; N=NR; western Mojave desert, Fremont Peak
co	annual survival rate for subadults and adults; N=NR; Fenner Valley, Goffs (elev., 732m)
cp	% survival from hatching to >277 d post-hatch at various temperatures (25-31C); N=18-46 eggs/temperature
cq	hatching; N=NR; Fenner Valley, Goffs (elev., 732m)
cr	N=50; tortoises were exposed to ambient lighting and weather conditions
cs	mating; N=NR; Fenner Valley, Goffs (elev., 732m)
ct	N=NR
cu	egg laying; N=20-26 animals; Ivanpah Valley, Goffs
cv	laying; N=NR; Beaver Dam Slope, Washington County (elev., 3200-3500 ft)
cw	N=50; tortoises were exposed to ambient lighting and weather conditions
cx	N=9; San Pedro River Valley, Pinal County [lat., 32^o38'N; long., 110^o34'W]
cy	N=50; tortoises were exposed to ambient lighting and weather conditions
cz	N=9; yr-round; Fenner Valley, Goffs (elev., 680m) {lat., 34^o51'N; long., 115^o09'W]
da	hibernation period; N=11 animals; Rock Valley, Nye County; see citation for annual activity budget
db	annual weight mean for water drinking rate; N=11 animals; yr round; Rock Valley, Nye County; see citation for seasonal changes in total water influx (drinking + metabolism + dietary)

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