Cal/Ecotox
Exposure Factors for California Ground Squirrel (Spermophilus beecheyi)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Age at Fledging, Metamorphosis, Weaning	5-6			wks	NR	Juvenile	Santa Cruz; CA	a	1
Age at Sexual Maturity	1			yr	B	Adult	Santa Cruz; CA	b	1
Age at Sexual Maturity	9-10			mo	B	Juvenile	Monterey; CA	c	2
Body Weight - Mean	64.2		20.0 - 106.0	g	B		Lab	d	3
Body Weight - Mean	163.4		115.0 - 229.0	g	B		Lab	e	3
Body Weight - Mean	9.3		7.7 - 12.6	g	B		Lab	f	3
Body Weight - Mean			500 - 800	g	B	Adult	Alameda; Santa Clara; CA	g	4
Body Weight - Mean			483.8 - 552.5	g	F	Adult	CA	h	5
Body Weight - Mean	526	6 SE		g	F	Adult	Santa Cruz; CA	i	6
Body Weight - Mean	571		6 SE	g	F	Adult	Santa Cruz; CA	j	6
Body Weight - Mean	589		12 SE	g	F	Adult	Santa Cruz; CA	k	6
Body Weight - Mean	592		491-774	g	F	Adult	CA	l	7
Body Weight - Mean	516	104.5	321-892	g	F	Adult	Solano; Yolo; CA	m	3
Body Weight - Mean			560 - 764.8	g	M	Adult	CA	n	5
Body Weight - Mean	707		5 SE	g	M	Adult	Santa Cruz; CA	o	6
Body Weight - Mean	814		22 SE		M	Adult	Santa Cruz; CA	p	6
Body Weight - Mean	696		600-923	g	M	Adult	CA	q	7
Body Weight - Mean	677	113.5	480 - 1009	g	M	Adult	Solano; Yolo; CA	r	3
Body Weight - Mean	see citation			g	B	Both Adult and Juv.	Alameda; Santa Clara; CA	s	4
Body Weight - Mean	373	150.5	99 - 686	g	F	Juvenile	Solano; Yolo; CA	t	3
Body Weight - Mean	528	208.7	74 - 885	g	M	Juvenile	Solano; Yolo; CA	u	3
Body Weight - Mean	100			g	NR	Juvenile	CA	v	5
Body Weight - Mean	8.9			g	NR	Juvenile	Lab	w	5
Body Weight - Mean	61			g	NR	Juvenile	CA	x	7
Body Weight - Mean	397.3		106.9 - 806.2	g	F	NR	Monterey; CA	y	8
Body Weight - Mean	512.4		91.9 - 942.4	g	M	NR	Monterey; CA	z	8
Body Weight - Mean	531	75		g	NR	NR	Lab	aa	9
Body Weight - Mean	402.3			g	NR	NR	Orange; CA	ab	10
Body Weight - Mean	599.6			g	NR	NR	Orange; CA	ac	10
Clutch or Litter Size			8.5 - 9.7	embryos/female	F	Adult	Tulare; CA	ad	11
Clutch or Litter Size	7.9	0.3 SE		young/litter	F	Adult	Santa Cruz; CA	ae	6
Clutch or Litter Size	6.7	0.3 SE		young/litter	F	Adult	Santa Cruz; CA	af	6
Clutch or Litter Size	6.25		2 - 9	young/litter	F	Adult	Alameda; Santa Clara; CA	ag	4
Clutch or Litter Size			4 - 11	young/litter	F	Adult	CA	ah	7
Clutch or Litter Size	8.3			young/litter	F	Adult	Santa Cruz; CA	ai	12
Clutch or Litter Size	6.9			young/litter	F	Adult	Santa Cruz; CA	aj	12
Clutch or Litter Size			5.46 - 6.44	young/litter	F	Adult	OR	ak	13
Clutch or Litter Size			5.5 - 8.1	embryos/female	F	Adult	CA	al	14
Clutch or Litter Size	7.5		5 - 12	young/litter	F	Adult	Monterey; CA	am	8
Clutch or Litter Size	6.09		1 - 9	young/litter	F	Adult	Solano; Yolo; CA	an	3
Clutches or Litters per year			1 - 2	litters/yr	F	Adult	Tulare; CA	ao	11
Clutches or Litters per year	1			litters/yr	F	Adult	Alameda; Santa Clara; CA	ap	4
Clutches or Litters per year	1			litter/yr	F	Adult	CA	aq	7

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Clutches or Litters per year	1			litter/yr	F	Adult	Santa Cruz; CA	ar	1
Dietary Composition	see citation			%	NR	NR	Madera; CA	as	15
Duration of Incubation or Gestation	28-30			d	F	Adult	Santa Cruz; CA	at	1
Food Ingestion Rate			6.85 - 29.3	g dry wt/d	B	Adult	CA	au	5
Food Ingestion Rate	22.5		12.4 - 31.1	g dry wheat/squirrel x day	B	Both Adult and Juv.	Lab	av	5
Growth Rate	see citation			g/d	B		Lab	aw	3
Home Range			615 - 902	m2	F	Adult	Alameda; CA	ax	16
Home Range	0.59		0.12 - 1.62	acres	F	Adult	Alameda; Santa Clara; CA	ay	4
Home Range	4217.07	1515.67 SD		m2	F	Adult	Yolo; CA	az	17
Home Range	270		41.2 SE	m2	M	Adult	Alameda; CA	ba	16
Home Range	309.3		41.4 SE	m2	M	Adult	Alameda; CA	bb	16
Home Range			313.3 - 375.9	m2	M	Adult	Alameda; CA	bc	16
Home Range	0.36		0.06 - 0.74	acres	M	Adult	Alameda; Santa Clara; CA	bd	4
Home Range	5466.78	1897.19 SD		m2	M	Adult	Yolo; CA	be	17
Home Range	400			ft	B	Both Adult and Juv.	CA	bf	5
Longevity	3+			yrs	M	Adult	Alameda; Santa Clara; CA	bg	4
Longevity	5			yrs	M	Adult	Monterey; CA	bh	8
Longevity	5			yrs	NR	Adult	CA	bi	7
Metabolic Rate	0.75	0.21 SE		ml O2/g/ h	B	Adult	Lab	bj	15
Metabolic Rate	see citation			ml O2/g/hr	NR	NR	Lab	bk	18
Population Density	2.3			#/acre	B	Adult	CA	bl	5
Population Density			70.4 - 92.5	#/ha	B	Adult	Alameda; CA	bm	16
Population Density			70.4 - 92.5	#/ha	B	Adult	Alameda; CA	bn	19
Population Density	32.0	16.23 SD	8.6-52.1	#/ha	NR	Adult	Contra Costa; CA	bo	20
Population Density	7			#/acre	B	Both Adult and Juv.	Alameda; Santa Clara; CA	bp	4
Population Density	20			#/acre	NR	NR	Contra Costa; CA	bq	7
Population Density	76			#/acre	NR	NR	Contra Costa; CA	br	7
Survival/ Mortality			36.1 - 51.6	%	B	Juvenile	CA	bs	5
Time of Mating/ Laying	Jan. - Feb.				B	Adult	CA	bt	5
Time of Mating/ Laying	Feb. - Apr.				B	Adult	Tulare; CA	bu	11
Time of Mating/ Laying	Feb. - Mar.				B	Adult	Santa Cruz; CA	bv	1
Time of Mating/ Laying	Feb.-Mar.				B	Adult	Alameda; CA	bw	19
Time of Mating/ Laying	Mar. - Apr.				B	Adult	Solano; Yolo; CA	bx	3
Time of Migration or Dispersal	June - Aug.				B	Juvenile	Monterey; CA	by	21
Time of Molt	May				B	Adult	Alameda; Santa Clara; CA	bz	4
Time of Molt	June				B	Both Adult and Juv.	Monterey; CA	ca	8
Time of Molt	April; June; July				NR	NR	Santa Cruz; CA	cb	12
Time of Torpor or Hibernation	July - Dec.				F	Adult	Santa Cruz; CA	cc	1
Time of Torpor or Hibernation	May/June - Oct.				M	Adult	Santa Cruz; CA	cd	1
Time of Torpor or Hibernation	see citation				B	Both Adult and Juv.	Monterey; CA	ce	2

Notes

a N=NR; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]

b	N=NR; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
c	N=NR; Santa Barbara; Bell Ranch; Hastings Reservation
d	N=22; Age=4 wks; see citation for weekly average weights from 0-7 wks
e	N=13; Age=7 wks; see citation for weekly average weights from 0-7 wks
f	N=34; Age=0 wks; see citation for weekly average weights from 0-7 wks
g	N=NR; Calaveras Reservoir
h	range of monthly mean weights over 4 yrs; N= 5 - 58/mo; Jan. - Mar.; San Joaquin Experimental Range
i	N=233; Condition=non-reproductive; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]; see citation for figure of seasonal changes in weight
j	N=100; Condition=lactating; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]
k	N=41; Condition=pregnant; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]
l	N=10
m	N=112; Davis and Dixon; see citation for seasonal changes in weight
n	range of monthly mean weights over 4 yrs; N=4 - 63/mo; Jan. - Mar.; San Joaquin Experimental Range
o	N=306; Condition=reproductively active; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]
p	; N=56; Condition=non-reproductive; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]
q	N=10
r	N=61; Davis and Dixon; see citation for seasonal changes in weight
s	figure of monthly changes in body weight; N=2 - 106/sample; Calaveras Reservior
t	referred to as "young females"; N=115; Davis and Dixon
u	referred to as "young males"; N=124; Davis and Dixon
v	weight of young at first appearance above ground; N=NR; San Joaquin Experimental Range
w	weight at birth; N=6 litters (42 animals); Age=0 d
x	N=1; Age=10 d
y	N=373; yr-round; Hastings Natural History Reservation; see citation for figures of seasonal changes in weight and tables of organ weights
z	N=397; yr-round; Hastings Natural History Reservation; see citation for figures of seasonal changes in weight and tables of organ weights
aa	N=6; captured at University of California, Riverside
ab	N=10; July; University of California, Irvine
ac	N=10; February; University of California, Irvine
ad	N=NR; Coho creek
ae	N=47; Condition=multiparous; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]
af	N=26; Condition=primiparous; University of California, Santa Cruz Campus (elev., 120 m) [lat., 37^0W; long., 122^oW]
ag	N=8 litters; Calaveras Reservoir
ah	based on embryo counts; N=NR
ai	N=20; Condition=multiparous; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
aj	N=14; Condition=primiparous; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
ak	range of means for 2 sites; N=9-13/site; Douglas and Benton counties {lat., 43-44.5^oN]
al	range of means; N=NR
am	estimated from embryo or embryo scar counts; N=40; Hastings Natural History Reservation
an	based on embryo and placental scar counts; N=148; Davis and Dixon
ao	evidence for 2nd litter in 20% of reproductively active females; N=NR; Coho creek
ap	N=NR; Calaveras Reservoir
aq	N=NR
ar	N=128; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
as	list of mean % of 25 items in monthly diets, based on stomach contents; N=12-40/mo; San Joaquin Experimental Range
at	N=128; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
au	range of total food weight for observed individuals; N=6; Apr. - Dec.; San Joaquin Experimental Range; see citation for detailed list of food item weights (plant dry and wet weights)
av	N=9 animals; mid-summer
aw	figure of body weight changes over time; N=6 litters; Age=0-50 d
ax	range of means for 2 yrs; N=0-12/yr; Feb - July; Camp Ohlone [lat., 37^o29'N; long., 121^o45'W]

ay	above ground area occupied for at least one mo; N=51; Calaveras Reservoir
az	N=5; Mar. - June; Capay (elev., 305 m)
ba	N=12; Condition=postbreeding; Feb - July; Camp Ohlone [lat., 37^o29'N; long., 121^o45'W]
bb	N=21; Condition=breeding; Feb - July; Camp Ohlone [lat., 37^o29'N; long., 121^o45'W]
bc	range of means for 2 yrs; N=11/yr; Feb - July; Camp Ohlone [lat., 37^o29'N; long., 121^o45'W]
bd	above ground area occupied for at least one mo; N=21; Calaveras Reservoir
be	N=2; Mar. - June; Capay (elev., 305 m)
bf	diameter of "typical" home range; N=NR; San Joaquin Experimental Range; see citation for seasonal average monthly movement (ft)
bg	oldest individuals recaptured; N=2; Calaveras Reservoir
bh	longest record of lifespan; N=NR; Hastings Natural History Reservation
bi	N=NR
bj	resting oxygen consumption at 25-28C; N=26; captured at San Joaquin Experimental Range; also reported as 84 cal/g/d; see citation for estimated seasonal energy requirements (kcal/ha/d)
bk	figure of oxygen consumption at ambient temperatures (15-35C); N=10/group; captured at University of California, Irvine
bl	five year average; N=275; San Joaquin Experimental Range
bm	range of means for 2 yrs; N=NR; Feb - July; Camp Ohlone [lat., 37^o29'N; long., 121^o45'W]
bn	range over 2 yrs; N=NR; Feb.-Mar; Camp Ohlone, East Bay Regional Park District
bo	N=5 study sites; Dec. - Apr.; Concord Naval Weapons Station; "high burrow density"
bp	N=NR; Calaveras Reservoir; see citation for figure of seasonal changes in abundance
bq	N=3 counts; July; Walnut Creek; after breeding season; mowed field
br	N=3 counts; July; Walnut Creek; after breeding season; south facing hill side
bs	% tagged young surviving to following year to become breeding adults; range over 3 yrs; N=321 - 339/yr; San Joaquin Experimental Range
bt	San Joaquin Experimental Range
bu	N=NR; Coho creek
bv	N=NR; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
bw	breeding; N=NR; Camp Ohlone, East Bay Regional Park District
bx	N=NR; Davis and Dixon
by	dispersal of young; N=NR; Hastings Natural History Reservation
bz	N=NR; Calaveras Reservoir
ca	molt of juvenile or adult pelage; N=NR; Hastings Natural History Reservation
cb	N=NR; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
cc	months of estivation; N=128; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
cd	months of estivation; N=144; University of California, Santa Cruz Campus [lat., 37^oN; long., 122^oW]
ce	figure of seasonal activity patterns, including hibernation; N=NR; Santa Barbara; Bell Ranch; Hastings Reservation

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