

APPENDIX C – BIOLOGICAL RESOURCES SUPPORTING DOCUMENTATION

TABLE C-1
BUTTE COUNTY VEGETATION TYPES AND SPECIES SUITABLE HABITAT

CWHR HABITAT TYPE	BEAR (SQ MI)	BOBCAT (SQ MI)	COYOTE (SQ MI)	GRAY FOX (SQ MI)	MOUNTAIN LION (SQ MI)	RACCOON (SQ MI)	SKUNK (SQ MI)	VIRGINIA OPOSSUM (SQ MI)	BEAVER AND MUSKRAT (STREAM KM)
Annual grassland	5	219	219	219	100	219	219	219	
Barren			9						
Blue oak woodland		118	118	118	106	118	118	118	
Blue oak-foothill pine	9	96	96	95	95	96	96	96	
Cropland		59	59	59	4	59	59		
Deciduous orchard		156	156	156		156	156	156	
Douglas fir	45	47	47	47	47	47	47	47	
Dryland grain crop		7	7	7					
Evergreen orchard		3	3	3		3	3	3	
Freshwater emergent wetland		41	41	41		41	41	41	
Irrigated field		13	13	13		13	13	13	
Jeffrey pine	3	3	3	3	3	3	3	3	
Lacustrine	3					7			
Mixed chaparral	18	33	33	33	33	33	33	33	
Montane chaparral	14	16	16	16	16	16	16	16	
Montane hardwood	79	119	119	116	117	119	119	119	
Montane hardwood-conifer	77	77	77	77	77	77	77	77	
Montane riparian	2	2	2	1	2	2	2	2	
Perennial grassland				1		1	1	1	
Ponderosa pine	80	82	82	82	82	82	82	82	
Red fir	5	5	5		5	5	1	5	
Rice			165	165			165		
Riverine	0.5					7			
Sierran mixed conifer	241	241	241	241	241	241	241	241	
Urban			78	78		78	78	78	
Valley foothill riparian		23	23	23	3	23	23	23	
Valley oak woodland		3	3	3	3	3	3	3	
Wet meadow	0.5		1	1	1	1	1	1	
White fir	17	17	17	16	17	17	17	17	
Total Square Miles	599	1,380	1,633	1,614	952	1,467	1,614	1,394	
Square Kilometers					2,466				
Stream Kilometers									1,670

Data Sources

Species habitat: CDFW Interagency Wildlife Task Group. Predicted Habitats. SDE Raster Datasets. Available at: <https://apps.wildlife.ca.gov/bios/>. Accessed April 2020;
CDFW Biogeographic Data Branch. California Wildlife Habitat Relationships (CWHR) Model and BIOVIEW (CWHR Version 9.0). Available at: <https://wildlife.ca.gov/Data/CWHR>; USFS (United States Forest Service). 2019. EVeg Mid Region 5 Central Valley and Region 5 North Sierra; Downloaded from <http://data.fs.usda.gov/geodata/edw/datasets.php>.

Stream kilometers: USGS (U.S. Geological Survey). 2019, National Hydrography Dataset (ver. USGS National Hydrography Dataset Best Resolution (NHD) for Unit (HU) 4 – 1802 (published 20191002); Downloaded from https://prd-tnm.s3.amazonaws.com/StagedProducts/Hydrography/NHD/HU4/HighResolution/GDB/NHD_H_1802_HU4_GDB.zip March 24, 2020..

TABLE C-2
BUTTE COUNTY SPECIAL-STATUS PLANTS

Scientific Name	Common Name	CRPR	GRank	SRank	CESA	FESA
<i>Agrostis hendersonii</i>	Henderson's bent grass		3.2 G2Q	S2	None	None
<i>Allium jepsonii</i>	Jepson's onion	1B.2	G2	S2	None	None
<i>Allium sanbornii</i> var. <i>sanbornii</i>	Sanborn's onion		4.2 G4T3T4	S3S4	None	None
<i>Anomobryum julaceum</i>	slender silver moss		4.2 G5?	S2	None	None
<i>Arctostaphylos mewukka</i> ssp. <i>truei</i>	True's manzanita		4.2 G4?T3	S3	None	None
<i>Astragalus pauperculus</i>	depauperate milk-vetch		4.3 G4	S4	None	None
<i>Astragalus tener</i> var. <i>ferrisiae</i>	Ferris' milk-vetch	1B.1	G2T1	S1	None	None
<i>Astragalus whitneyi</i> var. <i>lenophyllus</i>	woolly-leaved milk-vetch		4.3 G5T4	S4	None	None
<i>Atriplex cordulata</i> var. <i>cordulata</i>	heartscale	1B.2	G3T2	S2	None	None
<i>Atriplex minuscula</i>	lesser saltscale	1B.1	G2	S2	None	None
<i>Atriplex subtilis</i>	subtle orache	1B.2	G1	S1	None	None
<i>Azolla microphylla</i>	Mexican mosquito fern		4.2 G5	S4	None	None
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	1B.2	G2	S2	None	None
<i>Betula glandulosa</i>	dwarf resin birch	2B.2	G5	S2	None	None
<i>Botrychium ascendens</i>	upswept moonwort	2B.3	G3G4	S2	None	None
<i>Botrychium crenulatum</i>	scalloped moonwort	2B.2	G4	S3	None	None
<i>Botrychium minganense</i>	Mingan moonwort	2B.2	G4G5	S3	None	None
<i>Botrychium montanum</i>	western goblin	2B.1	G3	S2	None	None
<i>Brasenia schreberi</i>	watershield	2B.3	G5	S3	None	None
<i>Brodiaea rosea</i> ssp. <i>vallicola</i>	valley brodiaea		4.2 G5T3	S3	None	None
<i>Brodiaea sierrae</i>	Sierra foothills brodiaea		4.3 G3	S3	None	None
<i>Bryum chryseum</i>	brassy bryum		4.3 G5	S3	None	None
<i>Bulbostylis capillaris</i>	thread-leaved beakseed		4.2 G5	S3	None	None
<i>Calycadenia oppositifolia</i>	Butte County calycadenia		4.2 G3	S3	None	None
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i>	Butte County morning-glory		4.2 G5T3	S3	None	None
<i>Campylopodiella stenocarpa</i>	flagella-like atractylocarpus	2B.2	G5	S1?	None	None
<i>Cardamine pachystigma</i> var. <i>dissectifolia</i>	dissected-leaved toothwort	1B.2	G3G5T2Q	S2	None	None
<i>Carex cyrtostachya</i>	Sierra arching sedge	1B.2	G2	S2	None	None
<i>Carex davyi</i>	Davy's sedge	1B.3	G3	S3	None	None
<i>Carex geyeri</i>	Geyer's sedge		4.2 G5	S4	None	None
<i>Carex limosa</i>	mud sedge	2B.2	G5	S3	None	None
<i>Carex xerophila</i>	chaparral sedge	1B.2	G2	S2	None	None
<i>Castilleja rubicundula</i> var. <i>rubicundula</i>	pink creamsacs	1B.2	G5T2	S2	None	None

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Centromadia parryi ssp. parryi	pappose tarplant	1B.2	G3T2	S2	None	None
Centromadia parryi ssp. rudis	Parry's rough tarplant		4.2 G3T3	S3	None	None
Chlorogalum grandiflorum	Red Hills soaproot	1B.2	G3	S3	None	None
Clarkia biloba ssp. brandegeae	Brandegee's clarkia		4.2 G4G5T4	S4	None	None
Clarkia gracilis ssp. albicaulis	white-stemmed clarkia	1B.2	G5T3	S3	None	None
Clarkia mildrediae ssp. lutescens	golden-anthered clarkia		4.2 G3T3	S3	None	None
Clarkia mildrediae ssp. mildrediae	Mildred's clarkia	1B.3	G3T2T3	S2S3	None	None
Clarkia mosquinii	Mosquin's clarkia	1B.1	G2	S2	None	None
Claytonia palustris	marsh claytonia		4.3 G4	S4	None	None
Claytonia parviflora ssp. grandiflora	streambank spring beauty		4.2 G5T3	S3	None	None
Cryptantha rostellata	red-stemmed cryptantha		4.2 G4	S3	None	None
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	2B.2	G5T4?	SH	None	None
Cypripedium californicum	California lady's-slipper		4.2 G4	S4	None	None
Cypripedium fasciculatum	clustered lady's-slipper		4.2 G4	S4	None	None
Darlingtonia californica	California pitcherplant		4.2 G4	S4	None	None
Delphinium recurvatum	recurved larkspur	1B.2	G2?	S2?	None	None
Drosera anglica	English sundew	2B.3	G5	S2	None	None
Eleocharis parvula	small spikerush		4.3 G5	S3	None	None
Eremogone cliftonii	Clifton's eremogone	1B.3	G2G3	S2S3	None	None
Erigeron inornatus var. calidipetris	hot rock daisy		4.3 G5T3	S3	None	None
Erigeron petrophilus var. sierrensis	northern Sierra daisy		4.3 G4T4	S4	None	None
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	1B.2	G5T3	S3	None	None
Eriophorum gracile	slender cottongrass		4.3 G5	S4	None	None
Erythranthe filicifolia	fern-leaved monkeyflower	1B.2	G2	S2	None	None
Erythranthe glaucescens	shield-bracted monkeyflower		4.3 G3G4	S3S4	None	None
Erythranthe inconspicua	small-flowered monkeyflower		4.3 G4	S4	None	None
Erythranthe laciniata	cut-leaved monkeyflower		4.3 G4	S4	None	None
Euphorbia hooveri	Hoover's spurge	1B.2	G1	S1	None	FT
Fissidens pauperculus	minute pocket moss	1B.2	G3?	S2	None	None
Frangula purshiana ssp. ultramafica	Caribou coffeeberry	1B.2	G4T2T3	S2S3	None	None
Fritillaria eastwoodiae	Butte County fritillary		3.2 G3Q	S3	None	None
Fritillaria pluriflora	adobe-lily	1B.2	G2G3	S2S3	None	None
Hesperervax caulescens	hogwallow starfish		4.2 G3	S3	None	None
Heteranthera dubia	water star-grass	2B.2	G5	S2	None	None

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<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose-mallow	1B.2	G5T3	S3	None	None
<i>Imperata brevifolia</i>	California satintail	2B.1	G4	S3	None	None
<i>Juncus leiospermus</i> var. <i>ahartii</i>	Ahart's dwarf rush	1B.2	G2T1	S1	None	None
<i>Juncus leiospermus</i> var. <i>leiospermus</i>	Red Bluff dwarf rush	1B.1	G2T2	S2	None	None
<i>Lagophylla dichotoma</i>	forked hare-leaf	1B.1	G2	S2	None	None
<i>Lasthenia ferrisiae</i>	Ferris' goldfields		4.2 G3	S3	None	None
<i>Layia septentrionalis</i>	Colusa layia	1B.2	G2	S2	None	None
<i>Leptosiphon acicularis</i>	bristly leptosiphon		4.2 G4?	S4?	None	None
<i>Lewisia cantelovii</i>	Cantelow's lewisia	1B.2	G3	S3	None	None
<i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i>	Hutchison's lewisia		3.2 G3G4T3Q	S3	None	None
<i>Lilium humboldtii</i> ssp. <i>humboldtii</i>	Humboldt lily		4.2 G4T3	S3	None	None
<i>Limnanthes floccosa</i> ssp. <i>californica</i>	Butte County meadowfoam	1B.1	G4T1	S1	CE	FE
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	woolly meadowfoam		4.2 G4T4	S3	None	None
<i>Meesia triquetra</i>	three-ranked hump moss		4.2 G5	S4	None	None
<i>Meesia uliginosa</i>	broad-nerved hump moss	2B.2	G5	S3	None	None
<i>Micranthes marshallii</i>	Marshall's saxifrage		4.3 G5	S3	None	None
<i>Microseris sylvatica</i>	sylvan microseris		4.2 G4	S4	None	None
<i>Monardella venosa</i>	veiny monardella	1B.1	G1	S1	None	None
<i>Navarretia cotulifolia</i>	cotula navarretia		4.2 G4	S4	None	None
<i>Navarretia heterandra</i>	Tehama navarretia		4.3 G4	S4	None	None
<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	adobe navarretia		4.2 G4T3	S3	None	None
<i>Navarretia subuligera</i>	awl-leaved navarretia		4.3 G4	S4	None	None
<i>Ophioglossum californicum</i>	California adder's-tongue		4.2 G4	S4	None	None
<i>Orcuttia pilosa</i>	hairy Orcutt grass	1B.1	G1	S1	CE	FE
<i>Orcuttia tenuis</i>	slender Orcutt grass	1B.1	G2	S2	CE	FT
<i>Packera eurycephala</i> var. <i>lewisrosei</i>	Lewis Rose's ragwort	1B.2	G4T2	S2	None	None
<i>Paronychia ahartii</i>	Ahart's paronychia	1B.1	G3	S3	None	None
<i>Penstemon heterodoxus</i> var. <i>shastensis</i>	Shasta beardtongue		4.3 G5T3	S3	None	None
<i>Penstemon personatus</i>	closed-throated beardtongue	1B.2	G2	S2	None	None
<i>Perideridia bacigalupii</i>	Bacigalupi's yampah		4.2 G3	S3	None	None
<i>Piperia colemanii</i>	Coleman's rein orchid		4.3 G4	S4	None	None
<i>Piperia michaelii</i>	Michael's rein orchid		4.2 G3	S3	None	None
<i>Plagiobryoides vinosula</i>	wine-colored tufa moss		4.2 G3G4	S2	None	None
<i>Poa sierrae</i>	Sierra blue grass	1B.3	G3	S3	None	None

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<i>Polygonum bidwelliae</i>	Bidwell's knotweed	4.3	G4	S4	None	None
<i>Polystichum kruckebergii</i>	Kruckeberg's sword fern	4.3	G4	S4	None	None
<i>Puccinellia simplex</i>	California alkali grass	1B.2	G3	S2	None	None
<i>Rhynchospora californica</i>	California beaked-rush	1B.1	G1	S1	None	None
<i>Rhynchospora capitellata</i>	brownish beaked-rush	2B.2	G5	S1	None	None
<i>Rupertia hallii</i>	Hall's rupertia	1B.2	G2G3	S2S3	None	None
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	1B.2	G3	S3	None	None
<i>Sanicula tracyi</i>	Tracy's sanicle	4.2	G4	S4	None	None
<i>Schoenoplectus subterminalis</i>	water bulrush	2B.3	G4G5	S3	None	None
<i>Sedum albomarginatum</i>	Feather River stonecrop	1B.2	G2	S2	None	None
<i>Sidalcea gigantea</i>	giant checkerbloom	4.3	G3	S3	None	None
<i>Sidalcea robusta</i>	Butte County checkerbloom	1B.2	G2	S2	None	None
<i>Silene occidentalis</i> ssp. <i>longistipitata</i>	long-stiped campion	1B.2	G4T2Q	S2	None	None
<i>Silene occidentalis</i> ssp. <i>occidentalis</i>	Western campion	4.3	G4T3	S3	None	None
<i>Stellaria longifolia</i>	long-leaved starwort	2B.2	G5	S2	None	None
<i>Stellaria obtusa</i>	obtuse starwort	4.3	G5	S4	None	None
<i>Streptanthus drepanoides</i>	sickle-fruit jewelflower	4.3	G4	S4	None	None
<i>Streptanthus longisiliquus</i>	long-fruit jewelflower	4.3	G3	S3	None	None
<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	slender-leaved pondweed	2B.2	G5T5	S2S3	None	None
<i>Subularia aquatica</i> ssp. <i>americana</i>	water awlwort	4.3	G5T5	S4	None	None
<i>Trifolium jokerstii</i>	Butte County golden clover	1B.2	G2	S2	None	None
<i>Tuctoria greenei</i>	Greene's tuctoria	1B.1	G1	S1	CR	FE
<i>Utricularia intermedia</i>	flat-leaved bladderwort	2B.2	G5	S3	None	None
<i>Utricularia minor</i>	lesser bladderwort	4.2	G5	S3	None	None
<i>Viola tomentosa</i>	felt-leaved violet	4.2	G3	S3	None	None
<i>Wolffia brasiliensis</i>	Brazilian watermeal	2B.3	G5	S2	None	None

Source: CNPS 2020; CDFW 2020

**TABLE C-3
AMERICAN BEAVER POPULATION AND TAKE DATA**

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	45	716
2001	47	1077
2002	14	845
2003	35	659
2004	20	758
2005	99	824
2006	65	844
2007	132	1,086
2008	100	1,359
2009	54	1,135
2010	94	1,110
2011	45	869
2012	49	999
2013	58	1,167
2014	55	1,153
2015	91	997
2016	47	912
2017	30	887
2018	51	884
2019	34	889
TOTAL	1,165	19,170
MED/YR	50	901
AVE/YR	58	959
County % of APHIS-WS state take over 20-year period		6.1%

County Population Estimate		
Suitable habitat (stream kilometers) ³	1,670	
Density (individuals per stream kilometer) ⁴	0.2	(low)
	3	(high)
Sex ratio	0.5	
Female breeding success	0.80	
Litter size	3.5	
Total Adults	334	(low)
	4,175	(high)
Breeding females	170	(low)
	2,129	(high)
Young at den	477	(low)
	5,962	(high)
County population before natural mortality (adults + young)	811	(low)
	10,137	(high)
State low population estimate (after mortality) ⁵	18,336	

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	58
% average take per year of County low population estimate	7%
% average take per year of state low population estimate	0.3%
% highest historic take (132) of County low population estimate	16%
% highest historic take (132) of state low population estimate	0.7%

Notes:

1. 2000-2006 data from: USDA (2019b)
2. 2007-2019 data from: USDA (2020a)
3. Calculated from National Hydrography Dataset (USGS 2019) see Table C-1
4. Population dynamics from: CDFG (2004) Appendix 2 (Beaver Population Model)

TABLE C-3
AMERICAN BEAVER POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (% of population) ⁶	30%
Cumulative Take Estimates	
County 20-year average take by APHIS under CSA	58
County average take compared to low population	7%
County average take plus 33% ⁷	77
County average take plus 33% compared to county low population	10%
County average plus 33% compared to state low population	0.4%
County average plus 33% plus county average hunting plus other equals cumulative county ⁸	197
Cumulative county average take compared to county low population	24%
State 20-year average take by APHIS	959
State average take plus 33%	1,275
State average take plus 33% plus state average hunting equals cumulative state ⁸	1,449
State average take plus 33% plus state average hunting compared to state low population	8%
County contribution to annual cumulative take	13.6%

Notes:

6. From CDFG (2004: 39) includes trapping, damage control, private property owners, entities, or other persons.

7. * 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW trapper reports FY 1997-2018 CDFW (2019a). As of September 2019, trapping is no longer allowed, but beaver can be hunted with with a valid CDFW hunting license from November 1 through March 31. There are no daily bag or possession limit or reporting requirements for recreational hunting. Trapping data are used as a proxy for estimating potential hunting take. Other = take under separate agreement with California Department of Water Resources (USDA 2020a).

TABLE C-4
BLACK BEAR POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	1	114
2001	0	73
2002	0	92
2003	0	104
2004	0	67
2005	3	93
2006	4	96
2007	3	148
2008	4	83
2009	3	137
2010	3	175
2011	3	126
2012	1	134
2013	2	70
2014	3	167
2015	7	88
2016	7	83
2017	20	134
2018	8	93
2019	3	39
TOTAL	75	2,116
MED/YR	3	95
AVE/YR	4	106
County % of APHIS-WS state take over 20-year period		3.5%

County Population Estimate		
Suitable habitat (square miles) ³	599	
Density (individuals per square mile) ⁴	1.00	(low)
	2.50	(high)
Sex ratio	N/A	
Female breeding success	N/A	
Litter size	N/A	
Total adults	599	(low)
	1,498	(high)
Breeding females	N/A	(low)
	N/A	(high)
Young at den	N/A	(low)
	N/A	(high)
County population before natural mortality (adults + young)	599	(low)
	1,498	(high)

State Population Estimate	
State low population estimate ⁵	17,000

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	4
% average take per year of County low population estimate	0.5%
% average take per year of state low population estimate	0.02%
% highest historic take (20) of County low population estimate	3.3%
% highest historic take (20) of state low population estimate	0.1%

Notes:

1. 2000-2006 data from: USDA (2019b)
2. 2007-2019 data from: USDA (2020a)
3. Calculated from CDFW BIOS dataset CHWR M151 [ds2602] (CDFW2016) (see Table C-1)
4. Population dynamics from CDFG (2011)
5. From CDFG (2011)

TABLE C-4
BLACK BEAR POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (individuals) ⁶	3,875
Cumulative Take Estimates	
County 20-year average take by APHIS	4
County average take compared to low population	0.5%
County average take plus 33% ⁷	5
County average take plus 33% compared to county low population	0.8%
County average plus 33% compared to state low population	0.03%
County average plus 33% + average hunting + DPs equals cumulative county ⁸	55
Cumulative county average take compared to county low population	9.2%
State 20-year average take by APHIS	106
State average take plus 33%	141
State average take plus 33% + average hunting + DPs equals cumulative state ⁸	1,963
State average compared to state low population	11.5%
County contribution to annual cumulative take	2.8%

Notes:

6. From: CDFG (2011: 25). Reflects sum of hunter harvest of 3,100 bears plus illegal take equal to 25% of legal harvest (775 bears). Per CDFG (2011), any legal harvest below 3,100 bears will not significantly affect the state's bear resource.

7. 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Hunting data from CDFW 2018 and CDFG 2011. Between 2006 and 2018, 50 black bears were taken in the county with depredation permits (DPs), for an average of approximately 4 per year. Statewide, 1,008 black bears were taken with depredation permits, for an annual average of 77 (CDFW 2019f).

TABLE C-5
BOBCAT POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	0	90
2001	0	73
2002	0	85
2003	0	44
2004	0	82
2005	0	36
2006	1	59
2007	4	57
2008	1	81
2009	0	73
2010	1	53
2011	0	58
2012	1	84
2013	0	44
2014	0	28
2015	0	12
2016	1	16
2017	0	11
2018	0	10
2019	0	15
TOTAL	9	1,011
MED/YR	<1	55
AVE/YR	0.5	51
County % of APHIS-WS state take over 20-year period		0.9%

County Population Estimate		
Suitable habitat (square miles) ³	1,380	
Density (individuals per square mile) ⁴	0.55	(low)
	0.58	(high)
Sex ratio	0.5	
Female breeding success	0.53	
Litter size	2.7	
Total adults	759	(low)
	800	(high)
Breeding females	380	(low)
	400	(high)
Young at den	543	(low)
	573	(high)
County population before natural mortality (adults + young)	1,302	(low)
	1,373	(high)
State low population estimate (after mortality) ⁵	81,609	

County APHIS-WS Baseline Take Under CSA	
Median annual take over 20-year period	1
% median take per year of County low population estimate	0.1%
% median take per year of state low population estimate	0.001%
% highest historic take (4) of County low population estimate	0.3%
% highest historic take (4) of state low population estimate	0.005%

Notes:

1. 2000-2006 data from: USDA (2019b)
2. 2007-2019 data from: USDA (2020a)
3. Calculated from CDFW BIOS dataset CWHR M166 [ds2617] (CDFW 2016) (see Table C-1)
4. Population dynamics from: CDFG (2004) Appendix 3 (Bobcat Population Model)
5. From: CDFG (2004) Appendix 3 (Bobcat Population Model)

TABLE C-5
BOBCAT POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (individuals) ⁶	14,400
Cumulative (Historic) Take Estimates	
County 20-year median take by APHIS	1
County median take compared to low population	0.1%
County median take plus 33% ⁷	2
County median take plus 33% compared to county low population	0.2%
County median plus 33% compared to state low population	0.002%
County median plus 33% plus county hunting equals cumulative county ⁸	10
Cumulative county median take compared to county low population	0.8%
State 20-year median take by APHIS	55
State median take plus 33%	73
State median take plus 33% plus state hunting equals cumulative state ⁸	376
State median plus 33% plus hunting state compared to state low population	0.5%
County contribution to annual cumulative take	2.7%

Notes:

6. From: CDFG (2004:57) includes trapping, damage control, private property owners, entities, or other persons. Provided for informational purposes only. Hunting and trapping no longer allowed.

7. 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004): species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Hunting and trapping data from CDFW (2019b and 2019a). Historic take included in the calculations provided for informational, comparative purposes only. Hunting and trapping no longer allowed; therefore, any future take would only be with a depredation permit, and take would be less than estimated.

TABLE C-6
COYOTE POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	24	8,379
2001	28	7,921
2002	25	7,163
2003	28	6,061
2004	15	6,463
2005	68	6,395
2006	55	7,703
2007	40	6,963
2008	45	6,160
2009	48	6,530
2010	22	5,326
2011	10	5,746
2012	15	5,699
2013	9	4,988
2014	4	4,083
2015	15	3,958
2016	10	3,702
2017	4	3,514
2018	14	3,767
2019	6	3,115
TOTAL	485	113,636
MED/YR	19	5,904
AVE/YR	24	5,682
County % of APHIS-WS state take over 20-year period		0.4%

County Population Estimate	
Suitable habitat (square miles) ³	1,633
Density (individuals per square mile) ⁴	1 (low)
	5 (high)
Sex ratio	0.5
Female breeding success	0.65
Litter size	5.5
Total Adults	1,633 (low)
	8,165 (high)
Breeding females	817 (low)
	4,083 (high)
Young at den	2,919 (low)
	14,595 (high)
County population before natural mortality (adults + young)	4,552 (low)
	22,760 (high)

State Population Estimate	
State low population estimate (after mortality) ⁵	227,818

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	24
% average take per year of County low population estimate	0.5%
% average take per year of state low population estimate	0.01%
% highest historic take (68) of County low population estimate	1.5%
% highest historic take annual (68) of state low population estimate	0.03%

Notes:

1. 2000-2006 data from: USDA (2019b)

2. 2007-2019 data from: USDA (2020a)

3. Calculated from CDFW BIOS dataset CWHR M146 [ds2597] (CDFW 2016) (see Table C-1)

4. Population dynamics from: CDFG (2004) Appendix 4 (Coyote Population Model)

5. From: CDFG (2004) Appendix 4 (Coyote Population Model)

TABLE C-6
COYOTE POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (% of population) ⁶	60%
Sustainable annual harvest state low population estimate using 60% (individuals)	136,691
Cumulative Take Estimates	
County 20-year average take by APHIS	24
County average take compared to low population	0.5%
County average take plus 33% ⁷	32
County average take plus 33% compared to county low population	0.7%
County average plus 33% compared to state low population	0.014%
County average plus 33% plus county average trapping plus hunting plus other equals cumulative county ⁸	648
Cumulative county average take compared to county low population	14%
State 20-year median take by APHIS	5,904
State median take plus 33%	7,852
State median take plus 33% plus state average trapping plus hunting equals cumulative state ⁸	64,809
State median plus 33% plus trapping state compared to state low population	28%
County contribution to annual cumulative take	1.0%

Notes:

6. From: Pitt, Knowlton, and Fox (2001)

7. * 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW trapper reports FY 1997-98 to FY 2018-19 (CDFW (2019a);

Hunting data from: CDFW game take hunter surveys FY 1997-98 to FY 2010-11 (most recent) (CDFW 2011b). Other = take under separate agreement with California Department of Water Resources (USDA 2020a).

TABLE C-7
GRAY FOX POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	0	142
2001	0	125
2002	0	173
2003	0	149
2004	1	90
2005	3	132
2006	2	149
2007	0	134
2008	2	202
2009	0	171
2010	1	193
2011	3	200
2012	3	179
2013	1	177
2014	1	126
2015	1	99
2016	1	121
2017	4	112
2018	8	98
2019	0	52
TOTAL	31	2,824
MED/YR	1	138
AVE/YR	2	141
County % of APHIS-WS state take over 20-year period		1.1%

County Population Estimate		
Suitable habitat (square miles) ³	1,614	
Density (individuals per square mile) ⁴	1	(low)
	3	(high)
Sex ratio	0.47	
Female breeding success	0.95	
Litter size	3.8	
Total Adults	1,614	(low)
	4,907	(high)
Breeding females	759	(low)
	2,306	(high)
Young at den	2,738	(low)
	8,325	(high)
County population before natural mortality (adults + young)	4,352	(low)
	13,232	(high)

State Population Estimate	
State low population estimate (after mortality) ⁵	157,175

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	2
% average take per year of County low population estimate	0.04%
% average take per year of state low population estimate	0.001%
% average historic take (8) of County low population estimate	0.2%
% average historic take (8) of state low population estimate	0.005%

Notes:

1. 2000-2006 data from: USDA (2019b)

2. 2007-2019 data from: USDA (2020a)

3. Calculated CDFW BIOS dataset CWHR M149 [ds2600] (CDFW 2016) (see Table C-1)

4. Population dynamics from: CDFG (2004) Appendix 5 (Gray Fox Population Model)

5. From: CDFG (2004) Appendix 5 (Gray Fox Population Model)

TABLE C-7
GRAY FOX POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (% of population) ⁶	25%
Cumulative Take Estimates	
County 20-year average take by APHIS	2
County average take compared to low population	0.04%
County average take plus 33% ⁷	3
County average take plus 33% compared to county low population	0.1%
County average plus 33% compared to state low population	0.002%
County average plus 33% plus county median trapping plus hunting equals cumulative county ⁸	22
Cumulative county average take compared to county low population	0.5%
State 20-year average take by APHIS	141
State average take plus 33%	188
State average take plus 33% plus state median trapping plus hunting equals cumulative state ⁸	2,595
State average plus 33% plus trapping state compared to state low population	1.7%
County contribution to annual cumulative take	0.8%

Notes:

6. From CDFG (2004: 41) includes trapping, damage control, private property owners, entities, or other persons

7. * 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping and hunting data from: CDFW trapper reports FY 1997-98 to FY 2018-19 CDFW (2019a); CDFW game take hunter surveys FY 1997-98 to FY 2010-11 (most recent) (CDFW 2011).

TABLE C-8
MOUNTAIN LION POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	4	146
2001	0	104
2002	0	120
2003	2	102
2004	0	132
2005	5	133
2006	0	109
2007	2	141
2008	0	113
2009	3	110
2010	5	103
2011	5	102
2012	4	67
2013	2	57
2014	5	86
2015	3	77
2016	1	75
2017	2	67
2018	7	96
2019	3	61
TOTAL	53	2,001
MED/YR	3	103
AVE/YR	3	100
County % of APHIS-WS state take over 20-year period		2.6%

County Population Estimate	
Suitable habitat (square kilometers) ³	2,466
Density (individuals per 100 square kilometers) ⁴	1.6
County population estimate ⁵	39
State Population Estimate	
State population estimate ⁶	1,500-5,000

County APHIS-WS Baseline Take Under CSA	
Median take over 20-year period	3
% median take per year of County low population estimate	6.3%
% median take per year of state lowest population estimate	0.2%
% 20-year total take of state lowest population estimate	3.5%
% highest historic take (7) of County low population estimate	17.7%
% highest historic take (7) of state lowest population estimate	0.5%

Notes:

1. 2000-2006 data from: USDA (2019b)
2. 2007-2019 data from: USDA (2020a)
3. Calculated from CDFW BIOS dataset CWHR M165 [ds2616] (CDFW 2016) (see Table C-1)
4. Beausoleil (2013). See Draft EIR Section 4.1, Biological Resources, for additional information.
5. Approximate. See Draft EIR Section 4.1, Biological Resources for additional information.
6. Dellinger and Torres (2020). See Draft EIR Section 4.1, Biological Resources, for additional information.

TABLE C-8
MOUNTAIN LION POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest ⁷	N/A

Cumulative Take Estimates	
County 20-year median take by APHIS	3
County median take compared to low population	6.3%
County median take plus 33% ⁸	3.3
County median take plus 33% compared to county low population	8.4%
County median plus 33% compared to state lowest population	0.2%
County median plus 33% plus county median take with depredation permits equals cumulative county ⁹	6
Cumulative county median take compared to county low population	16%
State 20-year median take by APHIS	103
State median take plus 33%	136
State median take plus 33% plus state median take with depredation permits equals cumulative state ⁹	233
State median plus 33% plus state depredation permits compared to state lowest population estimate	16%
County contribution to annual cumulative take	3%

Notes:

7. Specially protected species, no harvest threshold.

8. * 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

9. CDFW issued 157 depredation permits in Butte County between 2001 and 2018, with actual reported take of 42 individuals (CDFW 2019e), or less than 3 per year. CDFW issued 3,528 permits statewide and reported take at 1,741 during the same timeframe, or approximately 97 per year. CDFW states that the data represent the least number of permits issued to take a mountain lion and the least number of mountain lions taken under depredation permits in a given county in a given year. In some years, more lions were reported as taken than number of depredation permits issues, which could be due to inaccuracies in reporting. Additionally, multiple mountain lions could be taken on a single permit prior to 2013.

**TABLE C-9
MUSKRAT POPULATION AND TAKE DATA**

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	0	164
2001	0	86
2002	0	801
2003	0	1,376
2004	0	554
2005	1	308
2006	0	218
2007	3	836
2008	8	1,201
2009	0	324
2010	1	427
2011	0	166
2012	0	138
2013	0	146
2014	2	1,277
2015	0	228
2016	0	48
2017	0	109
2018	0	1,072
2019	0	243
TOTAL	15	9,722
MED/YR	<1	486
AVE/YR	1	486
County % of APHIS-WS state take over 20-year period		0.2%

County Population Estimate		
Suitable habitat (stream kilometers) ³	1,670	
Density (individuals per stream kilometer) ⁴	3.0	(low)
	15	(high)
Sex ratio	0.5	
Female breeding success	0.80	
Litter size	19.3	
Total Adults	5,010	(low)
	25,050	(high)
Breeding females	8,068	(low)
	40,338	(high)
Young at den	155,705	(low)
	778,523	(high)
County population before natural mortality (adults + young)	5,010	(low)
	25,050	(high)
State low population estimate (after mortality) ⁵	78,730	

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	1
% average take per year of County low population estimate	0.01%
% average take per year of state low population estimate	0.001%
% highest historic take (8) of County low population estimate	0.2%
% highest historic take (8) of state low population estimate	0.01%

Notes:

1. 2000-2006 data from: USDA (2019b)

2. 2007-2019 data from: USDA (2020a)

3. Calculated from National Hydrography Dataset (USGS 2019) (see Table C-1)

4. Population dynamics from: CDFG (2004) Appendix 7 (Muskrat Population Model)

5. From: CDFG (2004) Appendix 7 (Muskrat Population Model)

**TABLE C-9
MUSKRAT POPULATION AND TAKE DATA**

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (% of population) ⁶	60%
Cumulative Take Estimates	
County 20-year average take by APHIS	1
County average take compared to low population	0.0%
County average take plus 33% ⁷	1
County average take plus 33% compared to county low population	0.0%
County average plus 33% compared to state low population	0.001%
County average plus 33% plus county average trapping plus other equals cumulative county ⁸	548
Cumulative county average take compared to county low population	10.9%
State 20-year average take by APHIS	486
State average take plus 33%	647
State average take plus 33% plus state average trapping equals cumulative state ⁸	6,066
State average plus 33% plus trapping state compared to state low population	8%
County contribution to annual cumulative take	9.0%

Notes:

6. From CDFG (2004: 42) includes trapping, damage control, private property owners, entities, or other persons

7. * 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW trapper reports FY 1997-2019 (CDFW (2019a). Other = take under separate agreement with California Department of Water Resources (USDA 2020a).

TABLE C-10
RACCOON POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	30	1,978
2001	39	2,254
2002	44	2,009
2003	77	2,220
2004	76	1,735
2005	99	2,168
2006	94	2,560
2007	85	2,359
2008	133	2,772
2009	155	2,537
2010	119	2,424
2011	130	2,549
2012	94	2,595
2013	72	2,637
2014	49	2,098
2015	48	1,481
2016	44	1,454
2017	19	1,405
2018	21	1,365
2019	31	1,252
TOTAL	1,459	41,852
MED/YR	74	2,194
AVE/YR	73	2,047
County % of APHIS-WS state take over 20-year period		3.5%

County Population Estimate		
Suitable habitat (square miles) ³	1,467	
Density (individuals per square mile) ⁴	0.24	(low)
	0.70	(high)
Sex ratio	0.5	
Female breeding success	0.86	
Litter size	3.5	
Total Adults	352	(low)
	1,027	(high)
Breeding females	169	(low)
	493	(high)
Young at den	509	(low)
	1,484	(high)
County population before natural mortality (adults + young)	861	(low)
	2,511	(high)

State Population Estimate	
State low population estimate (after mortality) ⁵	36,928

County APHIS-WS Baseline Take Under CSA	
Median annual take over 20-year period	74
% median take per year of County low population estimate	8.6%
% median take per year of state low population estimate	0.2%
% highest historic take (155) of County low population estimate	18%
% highest historic take (155) of state low population estimate	0.4%

Notes:

1. 2000-2006 data from: USDA (2019b)
2. 2007-2019 data from: USDA (2020a)
3. Calculated from CDFW BIOS dataset CWHR M153 [ds2604] (CDFW 2016) (see Table C-1)
4. Population dynamics from: CDFG (2004) Appendix 8 (Raccoon Population Model)
5. From: CDFG 2004 Appendix 8 (Raccoon Population Model)

TABLE C-10
RACCOON POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest (% of population) ⁶	49%
Cumulative Take Estimates	
County 20-year median take by APHIS	74
County median take compared to low population	8.6%
County median take plus 33% ⁷	98
County median take plus 33% compared to county low population	11.4%
County median plus 33% compared to state low population	0.27%
County median plus 33% plus county median trapping plus hunting plus other equals cumulative county ⁸	482
Cumulative county median take compared to county low population	56%
State 20-year median take by APHIS	2,194
State median take plus 33% ⁷	2,918
State median take plus 33% plus state average trapping equals cumulative state ⁸	7,910
State median plus 33% plus trapping state compared to state low population	21.4%
County contribution to annual cumulative take	6%

Notes:

6. From: CDFG (2004:49)

7. 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW (2019a). Other = take under separate agreement with California Department of Water Resources (USDA 2020a).

TABLE C-11
STRIPED SKUNK POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	78	3,835
2001	73	4,336
2002	117	4,218
2003	118	3,918
2004	183	3,755
2005	375	4,154
2006	380	5,232
2007	226	5,036
2008	205	5,497
2009	224	4,680
2010	181	4,533
2011	179	3,922
2012	201	3,780
2013	291	3,473
2014	203	3,475
2015	151	2,771
2016	152	2,488
2017	244	2,866
2018	235	2,668
2019	207	2,015
TOTAL	4,023	76,652
MED/YR	202	3,877
AVE/YR	201	3,833
County % of APHIS-WS state take over 20-year period		5%

County Population Estimate		
Suitable habitat (square miles) ³	1,614	
Density (individuals per square mile) ⁴	1.3	(low)
	6.2	(high)
Sex ratio	0.46	
Female breeding success	0.8	
Litter size	5.6	
Total Adults	2,098	(low)
	10,007	(high)
Breeding females	965	(low)
	4,603	(high)
Young at den	4,324	(low)
	20,622	(high)
County population before natural mortality (adults + young)	6,422	(low)
	30,629	(high)

State Population Estimate	
State low population estimate (after mortality) ⁵	143,188

County APHIS-WS Baseline Take Under CSA	
Median annual take over 20-year period	202
% median take per year of County low population estimate	3%
% median take per year of state low population estimate	0.1%
% highest historic take (380) of County low population estimate	6%
% highest historic take (380) of state low population estimate	0.3%

Notes:

1. 2000-2006 data from: USDA (2019b)
2. 2007-2019 data from: USDA (2020a)
3. Calculated from CDFW BIOS dataset CWHR M162 [ds2613] (CDFW 2016) (see Table C-1)
4. Population dynamics from: CDFG (2004) Appendix 10 (Striped Skunk Population Model)
5. From: CDFG (2004) Appendix 10 (Striped Skunk Population Model)

TABLE C-11
STRIPED SKUNK POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest ⁶	N/A
Cumulative Take Estimates	
County 20-year median take by APHIS	202
County median take compared to low population	3.1%
County median take plus 33% ⁷	269
County median take plus 33% compared to county low population	4.2%
County median plus 33% compared to state low population	0.19%
County median plus 33% plus county median trapping plus hunting plus other equals cumulative county ⁸	271
Cumulative county median take compared to county low population	4.2%
State 20-year median take by APHIS	3,877
State median take plus 33% ⁷	5,156
State median take plus 33% plus state median trapping equals cumulative state ⁸	5,674
State median plus 33% plus state median trapping compared to state low population	4.0%
County contribution to annual cumulative take	4.8%

Notes:

6. No harvest threshold identified in CDFG (2004)

7. 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW (2019a). Other = take under separate agreement with California Department of Water Resources (USDA 2020a).

TABLE C-11
STRIPED SKUNK POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	78	3,835
2001	73	4,336
2002	117	4,218
2003	118	3,918
2004	183	3,755
2005	375	4,154
2006	380	5,232
2007	226	5,036
2008	205	5,497
2009	224	4,680
2010	181	4,533
2011	179	3,922
2012	201	3,780
2013	291	3,473
2014	203	3,475
2015	151	2,771
2016	152	2,488
2017	244	2,866
2018	235	2,668
2019	207	2,015
TOTAL	4,023	76,652
MED/YR	202	3,877
AVE/YR	201	3,833
County % of APHIS-WS state take over 20-year period		5%

County Population Estimate		
Suitable habitat (square miles) ³	1,614	
Density (individuals per square mile) ⁴	1.3	(low)
	6.2	(high)
Sex ratio	0.46	
Female breeding success	0.8	
Litter size	5.6	
Total Adults	2,098	(low)
	10,007	(high)
Breeding females	965	(low)
	4,603	(high)
Young at den	4,324	(low)
	20,622	(high)
County population before natural mortality (adults + young)	6,422	(low)
	30,629	(high)

State Population Estimate	
State low population estimate (after mortality) ⁵	143,188

County APHIS-WS Baseline Take Under CSA	
Median annual take over 20-year period	202
% median take per year of County low population estimate	3%
% median take per year of state low population estimate	0.1%
% highest historic take (380) of County low population estimate	6%
% highest historic take (380) of state low population estimate	0.3%

Notes:

1. 2000-2006 data from: USDA (2019b)

2. 2007-2019 data from: USDA (2020a)

3. Calculated from CDFW BIOS dataset CWHR M162 [ds2613] (CDFW 2016) (see Table C-1)

4. Population dynamics from: CDFG (2004) Appendix 10 (Striped Skunk Population Model)

5. From: CDFG (2004) Appendix 10 (Striped Skunk Population Model)

TABLE C-11
STRIPED SKUNK POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest ⁶	N/A
Cumulative Take Estimates	
County 20-year median take by APHIS	202
County median take compared to low population	3.1%
County median take plus 33% ⁷	269
County median take plus 33% compared to county low population	4.2%
County median plus 33% compared to state low population	0.19%
County median plus 33% plus county median trapping plus hunting plus other equals cumulative county ⁸	271
Cumulative county median take compared to county low population	4.2%
State 20-year median take by APHIS	3,877
State median take plus 33% ⁷	5,156
State median take plus 33% plus state median trapping equals cumulative state ⁸	5,674
State median plus 33% plus state median trapping compared to state low population	4.0%
County contribution to annual cumulative take	4.8%

Notes:

6. No harvest threshold identified in CDFG (2004)

7. 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW (2019a). Other = take under separate agreement with California Department of Water Resources (USDA 2020a).

TABLE C-12
VIRGINIA OPOSSUM POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	Butte County ^{1,2}	California ^{1,2}
2000	17	1,410
2001	18	1,418
2002	19	1,421
2003	20	1,528
2004	17	1,329
2005	34	1,410
2006	14	1,287
2007	23	1,176
2008	32	1,183
2009	26	1,198
2010	50	1,013
2011	22	1,218
2012	19	1,024
2013	17	793
2014	9	633
2015	13	731
2016	9	630
2017	16	1,011
2018	23	855
2019	11	622
TOTAL	409	21,890
MED/YR	19	1,180
AVE/YR	20	1,095
County % of APHIS-WS state take over 20-year period		1.9%

County Population Estimate		
Suitable habitat (square miles) ³		1,394
Density (individuals per square mile) ⁴	1.3	(low)
	20.2	(high)
Sex ratio	0.44	
Female breeding success	0.8	
Litter size	14.4	
Total Adults	1,812	(low)
	28,159	(high)
Breeding females	797	(low)
	12,390	(high)
Young at den	9,186	(low)
	142,731	(high)
County population before natural mortality (adults + young)	10,998	(low)
	170,890	(high)

State Population Estimate	
State low population estimate (after mortality) ⁵	40,447

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	20
% average take per year of County low population estimate	0.2%
% average take per year of state low population estimate	0.05%
% highest historic take (50) of County low population estimate	0.5%
% highest historic take (50) of state low population estimate	0.1%

Notes:

1. 2000-2006 data from: USDA (2019b)

2. 2007-2019 data from: USDA (2020a)

3. Calculated from VEGMAP/CWHR Crosswalk (USFS 2019) (see Table C-1)

4. Population dynamics from: CDFG (2004) Appendix 11 (Virginia Opossum Population Model)

TABLE C-12
VIRGINIA OPOSSUM POPULATION AND TAKE DATA

Sustainable Take Threshold	
Sustainable cumulative annual statewide harvest ⁶	N/A
Cumulative Take Estimates	
County 20-year average take by APHIS	20
County average take compared to low population	0.2%
County average take plus 33% ⁷	27
County average take plus 33% compared to county low population	0.2%
County average plus 33% compared to state low population	0.07%
County average plus 33% plus county median trapping equals cumulative county ⁸	28
Cumulative county average take compared to county low population	0.3%
State 20-year median take by APHIS	1,180
State median take plus 33% ⁷	1,569
State median take plus 33% plus state average trapping equals cumulative state ⁸	1,858
State median plus 33% plus trapping state compared to state low population	4.6%
County contribution to annual cumulative take	1.5%

Notes:

6. No harvest threshold identified in CDFG (2004)

7. 33% is added to account for take by private parties and all other known sources of mortality. It is the factor applied by APHIS-WS in recent documents (see USDA 2015a: 44) in assessing impacts of its program, in CDFG (2004: species population models appendices) for APHIS-WS take, and has been used in this analysis for consistency.

8. Trapping data from: CDFW (2019a)

TABLE C-13A
BUTTE COUNTY TARGET SPECIES DISPERSED AND FREED 2000-2019

SPECIES	FATE	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TOTAL
BEARS, BLACK	DISPERSED												2					2
BEARS, BLACK	FREED				3								1					4
BLACKBIRDS, RED-WINGED	DISPERSED												200					200
BLACKBIRDS, TRI-COLORED	FREED													96	289			385
CATS, FERAL/FREE-RANGING	FREED							1		1			1					3
COWBIRDS, BROWN-HEADED	DISPERSED														1,200			1,200
COYOTES	FREED																1	1
CROWS, AMERICAN	DISPERSED											9	71					80
DEER, BLACK-TAILED	FREED					1												1
DOGS, FERAL, FREE-RANGING AN	FREED				2													2
FOXES, GRAY	FREED		1	3	3		1		2		2		2	2	1	3	3	23
JAYS, SCRUB	FREED												1					1
LIONS, MOUNTAIN (COUGAR)	FREED	1																1
OPOSSUMS, VIRGINIA	DISPERSED		1					2									1	4
OWLS, GREAT HORNED	FREED						1											1
PIGEONS, FERAL (ROCK)	DISPERSED														800	620	1,760	3,180
RACCOONS	FREED			2		2	3							1	1			9
RACCOONS	DISPERSED			1														1
RINGTAILS	FREED															1		1
SQUIRRELS, GROUND, CALIFORNI	FREED								1									1
SQUIRRELS, WESTERN GRAY	FREED									1								1
STARLINGS, EUROPEAN	DISPERSED												2,000		1,500		1,800	5,300
TURKEYS, WILD	FREED								1									1

Source: USDA 2019b; USDA 2020a

None reported for 2000-2003

Data are for target intentional species only; see Table C-13b for target and non-target unintentional species dispersed and freed.

TABLE C-13B
BUTTE COUNTY TARGET AND NON-TARGET UNINTENTIONAL 2000-2019

Butte County Target Unintentional 2000-2019

SPECIES	METHOD	FATE	2000	2001	2002	2003	2004	2005	2008	2009	2010	2011	2012	2013	2015	2017	2018	TOTAL
BOBCATS	TRAPS, CAGE	KILLED									1							1
CATS, FERAL/FREE RANGING	TRAPS, CAGE	FREED									1		1		1			3
DOGS, FERAL/FREE RANGING & HYBRIDS	TRAPS, CAGE	FREED			1													1
FOXES, GRAY	TRAPS, CAGE	FREED						1		1		2		2	2	1	3	12
FOXES, GRAY	TRAPS, CAGE	KILLED					1											1
OPOSSUMS, VIRGINIA	SNARES, NECK z-(OTHER)	KILLED						1										1
OPOSSUMS, VIRGINIA	TRAPS, CAGE	FREED						3			2							5
OPOSSUMS, VIRGINIA	TRAPS, CAGE	KILLED	11	8	6	3	3											31
RACCOONS	TRAPS, CAGE	FREED								2						1		3
RACCOONS	SNARES, NECK z-(OTHER)	KILLED						1	1									2
RACCOONS	TRAPS, CAGE	KILLED	3	2			1											6
SKUNKS, STRIPED	SNARES, NECK z-(OTHER)	KILLED	1															1
SKUNKS, STRIPED	TRAPS, CAGE	KILLED	2		1	3												6

Source: USDA APHIS-WS (USDA 2019b; USDA 2020a)

None reported for 2006, 2007, 2014, 2016, 2019

Butte County Non-Target Unintentional 2000-2019

SPECIES	METHOD	FATE	2005	2006	2007	2008	2009	2010	2012	2016	2017	2019	TOTAL
BEARS, BLACK	SNARES, NECK	KILLED	1										1
BEARS, BLACK	TRAPS, CULVERT	KILLED									1		1
BLACKBIRDS, TRI-COLORED	TRAPS, CAGE	FREED								96	289		385
CATS, FERAL/FREE RANGING	TRAPS, CAGE	FREED		1									1
DOGS, FERAL/ FREE-RANGING & HYBRIDS	SNARES, NECK	FREED		1									1
FOXES, GRAY	SNARES, NECK	FREED	1										1
FOXES, GRAY	SNARES, NECK	KILLED	2										2
FOXES, GRAY	TRAPS, CAGE	FREED	1							2		1	4
FOXES, GRAY	TRAPS, CULVERT	FREED	1										1
MUSKRATS, z-(OTHER)	TRAPS, QUICK-KILL (CONIBEAR)	KILLED	1		1	1							3
OTTERS, RIVER	SNARES, NECK	FREED		1									1
OTTERS, RIVER	SNARES, NECK z-(OTHER)	FREED	8										8
OTTERS, RIVER	SNARES, NECK z-(OTHER)	KILLED	3										3
OTTERS, RIVER	TRAPS, BODY GRIP	KILLED	1	6	2		1	3					13
OTTERS, RIVER	TRAPS, QUICK-KILL (CONIBEAR)	KILLED	4										4
RACCOONS	SNARES, FOOT/LEG	KILLED	1										1
RACCOONS	TRAPS, BODY GRIP	KILLED		1	4								5
RACCOONS	TRAPS, QUICK-KILL (CONIBEAR)	KILLED	1										1
SKUNKS, STRIPED	SNARES, NECK	KILLED	3			1							4
SQUIRRELS, WESTERN GRAY	TRAPS, CAGE	FREED							1				1

Source: USDA APHIS-WS (USDA 2019b; USDA 2020a)

None reported for 2000-2004, 2011, 2013-2015, 2018

TABLE C-14

BUTTE COUNTY GENERAL PLAN CONSERVATION AND OPEN SPACE ELEMENT BIOLOGICAL RESOURCES POLICIES CONSISTENCY ANALYSIS

Policy Number	Policy Text	Consistency Analysis
<i>Goal COS-6: Engage in cooperative planning efforts to protect biological resources.</i>		
COS-P6.1	The County shall coordinate with applicable federal, State, regional and local agencies on natural resources and habitat planning.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land use planning as it relates to natural resources.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
<i>Goal COS-7: Conserve and enhance habitat for protected species and sensitive biological communities.</i>		
COS-P7.1	Conservation easements that protect habitat areas, habitat corridors and sensitive biological resources shall be promoted.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development that would require conservation easements.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.2	Clustered development patterns shall be encouraged in order to conserve habitat for protected species and biological resources.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.3	Creeks shall be maintained in their natural state whenever possible, and creeks and floodways shall be allowed to function as natural flood protection features during storms.*	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve activities that would physically affect creeks and floodways.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.4	New development projects shall mitigate their impacts in habitat areas for protected species through on- or off-site habitat restoration, clustering of development, and/or project design and through the provisions of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) within the HCP/NCCP Planning Area, upon the future adoption of the HCP/NCCP.*	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.5	No new development projects shall occur in wetlands or within significant riparian habitats, except within the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) Planning Area where such development is consistent	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>

TABLE C-14

BUTTE COUNTY GENERAL PLAN CONSERVATION AND OPEN SPACE ELEMENT BIOLOGICAL RESOURCES POLICIES CONSISTENCY ANALYSIS

Policy Number	Policy Text	Consistency Analysis
	with the conditions of the HCP/NCCP, upon the future adoption of the HCP/NCCP.	
COS P7.6	New development projects shall include setbacks and buffers along riparian corridors and adjacent to habitat for protected species, except where permitted in the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) Planning Area and where such development is consistent with the conditions of the HCP/NCCP, upon the future adoption of the HCP/NCCP.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.7.	Construction barrier fencing shall be installed around sensitive resources on or adjacent to construction sites. Fencing shall be installed prior to construction activities and maintained throughout the construction period.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.8	Where sensitive on-site biological resources have been identified, construction employees operating equipment or engaged in any development-associated activities involving vegetation removal or ground disturbing activities in sensitive resource areas shall be trained by a qualified biologist and/or botanist who will provide information on the on-site biological resources (sensitive natural communities, special-status plant and wildlife habitats, nests of special-status birds, etc.), avoidance of invasive plant introduction and spread, and the penalties for not complying with biological mitigation requirements and other State and federal regulations.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.9	A biologist shall be retained to conduct construction monitoring in and adjacent to all habitats for protected species when construction is taking place near such habitat areas.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>

TABLE C-14

BUTTE COUNTY GENERAL PLAN CONSERVATION AND OPEN SPACE ELEMENT BIOLOGICAL RESOURCES POLICIES CONSISTENCY ANALYSIS

Policy Number	Policy Text	Consistency Analysis
COS P7.10	Long-term recovery plans for areas affected by wildfire shall incorporate native species and enhance wildlife habitat.	<p><u>Analysis:</u> This policy is not applicable. The Yuba-Sutter NCCP/HCP has not been adopted as of January 2020, and APHIS-WS is not involved in local land use decisions.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P7.11	The County shall work with the military to ensure that land uses under the Military Operations Areas (MOAs) encourage the fulfillment of the County's biological resource protection goals.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve operations in MOAs.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
<i>Goal COS-8: Maintain and preserve native vegetation.</i>		
COS P8.1	Native plant species shall be protected and planting and regeneration of native plant species shall be encouraged, wherever possible, in undisturbed portions of development sites.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P8.2	New landscaping shall promote the use of xeriscape and native tree and plant species, including those valued for traditional Native American cultural uses.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve installation of landscaping.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P8.3	Native plants shall be used wherever possible on County-owned and -controlled property.	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve activities that would require using native plants on County-owner property.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>
COS P8.4	Introduction or spread of invasive plant species during construction of development projects shall be avoided by minimizing surface disturbance; seeding and mulching disturbed areas with certified weed-free native mixes; and using native, noninvasive species in erosion control plantings	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy.</p>

<i>Goal COS-9: Protect identified special-status species.</i>		
COS P9.1	<p>A biological resources assessment shall be required for any proposed development project where special-status species or critical habitat may be present. Assessments shall be carried out under the direction of Butte County. Additional focused surveys shall be conducted during the appropriate season if necessary.</p> <p>Upon adoption of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), assessment requirements of the HCP/NCCP shall be implemented for development projects within the HCP/NCCP area.*</p>	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy</p>
COS P9.2	<p>If special-status plant or animal species are found to be located within a development site, proponents of the project shall engage in consultation with the appropriate federal, State and regional agencies and mitigate project impacts in accordance with State and federal law. Upon adoption of the Butte Regional Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP), mitigation requirements of the HCP/NCCP shall be implemented for development projects within the HCP/NCCP area.</p>	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy</p>
<i>Goal COS-10: Facilitate the survival of deer herds in winter and critical winter migratory deer herd ranges.</i>		
COS P10.1	<p>Clustered development projects that are designed to accommodate herd migration patterns shall be allowed and encouraged, with remaining areas protected under conservation easements, within the Winter and Critical Winter Deer Herd Migration Area Overlays in order to protect migratory deer herd ranges.</p>	<p><u>Analysis:</u> This policy is not applicable. APHIS-WS activities do not involve land development.</p> <p><u>Conclusion:</u> The County-funded APHIS-WS IWDM program services would not conflict with this policy</p>

Source: Policies from Butte County (2010a).

TABLE C-15
USDA APHIS-WS AGENCY CONSULTATION RESULTS FOR THREATENED AND ENDANGERED SPECIES

Common Name	Scientific Name	State Listing	Federal Listing	USDA APHIS-WS Agency Consultation Results
Mammals				
Fisher – West Coast DPS	<i>Pekania pennanti</i>			(d)
Birds				
Bald eagle	<i>Haliaeetus leucocephalus</i>	SE*	<u>Delisted</u> FT FE (rev) FE	NLAA/4,7
Bank swallow	<i>Riparia riparia</i>	ST		No Effect/4,7
California black rail	<i>Laterallus jamaicensis coturniculus</i>	ST*		No Effect/4,7
Great gray owl	<i>Strix nebulosa</i>	ST		(a)
Least Bell's vireo	<i>Vireo bellii pusillus</i>	SE	FE	No Effect/4,5,7 NLAA/5
Swainson's hawk	<i>Buteo swainsoni</i>	ST		No Effect/4,7
Tricolored blackbird	<i>Agelaius tricolor</i>	ST		(d)
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	CE	ST	No Effect/4,7
Amphibians and Reptiles				
California red-legged frog	<i>Rana draytonii</i>		FT	No Effect/3
Giant gartersnake	<i>Thamnophis gigas</i>	ST	ST	No Effect/3,4,7 NLAA/5
Foothill yellow-legged frog	<i>Rana boylei</i>	ST		(e)
Sierra Nevada yellow-legged frog	<i>Rana sierrae</i>	ST	FE	No Effect/6,7
Invertebrates				
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>		FT	(a)
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>		FE	(a)
Western bumble bee	<i>Bombus occidentalis</i>	CE		(a)
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	CT		(a)
Fish				
Chinook salmon – Central Valley spring run	<i>Oncorhynchus tshawytscha pop. 6</i>	ST	FT	(c)
Chinook salmon - Sacramento River winter run	<i>Oncorhynchus tshawytscha</i>	SE	FE	(c)
Green sturgeon, southern DPS	<i>Acipenser medirostris</i>		FT	(c)
Steelhead, Central Valley DPS	<i>Oncorhynchus mykiss irideus</i>		FT	(c)

Source: Species: USFWS 2019, 2020; CDFW 2019

S = state listed

F = federally listed

T = threatened

E = endangered

NLAA – not likely to adversely affect

* = state fully protected species

(a) = APHIS-WS does not modify habitat that supports this species.

(b) = Species cannot be inadvertently caught using APHIS-WS mammal capture methods (traps, cages, snares).

(c) = "Section 7(d) Determination with respect to Chinook salmon, Coho salmon, steelhead, green sturgeon, Pacific halibut and their critical habitats." Memo to file, Dennis L. Orthmeyer, State Director, California Office APHIS-WS, June 11, 2019; ESA Section 7 Consultation with NOAA-NMFS has been initiated.

(d) = Federal consultation not required. West Coast DPS split by listing in May 2020. Southern sierra population now Endangered. Northern DPS removed from listing consideration. (Federal Register Vol. 85, No. 95: 29532-29589.

(e) = In progress as part of NOAA-NMFS beaver/nutria damage management consultation activities. All terrestrial IWDN is considered No Effect on amphibians.

Effect determinations as reported in USDA (2015a, Appendix D):

- 1) USFWS Section 7 Informal Consultations 4-15-14.
- 2) Wildlife damage management is not currently proposed in the range of these species. If APHIS-WS receives a request for assistance within the range of these species, APHIS-WS would initiate and complete Section 7 consultation with USFWS and adopt all necessary conditions to ensure that either the proposed actions would not be likely to adversely affect these species, or that the proposed actions would not jeopardize the continued existence of the species. APHIS-WS would also consult with CDFW for species that are state listed.
- 3) USFWS Section 7 consultation 5-7-07 "Not likely to adversely affect" determination or confirmation of "no effect" determination. USFWS has requested additional consultation if work is proposed in the range of this species. No work is currently proposed. Concurrence CDFW 11/2014. APHIS-WS has reinitiated consultation with USFWS to update review.
- 4) CESA consultations with CDFG (1996) for state-listed species (12/20/1996, 1/16/1997, 2/13/1997, and 2014).
- 5) USFWS (1996) Section 7 Consultations when species was federally listed, and/or CDFG (1997) for species that are listed by the state only.
- 6) The proposed methods do not have the potential to affect this species in its range.
- 7) CDFW concurrence/2014.
- 8) USFWS formal consultation requested.