APPENDIX C – BIOLOGICAL RESOURCES SUPPORTING DOCUMENTATION

TABLE C-1

SHASTA COUNTY VEGETATION TYPES AND SPECIES SUITABLE HABITAT (IN SQUARE MILES)

CWHR HABITAT TYPE	BEAR	BOBCAT	COYOTE	GRAY FOX	MOUNTAIN LION	RACCOON	SKUNK	VIRGINIA OPOSSUM	BEAVER AND MUSKRAT
Alpine-dwarf shrub	1	1	1		1	1			
Annual grassland	22	192	192	186	192	192	192	192	
Aspen	1	1	1	1	1	1	1		
Barren			65						
Bitterbrush		2	2	2	2	2	2		
Blue oak woodland		306	306	306	306	306	306	306	
Blue oak-foothill pine	73	155	155	152	155	155	155	155	
Chamise-redshank chaparral	25		27	27	27	27	27	27	
Closed-cone pine-cypress		92	15	11	15	15	15	15	
Cropland	9	4	4	36	50	50	50		
Douglas fir	258	258	258	258	258	258	258	258	
Eastside pine	60	66	66	53	66	66	66	66	
Evergreen orchard		1	1	1	1	1	1	1	
Freshwater emergent wetland		2	2	2		2	2	2	
Irrigated field	3	30	30	6		30	30	30	
Jeffrey pine	3	3	3	3	3	3	3	3	
Juniper		18	18	16	18	18	18	18	
Klamath mixed conifer	327	327	327	193	327	327	327	327	
Lacustrine						15			
Lodgepole pine	9	9	9		9	9	1	1	
Low sage		1	1	1	1	1	1	1	
Mixed chaparral	169	211	211	196	211	211	211	211	
Montane chaparral	214	215	215	215	215	215	215	215	
Montane hardwood	325	349	346	344	346	346	346	346	
Montane hardwood-conifer	250	251	251	251	251	251	251	251	
Montane riparian	6	6	5	2	6	6	6	6	
Pasture	9	19	19	19	19	19	19		
Perennial grassland	30	32	32	30	32	32	32	32	
Ponderosa pine	279	281	281	281	281	281	281	281	
Red fir	47	47	47		46	46	9	46	

TABLE C-1
SHASTA COUNTY VEGETATION TYPES AND SPECIES SUITABLE HABITAT (IN SQUARE MILES)

CWHR HABITAT TYPE	BEAR	BOBCAT	COYOTE	GRAY FOX	MOUNTAIN LION	RACCOON	SKUNK	VIRGINIA OPOSSUM	BEAVER AND MUSKRAT
Rice			1	1			1		
Riverine	1					7		7	
Sagebrush		39	38	35	39	39	39	39	
Sierran mixed conifer	633	633	633	633	633	633	633	633	
Subalpine conifer	3	3	3		3	3	3	3	
Urban			49	49		49	49	49	
Valley foothill riparian	1	12	12		12	12	12	12	
Valley oak woodland		7	7	7	7	7	7	7	
Wet meadow	9	11	11	9		11	11		
White fir	75	75	75	68	75	75	75		
Square Miles	2,842	3,659	3,719	3,394	3,608	3,722	3,655	3,540	
Square Kilometers					9,345				
Stream Kilometers									4,148

Data Sources

Species habitat: CDFW Interagency Wildlife Task Group. Predicted Habitats. SDE Raster Datasets. Available at: https://apps.wildlife.ca.gov/bios/;
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);

TABLE C-2
SHASTA COUNTY SPECIAL-STATUS PLANTS

Common Name	Scientific Name	CRPR	GRank	SRank	CESA	FESA
Ahart's paronychia	Paronychia ahartii	1B.1	G3	S3	None	None
alpine marsh violet	Viola palustris	2B.2	G5	S1S2	None	None
alpine smelowskia	Smelowskia ovalis	1B.2	G5	S1	None	None
Anderson's clover	Trifolium andersonii ssp. andersonii	4.3	G5T5	S4	None	None
ash beardtongue	Penstemon cinicola	4.3	G4	S3	None	None
awl-leaved navarretia	Navarretia subuligera	4.3	G4	S4	None	None
Baker cypress	Hesperocyparis bakeri	4.2	G3	S3	None	None
Baker's globe mallow	Iliamna bakeri	4.2	G4	S3	None	None
Beegum onion	Allium hoffmanii	4.3	G4	S4	None	None
Bellinger's meadowfoam	Limnanthes floccosa ssp. bellingeriana	1B.2	G4T2T3	S1	None	None
Bidwell's knotweed	Polygonum bidwelliae	4.3	G4	S4	None	None
big-scale balsamroot	Balsamorhiza macrolepis	1B.2	G2	S2	None	None
blushing wild buckwheat	Eriogonum ursinum var. erubescens	1B.3	G3G4T3	S3	None	None
Boggs Lake hedge-hyssop	Gratiola heterosepala	1B.2	G2	S2	CE	None
Brewer's calandrinia	Calandrinia breweri	4.2	G4	S4	None	None
bristly sedge	Carex comosa	2B.1	G5	S2	None	None
broad-lobed leptosiphon	Leptosiphon latisectus	4.3	G4	S4	None	None
broad-nerved hump moss	Meesia uliginosa	2B.2	G5	S3	None	None
Butte County fritillary	Fritillaria eastwoodiae	3.2	G3Q	S3	None	None
Butte County morning-glory	Calystegia atriplicifolia ssp. buttensis	4.2	G5T3	S3	None	None
Buxbaum's sedge	Carex buxbaumii	4.2	G5	S3	None	None
California lady's-slipper	Cypripedium californicum	4.2	G4	S4	None	None
California pitcherplant	Darlingtonia californica	4.2	G4	S4	None	None
Callahan's mariposa lily	Calochortus syntrophus	1B.1	G1	S1	None	None
Cantelow's lewisia	Lewisia cantelovii	1B.2	G3	S3	None	None
Canyon Creek stonecrop	Sedum obtusatum ssp. paradisum	1B.3	G4G5T3	S3	None	None
Cascade alpine campion	Silene suksdorfii	2B.3	G4	S3	None	None
Cascade grass-of-Parnassus	Parnassia cirrata var. intermedia	2B.2	G5T4	S3	None	None
Castle Crags harebell	Campanula shetleri	1B.3	G2	S2	None	None
Castle Crags ivesia	Ivesia longibracteata	1B.3	G1	S1	None	None
Castlegar hawthorne	Crataegus castlegarensis	3	G5	S3?	None	None
Center Basin rush	Juncus hemiendytus var. abjectus	4.3	G5T5	S4	None	None
clustered lady's-slipper	Cypripedium fasciculatum	4.2	G4	S4	None	None
Coleman's rein orchid	Piperia colemanii	4.3	G4	S4	None	None
Congdon's buckwheat	Eriogonum congdonii	4.3	G4	S4	None	None
Cusick's stickseed	Hackelia cusickii	4.3	G4	S3S4	None	None
cut-leaf anemone	Anemone multifida var. multifida	2B.2	G5T5	S1S2	None	None

TABLE C-2
SHASTA COUNTY SPECIAL-STATUS PLANTS

Common Name	Scientific Name	CRPR		GRank	SRank	CESA	FESA
cylindrical trichodon	Trichodon cylindricus	2B.2		G4	S2	None	None
depauperate milk-vetch	Astragalus pauperculus		4.3	G4	S4	None	None
Dubakella Mountain buckwheat	Eriogonum libertini		4.2	G4	S4	None	None
dubious pea	Lathyrus sulphureus var. argillaceus		3	G5T1T2Q	S1S2	None	None
eel-grass pondweed	Potamogeton zosteriformis	2B.2		G5	S3	None	None
Egg Lake monkeyflower	Diplacus pygmaeus		4.2	G4	S3	None	None
Engelmann spruce	Picea engelmannii	2B.2		G5	S2	None	None
English Peak greenbrier	Smilax jamesii		4.2	G3G4	S3S4	None	None
English sundew	Drosera anglica	2B.3		G5	S2	None	None
ephemeral monkeyflower	Erythranthe inflatula	1B.2		G3	S2	None	None
finger rush	Juncus digitatus	1B.1		G1	S1	None	None
fleshy toothwort	Cardamine bellidifolia var. pachyphylla		4.3	G5T4	S3	None	None
Geysers panicum	Panicum acuminatum var. thermale	1B.2		G5T2Q	S2	CE	None
giant checkerbloom	Sidalcea gigantea		4.3	G3	S3	None	None
golden alpine draba	Draba aureola	1B.3		G4	S2	None	None
Great Basin nemophila	Nemophila breviflora	2B.3		G4G5	S3	None	None
Greene's tuctoria	Tuctoria greenei	1B.1		G1	S1	CR	FE
hairy marsh hedge-nettle	Stachys pilosa	2B.3		G5	S3	None	None
Heckner's lewisia	Lewisia cotyledon var. heckneri	1B.2		G4T3	S3	None	None
Henderson's bent grass	Agrostis hendersonii		3.2	G2Q	S2	None	None
hoary gooseberry	Ribes roezlii var. amictum		4.3	G5T4	S4	None	None
holly-leaved ceanothus	Ceanothus purpureus	1B.2		G2	S2	None	None
hot rock daisy	Erigeron inornatus var. calidipetris		4.3	G5T3	S3	None	None
Howell's alkali grass	Puccinellia howellii	1B.1		G1	S1	None	None
Howell's draba	Draba howellii		4.3	G4	S4	None	None
Howell's lewisia	Lewisia cotyledon var. howellii		3.2	G4T4Q	S2	None	None
Howell's thelypodium	Thelypodium howellii ssp. howellii	1B.2		G1T1	S1	None	None
Hutchison's lewisia	Lewisia kelloggii ssp. hutchisonii		3.2	G3G4T3Q	S3	None	None
Indian Valley brodiaea	Brodiaea rosea ssp. rosea		3.1	G2	S2	CE	None
Jepson's dodder	Cuscuta jepsonii	1B.2		G1	S1	None	None
Jepson's horkelia	Horkelia daucifolia var. indicta	1B.1		G4T1	S1	None	None
Jones' muhly	Muhlenbergia jonesii		4.3	G3	S3	None	None
Kellogg's lewisia	Lewisia kelloggii ssp. kelloggii		3.2	G3G4T2T3(	S2S3	None	None
Klamath fawn lily	Erythronium klamathense	2B.2		G4	S2	None	None
Klamath manzanita	Arctostaphylos klamathensis	1B.2		G2G3	S2S3	None	None
Klamath Mountain catchfly	Silene salmonacea	1B.2		G3	S3	None	None
Klamath rock daisy	Erigeron petrophilus var. viscidulus		4.3	G4T4	S4	None	None

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SHASTA COUNTY SPECIAL-STATUS PLANTS

Common Name	Scientific Name	CRPR		GRank	SRank	CESA	FESA
Konocti manzanita	Arctostaphylos manzanita ssp. elegans	1B.3		G5T3	S3	None	None
Kruckeberg's sword fern	Polystichum kruckebergii		4.3	G4	S4	None	None
Lassen paintbrush	Castilleja lassenensis	1B.3		G3	S3	None	None
Lassen Peak copper moss	Haplodontium tehamense	1B.3		G2	S2	None	None
legenere	Legenere limosa	1B.1		G2	S2	None	None
Lemmon's milk-vetch	Astragalus lemmonii	1B.2		G2	S2	None	None
lesser bladderwort	Utricularia minor		4.2	G5	S3	None	None
Liddon's sedge	Carex petasata	2B.3		G5	S3	None	None
little hulsea	Hulsea nana	2B.3		G4	S3	None	None
long bluebells	Mertensia longiflora	2B.2		G4?	S2	None	None
long-fruit jewelflower	Streptanthus longisiliquus		4.3	G3	S3	None	None
long-haired star-tulip	Calochortus longebarbatus var. longebarbatus	1B.2		G4T3	S3	None	None
long-leaved starwort	Stellaria longifolia	2B.2		G5	S2	None	None
long-stiped campion	Silene occidentalis ssp. longistipitata	1B.2		G4T2Q	S2	None	None
Mallory's manzanita	Arctostaphylos malloryi		4.3	G3	S3	None	None
marsh skullcap	Scutellaria galericulata	2B.2		G5	S2	None	None
Mingan moonwort	Botrychium minganense	2B.2		G4G5	S3	None	None
Modoc County knotweed	Polygonum polygaloides ssp. esotericum	1B.3		G4G5T3	S3	None	None
mountain lady's-slipper	Cypripedium montanum		4.2	G4	S4	None	None
Mt. Eddy buckwheat	Eriogonum umbellatum var. humistratum		4.3	G5T4	S4	None	None
Mt. Shasta sky pilot	Polemonium pulcherrimum var. shastense	1B.2		G5T2	S2	None	None
narrow-petaled rein orchid	Piperia leptopetala		4.3	G4	S4	None	None
Newberry's cinquefoil	Potentilla newberryi	2B.3		G3G4	S2S3	None	None
Niles' harmonia	Harmonia doris-nilesiae	1B.1		G2G3	S2S3	None	None
northern bugleweed	Lycopus uniflorus		4.3	G5	S4	None	None
northern clarkia	Clarkia borealis ssp. borealis	1B.3		G3T3	S3	None	None
northern holly fern	Polystichum lonchitis		3	G5	S3	None	None
northern spleenwort	Asplenium septentrionale	2B.3		G4G5	S3	None	None
northwestern moonwort	Botrychium pinnatum	2B.3		G4?	S2	None	None
Nuttall's ribbon-leaved pondweed	Potamogeton epihydrus	2B.2		G5	S2S3	None	None
obtuse starwort	Stellaria obtusa		4.3	G5	S4	None	None
Oregon campion	Silene oregana	2B.2		G4	S2	None	None
Oregon fireweed	Epilobium oreganum	1B.2		G2	S2	None	None
oval-leaved viburnum	Viburnum ellipticum	2B.3		G4G5	S3?	None	None
Pacific fuzz wort	Ptilidium californicum		4.3	G4G5	S3S4	None	None
pale yellow stonecrop	Sedum laxum ssp. flavidum		4.3	G5T3Q	S3	None	None
pallid bird's-beak	Cordylanthus tenuis ssp. pallescens	1B.2		G4G5T1	S1	None	None

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SHASTA COUNTY SPECIAL-STATUS PLANTS

Common Name	Scientific Name	CRPR		GRank	SRank	CESA	FESA
Peanut sandwort	Sabulina rosei		4.2	G3	S3	None	None
pink creamsacs	Castilleja rubicundula var. rubicundula	1B.2		G5T2	S2	None	None
pink-margined monkeyflower	Erythranthe trinitiensis	1B.3		G2	S2	None	None
profuse-flowered pogogyne	Pogogyne floribunda		4.2	G3G4	S3	None	None
pyrola-leaved buckwheat	Eriogonum pyrolifolium var. pyrolifolium	2B.3		G4T4	S3	None	None
rattlesnake fern	Botrypus virginianus	2B.2		G5	S2	None	None
rayless mountain ragwort	Packera indecora	2B.2		G5	S2?	None	None
Red Bluff dwarf rush	Juncus leiospermus var. leiospermus	1B.1		G2T2	S2	None	None
Red Mountain catchfly	Silene campanulata ssp. campanulata		4.2	G5T3Q	S3	CE	None
Redding checkerbloom	Sidalcea celata		3	G2G3	S2S3	None	None
red-stemmed cryptantha	Cryptantha rostellata		4.2	G4	S3	None	None
redwood lily	Lilium rubescens		4.2	G3	S3	None	None
rough harebell	Campanula scabrella		4.3	G4	S4	None	None
saffron-flowered lupine	Lupinus croceus var. pilosellus		4.3	G3T3	S3	None	None
Salmon Mountains wakerobin	Trillium ovatum ssp. oettingeri		4.2	G5T3	S3	None	None
San Bernardino grass-of-Parnassus	Parnassia cirrata var. cirrata	1B.3		G5T2	S2	None	None
Sanborn's onion	Allium sanbornii var. sanbornii		4.2	G4T3T4	S3S4	None	None
Sanford's arrowhead	Sagittaria sanfordii	1B.2		G3	S3	None	None
Santa Lucia dwarf rush	Juncus luciensis	1B.2		G3	S3	None	None
scabrid alpine tarplant	Anisocarpus scabridus	1B.3		G3	S3	None	None
scalloped moonwort	Botrychium crenulatum	2B.2		G4	S3	None	None
Scott Mountain bedstraw	Galium serpenticum ssp. scotticum	1B.2		G4G5T2	S2	None	None
Scott Mountain howellanthus	Howellanthus dalesianus		4.3	G3	S3	None	None
Scott Mountains fawn lily	Erythronium citrinum var. roderickii		4.3	G4T3T4	S3S4	None	None
serpentine collomia	Collomia diversifolia		4.3	G4	S4	None	None
serpentine cryptantha	Cryptantha dissita	1B.2		G2	S2	None	None
serpentine goldenbush	Ericameria ophitidis		4.3	G4	S4	None	None
serpentine milkweed	Asclepias solanoana		4.2	G3	S3	None	None
serpentine rockcress	Boechera serpenticola	1B.2		G1	S1	None	None
serpentine sunflower	Helianthus exilis		4.2	G3	S3	None	None
Shasta ageratina	Ageratina shastensis	1B.2		G3	S3	None	None
Shasta beardtongue	Penstemon heterodoxus var. shastensis		4.3	G5T3	S3	None	None
Shasta clarkia	Clarkia borealis ssp. arida	1B.1		G3T2	S2	None	None
Shasta County arnica	Arnica venosa		4.2	G3	S3	None	None
Shasta fawn lily	Erythronium shastense	1B.2		G2	S2	None	None
Shasta huckleberry	Vaccinium shastense ssp. shastense	1B.3		G4T3	S3	None	None
Shasta limestone monkeyflower	Erythranthe taylorii	1B.1		G2	S2	None	None

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SHASTA COUNTY SPECIAL-STATUS PLANTS

Common Name	Scientific Name	CRPR		GRank	SRank	CESA	FESA
Shasta maidenhair fern	Adiantum shastense		4.3	G3	S3	None	None
Shasta snow-wreath	Neviusia cliftonii	1B.2		G2	S2	None	None
shield-bracted monkeyflower	Erythranthe glaucescens		4.3	G3G4	S3S4	None	None
short-podded thelypodium	Thelypodium brachycarpum		4.2	G3	S3	None	None
sickle-fruit jewelflower	Streptanthus drepanoides		4.3	G4	S4	None	None
Sierra blue grass	Poa sierrae	1B.3		G3	S3	None	None
silky cryptantha	Cryptantha crinita	1B.2		G2	S2	None	None
silvery false lupine	Thermopsis californica var. argentata		4.3	G4T4	S4	None	None
Siskiyou clover	Trifolium siskiyouense	1B.1		GH	SH	None	None
Siskiyou false-hellebore	Veratrum insolitum		4.3	G4	S4	None	None
Siskiyou fireweed	Epilobium siskiyouense	1B.3		G3	S3	None	None
Siskiyou fritillaria	Fritillaria glauca		4.2	G3G4	S3	None	None
slender cottongrass	Eriophorum gracile		4.3	G5	S4	None	None
slender false lupine	Thermopsis gracilis		4.3	G4	S4	None	None
slender Orcutt grass	Orcuttia tenuis	1B.1		G2	S2	CE	FT
slender silver moss	Anomobryum julaceum		4.2	G5?	S2	None	None
slender-leaved pondweed	Stuckenia filiformis ssp. alpina	2B.2		G5T5	S2S3	None	None
small bur-reed	Sparganium natans		4.3	G5	S3	None	None
snow fleabane daisy	Erigeron nivalis	2B.3		G5	S3	None	None
squarestem phlox	Phlox muscoides	2B.3		G4G5	S3	None	None
Stebbins' harmonia	Harmonia stebbinsii	1B.2		G2	S2	None	None
Suksdorf's milk-vetch	Astragalus pulsiferae var. suksdorfii	1B.2		G4T2	S2	None	None
Sulphur Creek brodiaea	Brodiaea matsonii	1B.1		G1	S1	None	None
Susanville milk-vetch	Astragalus inversus		4.3	G4	S4	None	None
talus collomia	Collomia larsenii	2B.2		G4	S2	None	None
Tehama navarretia	Navarretia heterandra		4.3	G4	S4	None	None
thread-leaved beakseed	Bulbostylis capillaris		4.2	G5	S3	None	None
thread-leaved beardtongue	Penstemon filiformis	1B.3		G3	S3	None	None
three-ranked hump moss	Meesia triquetra		4.2	G5	S4	None	None
Tracy's eriastrum	Eriastrum tracyi		3.2	G3Q	S3	CR	None
Tracy's lomatium	Lomatium tracyi		4.3	G4	S4	None	None
Trinity Mountains triteleia	Triteleia crocea var. modesta		4.3	G4T3	S3	None	None
tufted loosestrife	Lysimachia thyrsiflora	2B.3		G5	S1?	None	None
upswept moonwort	Botrychium ascendens	2B.3		G3G4	S2	None	None
vanilla-grass	Anthoxanthum nitens ssp. nitens	2B.3		G5	S2	None	None
volcanic daisy	Erigeron elegantulus		4.3	G4	S4	None	None
water awlwort	Subularia aquatica ssp. americana		4.3	G5T5	S4	None	None

TABLE C-2
SHASTA COUNTY SPECIAL-STATUS PLANTS

Common Name	Scientific Name	CRPR		GRank	SRank	CESA	FESA
water bulrush	Schoenoplectus subterminalis	2B.3		G4G5	S3	None	None
water star-grass	Heteranthera dubia	2B.2		G5	S2	None	None
watershield	Brasenia schreberi	2B.3		G5	S3	None	None
Western campion	Silene occidentalis ssp. occidentalis		4.3	G4T3	S3	None	None
western goblin	Botrychium montanum	2B.1		G3	S2	None	None
white-stemmed pondweed	Potamogeton praelongus	2B.3		G5	S2	None	None
woolly meadowfoam	Limnanthes floccosa ssp. floccosa		4.2	G4T4	S3	None	None
woolly-fruited sedge	Carex lasiocarpa	2B.3		G5	S2	None	None
yellow triteleia	Triteleia crocea var. crocea		4.3	G4T4	S3S4	None	None

Source: CNPS 2019

TABLE C-3

AMERICAN BEAVER POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	**Shasta County[1,2]**	**California[1,2]**
1999	32	700
2000	15	716
2001	31	1,077
2002	9	845
2003	9	659
2004	15	758
2005	10	824
2006	8	844
2007	13	1,086
2008	9	1,359
2009	7	1,135
2010	14	1,110
2011	12	869
2012	11	999
2013	3	1,167
2014	3	1,153
2015	5	997
2016	9	912
2017	1	887
2018	19	884
TOTAL	**235**	**18,981**
MED/YR	**10**	**900**
AVE/YR	**12**	**949**
County % of APHIS-WS state take over 20-year period		**1.2%**

County Population Estimate		
Suitable habitat (stream kilometers) [3]	4,148	
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	830	(low)
	10,370	(high)
Breeding females	423	(low)
	5,289	(high)
Young at den	1,185	(low)
	14,808	(high)
County population before natural mortality (adults + young)	2,014	(low)
	25,178	(high)

State Population Estimate	
State low population estimate (after mortality)[5]	18,336

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	12
% average take per year of County low population estimate	1%
% average take per year of state low population estimate	0.1%
% highest historic take (32) of County low population estimate	2%
% highest historic take (32) of state low population estimate	0.2%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
3. Calculated from National Hydrography Dataset (USGS 2019) see Table C-1
4. Population dynamics from: CDFG (2004) Appendix 2 (Beaver Population Model)
5. 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	12
County average take compared to low population	1%
County average take plus 33%[7]	16
County average take plus 33% compared to county low population	1%
County average plus 33% compared to state low population	0.1%
County average plus 33% plus county average hunting equals cumulative county[8]	24
Cumulative county average take compared to county low population	1%
State 20-year average take by APHIS	949
State average take plus 33%	1,262
State average take plus 33% plus state average hunting equals cumulative state[8]	1,436
State average take plus 33% plus state average hunting compared to state low population	8%

County contribution to annual cumulative take	1.6%

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 (2018b). 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 recrational hunting. Trapping data are used as a proxy for estimating potential hunting take.

TABLE C-4

BLACK BEAR POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	**Shasta County[1,2]**	**California[1,2]**
1999	8	78
2000	15	114
2001	9	73
2002	16	92
2003	20	104
2004	12	67
2005	11	93
2006	9	96
2007	7	148
2008	7	83
2009	12	137
2010	22	175
2011	22	126
2012	27	134
2013	10	70
2014	12	167
2015	8	88
2016	17	83
2017	28	134
2018	9	93
TOTAL	**281**	**2,155**
MED/YR	**12**	**95**
AVE/YR	**14**	**108**
County % of APHIS-WS state take over 20-year period		**13.0%**

County Population Estimate		
Suitable habitat (square miles)[3]		2,842
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	2,842	(low)
	7,105	(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)	2,842	(low)
	7,105	(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	14
% average take per year of County low population estimate	0.5%
% average take per year of state low population estimate	0.08%
% highest historic take (28) of County low population estimate	1.0%
% highest historic take (28) of state low population estimate	0.16%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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	14
County average take compared to low population	0.5%
County average take plus 33%[7]	19
County average take plus 33% compared to county low population	0.7%
County average plus 33% compared to state low population	0.11%
County average plus 33% + average hunting + DPs equals cumulative county[8]	196
Cumulative county average take compared to county low population	6.9%
State 20-year average take by APHIS	108
State average take plus 33%	143
State average take plus 33% + average hunting + DPs equals cumulative state[8]	1,965
State average compared to state low population	11.6%
County contribution to annual cumulative take	10.0%

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 2018a and CDFG 2011. Between 2006 and 2018, 70 black bears were taken in the county with depredation permits (DPs), for an average of approximately 5 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	**Shasta County[1,2]**	**California[1,2]**
1999	0	97
2000	6	90
2001	7	73
2002	2	85
2003	1	44
2004	1	82
2005	3	36
2006	1	59
2007	0	57
2008	1	81
2009	0	73
2010	0	53
2011	1	58
2012	6	84
2013	2	44
2014	0	28
2015	0	12
2016	0	16
2017	0	11
2018	0	10
TOTAL	**31**	**1,093**
MED/YR	**<1**	**58**
AVE/YR	**1.6**	**55**
County % of APHIS-WS state take over 20-year period		**2.8%**

County Population Estimate		
Suitable habitat (square miles)[3]	3,659	
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	2,012	(low)
	2,122	(high)
Breeding females	1,006	(low)
	1,061	(high)
Young at den	1,440	(low)
	1,518	(high)
County population before natural mortality (adults + young)	3,452	(low)
	3,641	(high)

State Population Estimate	
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	0.03%
% median take per year of state low population estimate	0.001%
% highest historic take (7) of County low population estimate	0.2%
% highest historic take (7) of state low population estimate	0.009%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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	0.0%
County median take plus 33%[7]	1.3
County median take plus 33% compared to county low population	0.0%
County median plus 33% compared to state low population	0.002%
County median plus 33% plus county hunting equals cumulative county[8]	24
Cumulative county median take compared to county low population	0.7%
State 20-year median take by APHIS	58
State median take plus 33%	76
State median take plus 33% plus state hunting equals cumulative state[8]	379
State median plus 33% plus hunting state compared to state low population	0.5%
County contribution to cumulative annual take	6.4%

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 (2018b and 2019b). 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	**Shasta County[1,2]**	**California[1,2]**
1999	28	7,908
2000	107	8,379
2001	92	7,921
2002	99	7,163
2003	45	6,061
2004	48	6,463
2005	112	6,395
2006	123	7,703
2007	84	6,963
2008	55	6,160
2009	58	6,530
2010	52	5,326
2011	75	5,746
2012	93	5,699
2013	60	4,988
2014	49	4,083
2015	46	3,958
2016	46	3,702
2017	24	3,514
2018	21	3,767
TOTAL	**1,317**	**118,429**
MED/YR	**57**	**6,111**
AVE/YR	**66**	**5,921**
County % of APHIS-WS state take over 20-year period		**1.1%**

County Population Estimate		
Suitable habitat (square miles)[3]	3,719	
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	3,719	(low)
	18,595	(high)
Breeding females	1,860	(low)
	9,298	(high)
Young at den	6,648	(low)
	33,239	(high)
County population before natural mortality (adults + young)	10,367	(low)
	51,834	(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	66
% average take per year of County low population estimate	0.6%
% average take per year of state low population estimate	0.03%
% highest historic take (123) of County low population estimate	1.2%
% highest historic take annual (123) of state low population estimate	0.05%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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	66
County average take compared to low population	0.6%
County average take plus 33%[7]	88
County average take plus 33% compared to county low population	0.8%
County average plus 33% compared to state low population	0.04%
County average plus 33% plus county average trapping plus hunting equals cumulative county[8]	1,732
Cumulative county average take compared to county low population	17%
State 20-year median take by APHIS	6,111
State median take plus 33%	8,127
State median take plus 33% plus state average trapping plus hunting equals cumulative state[8]	65,084
State median plus 33% plus trapping state compared to state low population	29%
County contribution to cumulative annual take	2.7%

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 2017-18 (less than 1/yr) CDFW (2018b);
Hunting data from: CDFW game take hunter surveys FY 1997-98 to FY 2010-11 (most recent) (CDFW 2011b)

TABLE C-7

GRAY FOX POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	**Shasta County[1,2]**	**California[1,2]**
1999	0	133
2000	2	142
2001	0	125
2002	15	173
2003	0	149
2004	0	90
2005	2	132
2006	0	149
2007	0	134
2008	0	202
2009	4	171
2010	0	193
2011	1	200
2012	3	179
2013	2	177
2014	3	126
2015	0	99
2016	0	121
2017	0	112
2018	1	98
TOTAL	**33**	**2,905**
MED/YR	**0**	**138**
AVE/YR	**2**	**145**
County % of APHIS-WS state take over 20-year period		**1.1%**

County Population Estimate		
Suitable habitat (square miles)[3]	3,394	
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	3,394	(low)
	10,318	(high)
Breeding females	1,595	(low)
	4,849	(high)
Young at den	5,759	(low)
	17,506	(high)
County population before natural mortality (adults + young)	9,153	(low)
	27,824	(high)

State Population Estimate	
State low population estimate (after mortaility)[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	0.02%
% average take per year of state low population estimate	0.001%
% average historic take (15) of County low population estimate	0.2%
% average historic take (15) of state low population estimate	0.01%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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	0.02%
County average take plus 33%[7]	2
County average take plus 33% compared to county low population	0.02%
County average plus 33% compared to state low population	0.001%
County average plus 33% plus county median trapping plus hunting equals cumulative county[8]	205
Cumulative county average take compared to county low population	2.2%
State 20-year average take by APHIS	145
State average take plus 33%	193
State average take plus 33% plus state median trapping plus hunting equals cumulative state[8]	2,600
State average plus 33% plus trapping state compared to state low population	1.7%
County contribution to cumulative annual take	7.9%

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 data from: CDFW trapper reports FY 1997-98 to FY 2017-18 (2018b); hunting data from: 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	**Shasta County[1,2]**	**California[1,2]**
1999	2	103
2000	13	146
2001	10	104
2002	10	120
2003	7	102
2004	24	132
2005	10	133
2006	9	109
2007	16	141
2008	6	113
2009	6	110
2010	8	103
2011	13	102
2012	5	67
2013	8	57
2014	9	86
2015	5	77
2016	7	75
2017	2	67
2018	13	96
TOTAL	**183**	**2,043**
MED/YR	**9**	**103**
AVE/YR	**9**	**102**
County % of APHIS-WS state take over 20-year period		**9.0%**

County Population Estimate	
Suitable habitat (square kilometers)[3]	9,345
Density (individuals per 100 square kilometers)[4]	1.6
County population estimate[5]	150
State Population Estimate	
State population estimate[6]	1,500-5,000

County APHIS-WS Baseline Take Under CSA	
Median take over 20-year period	9
% median take per year of County low population estimate	5.7%
% median take per year of state lowest population estimate	0.6%
% 20-year total take of state lowest population estimate	12.2%
% highest historic take (24) of County low population estimate	16.1%
% highest historic take (24) of state lowest population estimate	1.6%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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 (2019). 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	9
County median take compared to low population	5.7%
County median take plus 33%[8]	11.3
County median take plus 33% compared to county low population	7.6%
County median plus 33% compared to state lowest population	0.75%
County median plus 33% plus county median take with depredation permits equals cumulative county[9]	17
Cumulative county median take compared to county low population	12%
State 20-year median take by APHIS	103
State median take plus 33%	137
State median take plus 33% plus state median take with depredation permits equals cumulative state[9]	234
State median plus 33% plus state depredation permits compared to state lowest population estimate	16%
County contribution to cumulative annual take	7%

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 181 depredation permits in Shasta County between 2001 and 2018, with actual reported take of 105 individuals (CDFW 2019e), or approximately 6 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	**Shasta County[1,2]**	**California[1,2]**
1999	1	87
2000	78	164
2001	17	86
2002	787	801
2003	1,353	1,376
2004	505	554
2005	218	308
2006	183	218
2007	815	836
2008	1,168	1,201
2009	301	324
2010	391	427
2011	90	166
2012	113	138
2013	120	146
2014	95	1,277
2015	195	228
2016	9	48
2017	109	109
2018	1,069	1,072
TOTAL	**7,617**	**9,566**
MED/YR	**189**	**478**
AVE/YR	**381**	**478**
County % of APHIS-WS state take over 20-year period		**79.6%**

County Population Estimate		
Suitable habitat (stream kilometers)[3]	4,148	
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	12,444	(low)
	62,220	(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)	12,444	(low)
	62,220	(high)

State Population Estimate	
State low population estimate (after mortality)[5]	78,730

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	381
% average take per year of County low population estimate	3.1%
% average take per year of state low population estimate	0.5%
% highest historic take (1353) of County low population estimate	11%
% highest historic take (1353) of state low population estimate	1.7%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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	381
County average take compared to low population	3.1%
County average take plus 33%[7]	507
County average take plus 33% compared to county low population	4.1%
County average plus 33% compared to state low population	0.6%
County average plus 33% plus county average trapping equals cumulative county[8]	1,700
Cumulative county average take compared to county low population	14%
State 20-year average take by APHIS	478
State average take plus 33%	636
State average take plus 33% plus state average trapping equals cumulative state[8]	6,055
State average plus 33% plus trapping state compared to state low population	8%
County contribution to annual cumulative take	28%

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 1997-2018 CDFW (2018b)

TABLE C-10

RACCOON POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	**Shasta County[1,2]**	**California[1,2]**
1999	30	1,876
2000	8	1,978
2001	4	2,254
2002	12	2,009
2003	0	2,220
2004	3	1,735
2005	2	2,168
2006	9	2,560
2007	1	2,359
2008	0	2,772
2009	1	2,537
2010	12	2,424
2011	1	2,549
2012	1	2,595
2013	0	2,637
2014	11	2,098
2015	0	1,481
2016	0	1,454
2017	1	1,405
2018	1	1,365
TOTAL	**97**	**42,476**
MED/YR	**1**	**2,194**
AVE/YR	**5**	**2,140**
County % of APHIS-WS state take over 20-year period		**0.2%**

County Population Estimate		
Suitable habitat (square miles)[3]	3,722	
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	893	(low)
	2,605	(high)
Breeding females	429	(low)
	1,251	(high)
Young at den	1,291	(low)
	3,764	(high)
County population before natural mortality (adults + young)	2,184	(low)
	6,370	(high)

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

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	5
% average take per year of County low population estimate	0.2%
% average take per year of state low population estimate	0.01%
% highest historic take (30) of County low population estimate	1.4%
% highest historic take (30) of state low population estimate	0.08%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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 (Racoon 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	5
County average take compared to low population	0.2%
County average take plus 33%[7]	6
County average take plus 33% compared to county low population	0.3%
County average plus 33% compared to state low population	0.02%
County average plus 33% plus county average trapping plus hunting equals cumulative county[8]	80
Cumulative county median take compared to county low population	3.7%
State 20-year average take by APHIS	2,194
State average take plus 33%[7]	2,918
State average take plus 33% plus state average trapping equals cumulative state[8]	7,910
State average plus 33% plus trapping state compared to state low population	21.4%
County contribution to cumulative annual take	1.0%

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 (2018b).

TABLE C-11

STRIPED SKUNK POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	**Shasta County[1,2]**	**California[1,2]**
1999	6	3,982
2000	18	3,835
2001	32	4,336
2002	31	4,218
2003	5	3,918
2004	4	3,755
2005	0	4,154
2006	2	5,232
2007	10	5,036
2008	0	5,497
2009	7	4,680
2010	4	4,533
2011	10	3,922
2012	25	3,780
2013	11	3,473
2014	13	3,475
2015	1	2,771
2016	0	2,488
2017	3	2,866
2018	9	2,668
TOTAL	**191**	**78,619**
MED/YR	**7**	**3,920**
AVE/YR	**10**	**3,931**
County % of APHIS-WS state take over 20-year period		**0.2%**

County Population Estimate		
Suitable habitat (square miles)[3]	3,655	
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	4,752	(low)
	22,661	(high)
Breeding females	2,186	(low)
	10,424	(high)
Young at den	9,792	(low)
	46,700	(high)
County population before natural mortality (adults + young)	14,543	(low)
	69,361	(high)

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

County APHIS-WS Baseline Take Under CSA	
Average annual take over 20-year period	10
% average take per year of County low population estimate	0.1%
% average take per year of state low population estimate	0.01%
% highest historic take (32) of County low population estimate	0.2%
% highest historic take (32) of state low population estimate	0.02%

Notes:

1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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 average take by APHIS	10
County average take compared to low population	0.1%
County average take plus 33%[7]	13
County average take plus 33% compared to county low population	0.1%
County average plus 33% compared to state low population	0.01%
County average plus 33% plus county median trapping plus hunting equals cumulative county[8]	23
Cumulative county average take compared to county low population	0.2%
State 20-year average take by APHIS	3,931
State average take plus 33%[7]	5,228
State average take plus 33% plus state median trapping equals cumulative state[8]	5,746
State average plus 33% plus state median trapping compared to state low population	4.0%
County contribution to cumulative annual take	0.4%

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 (2018b)
9. From USDA (2019g)

TABLE C-12

VIRGINIA OPOSSUM POPULATION AND TAKE DATA

APHIS-WS Annual Take		
Year	**Shasta County[1,2]**	**California[1,2]**
1999	1	1,333
2000	0	1,410
2001	0	1,418
2002	1	1,421
2003	1	1,528
2004	7	1,329
2005	0	1,410
2006	0	1,287
2007	0	1,176
2008	0	1,183
2009	1	1,198
2010	0	1,013
2011	1	1,218
2012	0	1,024
2013	0	796
2014	1	633
2015	0	731
2016	0	630
2017	0	1,011
2018	0	855
TOTAL	**13**	**22,604**
MED/YR	**0**	**1,191**
AVE/YR	**1**	**1,130**
County % of APHIS-WS state take over 20-year period		**0.1%**

County Population Estimate		
Suitable habitat (square miles)[3]	3,540	
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	4,602	(low)
	71,508	(high)
Breeding females	2,025	(low)
	31,464	(high)
Young at den	23,327	(low)
	362,460	(high)
County population before natural mortality (adults + young)	27,929	(low)
	433,968	(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	1
% average take per year of County low population estimate	0.002%
% average take per year of state low population estimate	0.002%
% highest historic take (7) of County low population estimate	0.03%
% highest historic take (7) of state low population estimate	0.02%

Notes:
1. 1999-2006 data from: USDA (2019c)
2. 2007-2018 data from: USDA (2019b)
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 median take by APHIS	1
County median take compared to low population	0.002%
County median take plus 33%[7]	1
County median take plus 33% compared to county low population	0.003%
County median plus 33% compared to state low population	0.002%
County median plus 33% plus county median trapping equals cumulative county[8]	2
Cumulative county median take compared to county low population	0.007%
State 20-year median take by APHIS	1,191
State median take plus 33%[7]	1,583
State median take plus 33% plus state average trapping equals cumulative state[8]	1,872
State median plus 33% plus trapping state compared to state low population	4.6%
County contribution to cumulative annual take	0.1%

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 (2018b)

TABLE C-13A
SHASTA COUNTY TARGET SPECIES DISPERSED AND FREED

SPECIES	FATE	1999	2000	2002	2003	2005	2008	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
BEARS, BLACK	FREED		5					1								6
BEARS, BLACK	DISPERSED		22													22
BLACKBIRDS, BREWER`S	DISPERSED												250			250
BLACKBIRDS, RED-WINGED	DISPERSED								26,000	198,300	456,400	902,600	299,800	665,187	865,113	3,413,400
BLACKBIRDS, YELLOW-HEADED	DISPERSED											8,650	800			9,450
BLACKBIRDS, Z-(MIXED SPECIES)	DISPERSED											75,000				75,000
CATS, FERAL/FREE-RANGING	FREED		1	2	1											4
COOTS, AMERICAN	DISPERSED									1,075	3,075	9,200	3,950			17,300
COWBIRDS, BROWN-HEADED	DISPERSED												1,750			1,750
COYOTES	DISPERSED												1			1
DOGS, FERAL/FREE-RANGING	FREED		2													2
DUCKS, BUFFLEHEAD	DISPERSED											15				15
DUCKS, MALLARD	DISPERSED											435	100			535
DUCKS, SCAUP, LESSER	DISPERSED											10				10
DUCKS, TEAL, CINNAMON	DISPERSED											82				82
DUCKS, WOOD	DISPERSED											94				94
FOXES, GRAY	FREED					2										2
GEESE, WHITE-FRONTED, GREATER	DISPERSED								500							500
LIONS, MOUNTAIN (COUGAR)	DISPERSED							1								1
RINGTAILS	FREED	2	1													3
SKUNKS, STRIPED	FREED						1									1
SWINE, FERAL	DISPERSED									11						11

Source: USDA 2019b; USDA 2019c
None reported for 2001, 2004, 2006-2007, 2009, 2018
Data are for target intentional species only; see Table C-13b for target and non-target unintentional species dispersed and freed.

TABLE C-13B
SHASTA COUNTY UNINTENTIONAL 1999-2018

Target Unintentional 1999-2018

SPECIES	METHOD	FATE	1999	2000	2001	2003	2012	2014	2016	2018	TOTAL
BOBCATS	SNARES, NECK z-(OTHER)	KILLED			1						1
CATS, FERAL/FREE-RANGING	TRAPS, CAGE	FREED					1				1
DOGS, FERAL/FREE RANGING & HYBRIDS	SNARES, NECK z-(OTHER)	FREED	1				1				2
DOGS, FERAL/FREE RANGING & HYBRIDS	SNARES, NECK z-(OTHER)	KILLED			1						1
FOXES, GRAY	TRAPS, CAGE	FREED						1		1	2
OTTER, RIVER	TRAPS, BODY GRIP	KILLED							1		1
RACCOONS	TRAPS, CAGE	FREED	1	22							23
RACCOONS	TRAPS, CULVERT	FREED						1			1
SKUNKS, STRIPED	SNARES, FOOT/LEG	FREED	1								1
SKUNKS, STRIPED	SNARES, NECK z-(OTHER)	KILLED				1					1
SKUNKS, STRIPED	TRAPS, CAGE	KILLED				4					4
SWINE, FERAL	TRAPS, CAGE	FREED					1				1

Source: USDA APHIS-WS (USDA 2019b; USDA 2019c)
None reported for 2002, 2004-2011, 2013, 2015, 2017

Non-Target Unintentional 1999-2018

SPECIES	METHOD	FATE	1999	2000	2001	2006	2013	TOTAL
BADGERS	SNARES, NECK z-(OTHER)	FREED		1				1
BOBCATS	SNARES, FOOT/LEG	KILLED		2				2
BOBCATS	SNARES, NECK z-(OTHER)	KILLED	2	1				3
DEER, z-(OTHER)	SNARES, NECK z-(OTHER)	KILLED	1					1
DOGS, FERAL/FREE RANGING & HYBRIDS	SNARES, FOOT/LEG	FREED		1				1
DOGS, FERAL/FREE RANGING & HYBRIDS	SNARES, NECK z-(OTHER)	FREED	1					1
FOXES, GRAY	SNARES, FOOT/LEG	FREED			1			1
FOXES, GRAY	SNARES, FOOT/LEG	KILLED			1			1
LIONS, MOUNTAIN (COUGAR)	CALLING DEVICE, ELECTRONIC	KILLED				1		1
OPOSSUMS, VIRGINIA	TRAPS, CAGE	FREED					1	
RACCOONS	SNARES, NECK z-(OTHER)	FREED		1				1

Source: USDA APHIS-WS (USDA 2019b; USDA 2019c)
None reported for 2002-2005, 2007-2012, 2017-2018

TABLE C-14

SHASTA COUNTY GENERAL PLAN RESOURCES GROUP BIOLOGICAL RESOURCES POLICIES CONSISTENCY ANALYSIS

Policy Number	Policy Text	Consistency Analysis
FW-a	Significant wildlife habitat resources, as discussed in the Plan text, when not otherwise classified as Timberland (T), Cropland (A-C), or Grazing (A-G) shall be classified on the General Plan maps as Natural Resources Protection-Habitat (N-H).	Analysis: This policy is not applicable. APHIS-WS does not have local land use planning authority. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-b	Recognition that classification of some fish, wildlife, and vegetation resources designated and used as Timberlands, Mineral Resource, Croplands, or Grazing lands does, in most cases, protect habitat resources. However, if there is a conflict, the timber, mineral extraction, or agricultural land use classifications mentioned above shall prevail in a manner consistent with State and Federal laws.	Analysis: This policy is not applicable. APHIS-WS does not have local land use planning authority. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-c	Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the U. S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse project impacts on those species.	Analysis: APHIS-WS consults with the USFWS, NMFS, and/or CDFW, as appropriate when any APHIS-WS program activities may affect wildlife are protected under the ESA and CESA so that restrictions or mitigation measures are applied when necessary. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-d	The significant river and creekside corridors of Shasta County shall be designated on the General Plan maps. The primary purpose of this designation is to protect the riparian habitats from development and from adverse impacts from conflicting resources uses. The purpose is also to encourage open space and recreation (policy OSR-e). Mapping of significant waterway corridors in areas designated as resource protection lands is not required since it is assumed that resource land uses will also act to protect such waterway corridors. Riparian habitat protection along the significant river and creekside corridors, as designated on the plan maps shall be achieved, where appropriate, by the following measures: regulation of vegetation removal. design of grading and road construction to restrict sediment input to all streams; establishment of a development set-back; the siting of	Analysis: This policy is not applicable. APHIS-WS does not have local land use planning authority, and APHIS-WS activities do not involve land development. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.

TABLE C-14

SHASTA COUNTY GENERAL PLAN RESOURCES GROUP BIOLOGICAL RESOURCES POLICIES CONSISTENCY ANALYSIS

Policy Number	Policy Text	Consistency Analysis
	structures, including clustering; recreation plans for the Sacramento River, Clear Creek, and other feasible waterway resources.	
FW-e	Salmon spawning gravel in the following rivers and creeks shall be protected [segments within the County]: Sacramento River, Battle Creek, Cow Creek, Cottonwood Creek, Bear Creek, Clear Creek, Churn Creek, Stillwater Creek, Olney Creek, Anderson Creek	Analysis: APHIS-WS consults with the USFWS, NOAA-NMFS, and/or CDFW, as appropriate when any APHIS-WS program activities may affect salmonid habita. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-f	The County should encourage and support efforts by State and Federal agencies that implement the Upper Sacramento River Fisheries and Riparian Habitat Management Plan.	Analysis: This policy is not applicable. APHIS-WS activities do not involve efforts related to implementing local habitat management plans. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-g	The County shall encourage the Department of Fish and Game to prepare periodic biological assessments regarding the overall effectiveness of waterway protection efforts under the Stream Corridor Protection Program.	Analysis: This policy is not applicable. APHIS-WS does not have authority to coordinate with CDFW on waterway protection efforts in the County, although it does consult with NOAA-NFMS regarding actions that could have an effect on species in stream corridors, as discussed in Section 4.1, Biological Resources. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-h	The County shall encourage efforts to develop tree protection standards which focus on the County's differing land use types, namely; lowland urban, upland urban, rural residential and resource lands. Urban tree protection standards shall focus on landscaping that promotes energy conservation and design aesthetics, as opposed to preserving native vegetation.	Analysis: This policy is not applicable. APHIS-WS does not have authority to develop local standards for tree protection standards or land development. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-i	An interagency plan should be encouraged for developing a parkway and wildlife habitat corridor along Clear Creek. The County should support and encourage planning and non- County funding sources which implement this parkway corridor.	Analysis: This policy is not applicable. APHIS-WS is not involved with local land use planning. Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-j	Efforts to restore the Middle Creek drainage basin, Clear Creek watershed basin, Battle	Analysis: This policy is not applicable. APHIS-WS is not involved in stream or watershed restoration projects.

TABLE C-14

SHASTA COUNTY GENERAL PLAN RESOURCES GROUP BIOLOGICAL RESOURCES POLICIES CONSISTENCY ANALYSIS

Policy Number	Policy Text	Consistency Analysis
	Creek, Cow Creek, and other Sacramento River tributary watersheds shall be supported by the County.	Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.
FW-k	The County should support efforts to develop a Stream Corridor Protection Plan along the Sacramento River from the south Redding City limits to the Tehama County line.	Analysis: This policy is not applicable. APHIS-WS is not involved in development of stream protection plans . Conclusion: The County-funded APHIS-WS IWDM program services would not conflict with this policy.

Source: Policies from Shasta County (2004).

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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	*Pekania pennanti*	ST	F (proposed)	(d)
Gray wolf	*Canis lupus*	SE	FE	NLAA 1,7(f)
Birds				
Bald eagle	*Haliaeetus leucocephalus*	SE*	Delisted FT FE (rev) FE	NLAA/4,7
Bank swallow	*Riparia riparia*	ST		No Effect/4,7
California black rail	*Laterallus jamaicensis coturniculus*	ST*		No Effect/4,7
Great gray owl	*Strix nebulosa*	ST		(a)
Least Bell's vireo	*Vireo bellii pusillus*	SE	FE	No Effect/4,5,7 NLAA/5
Swainson's hawk	*Buteo swainsoni*	ST		No Effect/4,7
Tricolored blackbird	*Agelaius tricolor*	ST		(d)
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	CE	ST	No Effect/4,7
Amphibians and Reptiles				
California red-legged frog	*Rana draytonii*		FT	No Effect/3
Giant gartersnake	*Thamnophis gigas*	ST	ST	No Effect/3,4,7 NLAA/5
Foothill yellow-legged frog	*Rana boylii*	ST		(e)
Sierra Nevada yellow-legged frog	*Rana sierrae*	ST	FE	No Effect/6,7
Invertebrates				
Vernal pool fairy shrimp	*Branchinecta lynchi*		FT	(a)
Vernal pool tadpole shrimp	Lepidurus packardi		FE	(a)
Western bumble bee	*Bombus occidentalis*	CE		(a)
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	CT		(a)
Fish				
Chinook salmon – Central Valley spring run	*Oncorhynchus tshawytscha pop. 6*	ST	FT	(c)
Chinook salmon - Sacramento River winter run	*Oncorhynchus tshawytsca*	SE	FE	(c)
Green sturgeon, southern DPS	*Acipenser mediorostris*		FT	(c)
Steelhead, Central Valley DPS	*Oncorhynchus mykiss irideus*		FT	(c)

Source: Species: USFWS 2019; 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 euclachon 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) = State-threatened only, federal consultation not required (no mechanism in place).

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

(f) = Update to consultation for gray wolf in process.

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.*

Table C-16
Shasta County Hunting andTrapping Take
Fiscal Years 1997-98 through 2017-18

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total	Average	Median	Notes
AMERICAN BEAVER																									
Commercial Trapping[1]																									
County	47	26	12	0	5	29	5	4	0	1	4	0	1	0	13	0	12	6	0	0	5	170	8	4	
State	792	311	272	172	184	98	275	168	62	276	136	160	170	193	129	122	60	39	26	6	6	3657	174	160	
BLACK BEAR																									
Sport Hunting[2]																									
County	185	208	179	104	178	142	199	167	158	212	155	205	172	200	179	107	134	130	114	(b)	(b)	3128	165	172	
State	1676	1836	1796	1633	1768	1670	1848	1418	1822	1861	2028	1900	1503	1745	1962	1078	1439	1287	1072	(b)	(b)	31342	1650	1745	
BOBCAT																									
Commercial Trapping[3]																									
County	13	4	16	2	17	21	21	29	7	17	9	10	12	14	8	12	35	13	0	0	0	260	12	12	(c)
State	1165	224	182	190	214	394	429	506	627	885	715	623	457	893	1499	1214	1292	760	0	0	0	12269	584	506	(c)
Sport Hunting[3]																									
County	14	15	12	14	6	11	11	11	8	12	11	5	10	15	4	8	9	5	12	12	19	224	11	11	(c)
State	426	353	352	414	295	342	272	261	265	317	336	281	251	238	255	324	308	206	263	265	331	6355	303	295	(c)
Sport Hunting[4]																									
County	0	0	64	0	0	0	34	32	0	0	53	(b)	27	(b)	(b)	(b)	(b)	(d)	(b)	(b)	(b)	210	18	0	(c)
State	2299	1124	1753	1517	1552	1379	739	608	1165	1867	1198	(b)	1,518	(b)	(b)	(b)	(b)	(d)	(b)	(b)	(b)	16719	1393	1448	(c)
COYOTE																									
Commercial Trapping[1]																									
County	16	3	12	0	0	6	5	10	0	0	3	0	0	0	0	11	0	4	0	0	0	70	3	0	
State	1127	301	201	296	290	396	636	443	133	226	204	149	82	139	209	280	169	156	114	111	118	5780	275	204	
Sport Hunting[4]																									
County	3001	591	636	1288	1521	2084	2484	1938	694	1767	1358	(b)	1890	(b)	(b)	(b)	(b)	(d)	(b)	(b)	(b)	19252	1604	1644	(a)
State	30675	44736	61064	62246	52947	52748	64820	54824	56682	69365	56815	(b)	69914	(b)	(b)	(b)	(b)	33941	(b)	(b)	(b)	710777	54675	56682	(a)
GRAY FOX																									
Commercial Trapping[1]																									
County	34	25	37	34	12	35	9	11	11	18	83	38	29	9	12	8	91	28	1	2	6	533	25	18	
State	1267	232	260	178	203	266	11	326	242	276	531	588	732	491	593	657	982	1338	774	284	133	10364	494	326	
Sport Hunting[4]																									
County	(d)	(d)	(d)	(d)	548	0	34	32	50	467	213	(b)	80	(b)	(b)	(b)	(b)	(d)	(b)	(b)	(b)	1424	178	65	(a)
State	(d)	(d)	(d)	(d)	2878	2023	470	449	1388	1833	1518	(b)	2236	(b)	(b)	(b)	(b)	4419	(b)	(b)	(b)	17214	1913	1833	(a)
MUSKRAT																									
Commercial Trapping[1]																									
County	3470	533	47	1738	1602	1625	1001	823	1286	1340	1031	851	683	1468	2728	2124	973	1673	0	0	47	25043	1193	1031	
State	13370	6633	2820	7190	5774	5419	2869	2159	2508	6643	4097	5465	3597	5550	6985	5745	5593	4641	1108	91	995	99252	4726	5419	
Sport Hunting (not included in survey)																									
RACCOON																									
Commercial Trapping[1]																									
County	53	19	15	9	2	19	14	20	2	6	15	5	16	13	6	8	35	4	2	0	0	263	13	9	
State	983	459	1245	841	539	709	1352	1029	209	588	210	555	597	562	609	612	246	139	120	66	111	11781	561	562	
Sport Hunting[4]																									
County	(d)	(d)	(d)	(d)	(d)	92	0	64	74	167	0	(b)	27	(b)	(b)	(b)	(b)	(d)	(b)	(b)	(b)	424	61	64	(a)
State	(d)	(d)	(d)	(d)	(d)	4046	4431	3869	2627	9967	4473	(b)	9957	(b)	(b)	(b)	(b)	(d)	(b)	(b)	(b)	39370	5624	4431	(a)
STRIPED SKUNK																									
Commercial Trapping[1]																									
County	24	28	37	55	4	0	1	13	9	7	7	7	16	0	0	0	2	0	2	0	0	212	10	4	
State	950	996	914	1083	667	735	1028	1092	160	486	65	276	328	457	514	425	176	272	129	39	94	10886	518	457	
Sport Hunting (not included in survey)																									
VIRGINIA OPOSSUM																									
Commercial Trapping[1]																									
County	10	12	11	12	0	0	0	0	0	5	5	8	4	0	0	0	0	0	0	0	0	67	3	0	
State	983	459	333	338	214	411	1987	343	108	24	24	88	16	153	165	164	60	51	44	48	63	6076	289	153	
Sport Hunting (not included in survey)																									

Notes:
(a) average calculated for years with take to provide conservative estimate
(b) no report prepared for this year, or report not available as of 2019
(c) average/median provided for historic information purposes only; trapping prohibited in 2015 and hunting prohibited in 2019.
(d) not included in survey

Sources:
1. CDFW 2018b (Licensed Fur Trappers and Dealers Reports 1998-2017)
2. CDFW 2018a (Bear Harvest Reports 1998-2016)
3. CDFW 2019b (Bobcat Harvest Assessments 1997-2018)
4. CDFW 2011b (Game Take Hunter Surveys 1998-2008, 2010); Responsive Management 2015