APPENDICES

APPENDIX I

Statewide Summary of Strategy Species

Although Strategy species were designated by ecoregion and not statewide, we recognize that appropriate conservation actions for a Strategy species outside the ecoregion(s) that has been identified will contribute to the overall conservation for that species. Thus, conservation actions for Strategy species may be important throughout the state, and should be considered when planning or implementing conservation activities. However, the ecoregions designated have the greatest conservation need and/or opportunities for Strategy species. These areas will be considered the highest priority for Strategy implementation.

Marine species, including marine mammals, will be addressed in the Oregon Nearshore Strategy.

KEY

Federal Status:

C – Candidate

LE – Listed Endangered

LT – Listed Threatened

SOC – Species of Concern

State Status:

C – Candidate (plants only)

LE– Listed Endangered

LT – Listed Threatened

SC – Sensitive Species, Critical category

SP – Sensitive Status, Peripheral or Naturally Rare category

SU – Sensitive Species, Undetermined Status category

SV – Sensitive Species, Vulnerable Category

(note: Sensitive Species applies to vertebrates only)

Heritage List (Oregon Natural Heritage Information Center rank):

1 (List 1) – threatened with extinction or presumed to be extinct throughout their entire range

2 (List 2) – threatened with extirpation or presumed to be extirpated in Oregon

3 (List 3) – More information is needed before status can be determined, but may be imperiled in Oregon or throughout range

4 (List 4) – of conservation concern but not currently imperiled

G Rank (Global) and S Rank (State)

(NatureServe/Natural Heritage Network Ranks):

1 = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences.

2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction or extirpation, typically with 6-20 occurrences.

3 = Rare, uncommon or threatened, but not immediately imperiled, typically with 21-100 occurrences.

4 = Not rare and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences.

5 = Demonstrably widespread, abundant, and secure.

H = Historical Occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered.

T = subspecies, variety or recognized race.

X = Presumed extirpated or extinct.

U = Unknown rank.

NR = Not yet ranked.

G and S Rank Qualifiers:

Q = Questionable taxonomy.

? = Inexact Numeric Rank. Taxa that can be ranked, but for which the rank is not certain. Ranks with a "?" indicate that the rank is probably correct, but that either documentation is lacking or there is still some uncertainty. Such ranks are always provisional.

Range Ranks = Ranks with more than one value. These can be G1G2, G1G3, etc. These indicate that the predicted final rank would be within the range, but with no indication of preference among the possibilities.

Ecoregions:

BM – Blue Mountains

CP – Columbia Plateau

CR – Coast Range

EC – East Cascades

KM – Klamath Mountains

NBR – Northern Basin and Range

WC – West Cascades

WV – Willamette Valley

X = Strategy Species within that ecoregion

ext = Extirpated from ecoregion (conservation priority is in ecoregions where populations still occur naturally, but translocation back into ecoregions of extirpation may be appropriate. For plants and invertebrates, extirpation status may reflect lack of complete survey data. Recent populations have been found for some "extirpated" plants.)

DG = Data gap (known occurrence, but unknown conservation status)

Table A-I.1

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
AMPHIBIANS														
Aneides ferreus	Clouded salamander		SV	4	G3	S3			X		X		X	
Ascaphus montanus	Inland tailed frog	SOC	SV	2	G4	S2	X							
Ascaphus truei	Coastal tailed frog	SOC	SV	4	G4	S3			X		X		X	
Batrachoseps wrightorum	Oregon slender salamander	SOC	SU	1	G2G3	S2S3							X	
Bufo boreas	Western toad		SV	4	G4	S3	X		X	X	X	X	X	
Dicamptodon copei	Cope's giant salamander		SU	2	G3G4	S2			X				X	
Plethodon larselli	Larch Mountain salamander	SOC	SV	2	G3	S2							X	
Plethodon stormi	Siskiyou Mountain Salamander	SOC	SV	1	G2G3	S2					X			
Rana aurora aurora	Northern red-legged frog	SOC	SV(WV) /SU(other)	4	G4T4	S3S4					X			X
Rana boylii	Foothill yellow-legged frog	SOC	SV	2	G3	S2S3			X		X		X	X
Rana cascadea	Cascades frog	SOC	SV	4	G3G4	S3				X			X	
Rana luteiventris	Columbia spotted frog	C	SU	2	G4	S2S3	X					X		
Rana pipiens	Northern leopard frog		SC	2	G5	S1S2	ext	ext		ext		X		
Rana pretiosa	Oregon spotted frog	C	SC	1	G2	S2				X			X	ext
Rhyacotriton cascadae	Cascade torrent salamander		SV	4	G3	S3							X	
Rhyacotriton kezeri	Columbia torrent salamander		SC	4	G3	S3			X					
Rhyacotriton variegatus	Southern torrent salamander	SOC	SV	4	G3G4	S3			X		X			
BIRDS														
Accipiter gentilis	Northern goshawk	SOC	SC	4	G5	S3B				X			X	
Ammodramus savannarum	Grasshopper sparrow		SV(CB) /SP(WV)	2	G5	S2B		X			X			X
Amphispiza belli	Sage sparrow		SC(CB)	4	G5	S4B		X						
Asio flammeus	Short-eared owl			NR	NR	NR								X
Athene cunicularia hypugaea	Western burrowing owl	SOC	SC(WV, KM, CB, BM)	4	G4T4	S3B		X			ext			ext
Baeolophus ridgwayi	Juniper titmouse			NR	NR	NR						X		
Bartramia longicauda	Upland sandpiper	SOC	SC	2	G5	S1B	X							
Brachyramphus marmoratus	Marbled murrelet	LT	LT	2	G3G4	S2			X		X			
Branta bernicla nigricans	Black brant			NR	NR	NR			X					
Branta canadensis leucopareia (note: AOU name is Branta hutchinsii leucopareia)	Aleutian Canada goose (Semidi Island subpopulation) (Note: AOU name is Aleutian cackling goose).			1	G5T2T3	S2S3N			X					
Branta canadensis occidentalis	Dusky Canada goose			1	G5T2T3	S2S3N								X
Bucephala albeola	Bufflehead		SU	2	G5	S2B,S5N				X			X	

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Bucephala islandica	Barrow's goldeneye		SU	4	G5	S3B,S3N				X			X	
Buteo regalis	Ferruginous hawk	SOC	SC	4	G4	S3B	X	X				X		
Buteo swainsoni	Swainson's hawk		SV	4	G5	S3B		X				X		
Calidris ptilocnemis	Rock sandpiper			NR	NR	NR			X					
Centrocercus urophasianus	Greater sage-grouse	SOC	SV(EC, CB, BM)	4	G4	S3	X	ext		ext		X		
Charadrius alexandrinus nivosus	Western snowy plover	LT(Coastal)	LT	2	G4T3	S2			X			X		
Chordeiles minor	Common nighthawk		SC(WV)	4	G5	S5B								X
Contopus cooperi	Olive-sided flycatcher	SOC	SV	4	G4	S3B			X	X			X	
Coturnicops noveboracensis	Yellow rail	SOC	SC	2	G4	S1B				X				
Cypseloides niger	Black swift		SP	2	G4	S2B							X	
Dolichonyx oryzivorus	Bobolink		SV	2	G5	S2B	X					X		
Dryocopus pileatus	Pileated woodpecker		SV	NR	NR	NR	X							
Egretta thula	Snowy egret		SV	2	G5	S2B						X		
Empidonax traillii brewsteri	Little willow flycatcher	SOC	SU	4	G5T5	S3S4B								X
Empidonax traillii adastus	Willow flycatcher		SV	4	G5T3T4	S3S4B						X		
Eremophila alpestris strigata	Streaked horned lark	C	SC	1	G5T2	S2B					ext			X
Falco peregrinus anatum	American peregrine falcon		LE	2	G4T3	S2B			X			X		
Fratercula cirrhata	Tufted puffin			2	G5	S2B			X					
Grus canadensis tabida	Greater sandhill crane		SV	4	G5T4	S3S4B				X		X	X	
Haematopus bachmani	Black oystercatcher			4	G5	S3			X					
Haliaeetus leucocephalus	American bald eagle	LT	LT	4	G4	S4B,S4N			X					
Himantopus mexicanus	Black-necked stilt			NR	NR	NR						X		
Icteria virens	Yellow-breasted chat	SOC	SC	4	G5	S4B								X
Lanius ludovicianus	Loggerhead shrike		SV(CB, BM)	4	G4	S3B,S2N	X	X						
Larus pipixcan	Franklin's gull		SP	2	G4G5	SB2						X		
Melanerpes formicivorus	Acorn woodpecker	SOC		4	G5	S3								X
Melanerpes lewis	Lewis' woodpecker	SOC	SC(WV, KM, WC, EC, CB)	2	G4	S2S3B	X	X		X	X			ext
Numenius americanus	Long-billed curlew		SV(CB)	4	G5	S3B		X				X		
Oceanodrama furcata	Fork-tailed storm-petrel		SV	2	G5	S2B			X					
Oceanodrama leucorhoa	Leach's storm-petrel			NR	NR	NR			X					
Oreortyx pictus	Mountain quail	SOC	SU(EC, BM)	4	G5	S4						X		
Otus flammeolus	Flammulated owl		SC	4	G4	S3B	X			X				
Patagioenas fasciata	Band-tailed pigeon	SOC		4	G4	S3B			X				X	

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Scientific name	Common name	status	status	List	G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
Pelecanus erythrorhynchos	American white pelican		SV	2	G3	S2B						X		
Pelecanus occidentalis californicus	California brown pelican	LE	LE	2	G4T2	S2N			X					
Picoides albolarvatus	White-headed woodpecker	SOC	SC	2	G4	S2S3	X			X	X			
Picoides arcticus	Black-backed woodpecker		SC	4	G5	S3	X			X				
Picoides dorsalis	American three-toed woodpecker		SC	4	G5	S3	X			X				
Podiceps grisegena	Red-necked grebe		SC	2	G5	S1B,S4N				X				
Polioptila caerulea	Blue-gray gnatcatcher			NR	NR	NR					X			
Pooecetes gramineus affinins	Oregon vesper sparrow	SOC	SC	2	G5T3	S2B,S2N					X			X
Progne subis	Western purple martin	SOC	SC	2	G5	S2B				ext	X			X
Sialia mexicana	Western bluebird		SV(CR, WV, KM, WC)	4	G5	S4B,S4N								X
Sitta carolinensis aculeata	Slender-billed (white-breasted) nuthatch			4	G5T4	S3								X
Spizella passerina	Chipping sparrow													X
Sterna caspia	Caspian tern								X					
Strix nebulosa	Great gray owl		SV	4	G5	S3	X			X				
Strix occidentalis caurina	Northern spotted owl	LT	LT						X		X		X	
Sturnella neglecta	Western meadowlark		SC(WV)	4	G5	S4								X
Spizella breweri	Brewer's sparrow			NR	NR	NR		X						
FISH														
Acipenser medirostris	Green sturgeon	SOC		4	G3	S3			X					
Catostomus microps	Modoc sucker	SOC	SC	1	G1	S1				X				
Catostomus occidentalis lacusanserinus	Goose Lake sucker			1	G5T2T3Q	S2				X				
Catostomus rimiculus	Jenny Creek sucker (=Jenny Creek population of Klamath smallscale sucker)	SOC	SS	1	G5T+G1432Q	S2				X				
Catostomus warnerensis	Warner sucker	LT	LT	1	G1	S1						X		
Chasmistes brevirostris	Shortnose sucker	LE	LE	1	G1	S1				X				
Cottus bendirei	Malheur mottled sculpin	SOC	SS	4	G4Q	S4	X					X		
Cottus marginatus	Margined sculpin	SOC	SV	4	G3	S3	X	X						
Cottus tenuis	Slender sculpin	SOC		3	G3	S3				X				
Deltistes luxatus	Lost River sucker	LE	LE	1	G1	S1				X				
Gila avordensis	Alvord chub	SOC	SS	1	G2	S2						X		
Gila bicolor eutysoma	Sheldon tui chub	SOC	SS	1	G4T1	S1						X		
Siphateles sp. (cf. S. obesus)	Abert Lake tui chub (=Oregon Lakes tui chub)	SOC	SV	1	G4T2	S2						X		
Gila bicolor ssp.	Catlow tui chub	SOC	SS	1	G4T1	S1						X		

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Gila bicolor ssp.	Hutton tui chub	LT	LT	1	G4T1	S1						X		
Gila bicolor ssp.	Summer Basin tui chub	SOC	SS	1	G4T1	S1						X		
Gila bicolor ssp.	Warner Basin tui chub		SS	1	G4T2Q	S2						X		
Gila bicolor thalassina	Goose Lake tui chub		SS	1	G4T2	S2				X				
Gila boraxobius	Borax Lake chub	LE	LE	1	G1	S1						X		
Lampetra richardsoni	Western brook lamprey	SOC	SS				X	X	X	X	X		X	X
Lampetra lethophaga	Pit-Klamath brook lamprey			4	G3G4	S3				X				
Lampetra minima	Miller Lake lamprey	SOC	SS	1	G1	S1				X				
Lampetra tridentata	Pacific lamprey	SOC	SS	4	G5	S3	X	X	X	X	X		X	X
Lampetra tridentata ssp.	Goose Lake lamprey	SOC	SC	1	G5T1	S1				X				
Lampetra tridentata ssp.	Upper Klamath Lake lamprey			NR	NR	NR				X				
Oncorhnchus kisutch	Coho salmon (Lower Columbia /SW Washington Coast ESU)	C	LE	1	G4T2Q	S2		X	X	X			X	X
Oncorhnchus kisutch	Coho salmon (Oregon Coast ESU)	LT	SS	1	G4T2Q	S2			X		X		X	X
Oncorhnchus kisutch	Coho salmon (Southern Oregon/Northern California Coasts ESU)	SOC	SS	1	G4T2Q	S2			X		X		X	
oncorhychus clarki lewisi	Westslope cutthroat trout	SOC	SS	1	G4T3	S3	X							
Oncorhynchus clarki	Coastal cutthroat trout (Oregon coast ESU)	SOC	SV	4	G4T3Q	S3			X		X		X	X
Oncorhynchus clarki	Coastal cutthroat trout (Southwestern Washington/Columbia River ESU)		SC	1	G4T2Q	S2			X	X			X	X
Oncorhynchus clarki	Coastal cutthroat trout (Upper Willamette River ESU)	SOC		4	G4T?Q	S3?			X				X	X
Oncorhynchus clarki	Coastal cutthroat trout (Southern Oregon/ California Coasts ESU)	SOC	SS	4	G4T?Q	S3?			X		X		X	
Oncorhynchus clarki henshawi	Lahontan cutthroat trout	LT	LT	2	G4T3	S1						X		
Oncorhynchus keta	Chum salmon (Pacific Coast)	LT	SC	2	G5T3Q	S2			X					
Oncorhynchus keta	Chum salmon (Columbia River ESU)	LT	SS	1	G5T2Q	S2								
Oncorhynchus mykiss	Steelhead (Lower Columbia River ESU, summer run)	LT	SS	1	G5T2Q	S2			X	X			X	X
Oncorhynchus mykiss	Steelhead (Lower Columbia River ESU, winter run)			1	G5T2Q	S2			X	X			X	X
Oncorhynchus mykiss	Steelhead (Middle Columbia ESU, summer run)	LT	SS	1	G5T2Q	S2	X	X	X	X			X	X
Oncorhynchus mykiss	Steelhead (Middle Columbia River ESU, winter run)			1	G5T2Q	S2	X	X	X	X			X	X
Oncorhynchus mykiss	Steelhead (Oregon Coast ESU, summer run)	C	SS	1	G5T2T3Q	S2S3			X		X		X	X
Oncorhynchus mykiss	Steelhead (Oregon Coast ESU, winter run)	C	SS	1	G5T2T3Q	S2S3			X		X		X	X
Oncorhynchus mykiss	Steelhead (Snake River Basin ESU)	LT	SV	1	G5T2T3Q	S2S3	X	X	X	X			X	X
Oncorhynchus mykiss	Steelhead (Southwest Washington ESU, winter run)	C		2	G5T3Q	S2			X					X
Oncorhynchus mykiss	Steelhead (Upper Willamette River ESU, winter run)	LT	SS	1	G5T2Q	S2			X				X	X

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Oncorhynchus mykiss	Oregon Basins redband trout (Goose Lake SMU)	SOC	SS	1	G5T2Q	S2				X				
Oncorhynchus mykiss	Oregon Basins redband trout (Catlow Valley redband trout SMU)	SOC	SS	1	G5T1Q	S1						X		
Oncorhynchus mykiss	Oregon Basins redband trout (Foster Creek redband trout)			NR	NR	NR						X		
Oncorhynchus mykiss	Oregon Basins redband trout (Silvies River)		SV	3	G5T3Q	S3	X							
Oncorhynchus mykiss	Oregon Basins redband trout (Warner Valley redband trout SMU)	SOC	SS	1	G5T2Q	S2						X		
Oncorhynchus mykiss	Steelhead (Klamath Mountains Province ESU summer run)		SS	2	G5T3Q	S2S3			X		X		X	
Oncorhynchus mykiss	Steelhead (Klamath Mountains Province ESU, winter run		SS	2	G5T3Q	S2S3			X		X		X	
Oncorhynchus mykiss gairdneri	Inland Columbia Basin redband trout	SOC	SS	4	G5T4	S3	X	X		X		X		
Oncorhynchus tshawytscha	Chinook (Snake R ESU, spring/summer run)	LT	ST	1	G5T1Q	S1	X	X	X	X			X	X
Oncorhynchus tshawytscha	Chinook (Snake River ESU fall run)	LT	LT	1	G5T1Q	S1	X	X	X	X			X	X
Oncorhynchus tshawytscha	Chinook salmon (Lower Columbia, fall run)	LT	SC	1	G5T2Q	S2			X	X			X	X
Oncorhynchus tshawytscha	Chinook salmon (Lower Columbia, spring run)	LT	SC	1	G5T2Q	S2			X	X			X	X
Oncorhynchus tshawytscha	Chinook salmon (Upper Willamette River ESU, spring run)	LT		1	G5T2Q	S2			X				X	X
Oncorhynchus tshawytscha	Chinook salmon (Southern Oregon/Northern California Coast ESU, fall run)		SS	2	G5T3Q	S2			X		X		X	
Oregonichthys crameri	Oregon chub	C	LE	1	G2	S2							X	X
Oregonichthys kalawatseti	Umpqua chub	SOC	SS	1	G2G3	S2S3			X		X		X	
Rhinichthys cataractae ssp	Millicoma dace	SOC	SP	1	G5T2	S2			X					
Rhinichthys osculus ssp	Foskett spring speckled dace	LT	LT	1	G5T1	S1						X		
Salvelinus confluentus	Bull trout (Columbia Distinct Population Segment [DPS])	LT	SS	1	G3T2Q	S2	X	X		X			X	X
Salvelinus confluentus	Bull trout (Klamath River population)	LT	SS	1	G3T2Q	S2				X			X	
INVERTEBRATES														
Acetropis americana	American grass bug	SOC		1	G1	S1								X
Algamorda newcombiana	Newcomb's littorine snail	SOC		1	G1G2	S1			X					
Allomyia scotti	Scott's apatanian caddisfly	SOC		1	G1	S1							X	
Amerigoniscus malheurensis	Malheur isopod			1	G1	S1						X		
Anodonta wahlametensis	Willamette floater (freshwater mussel)			1	G2Q	S1								X
Apochthonius malheuri	Malheur pseudoscorpion	SOC		1	G1	S1						X		
Branchinecta lynchi	Vernal pool fairy shrimp	LT		1	G2G3	S2S3					X			
Chloealtis aspasma	Siskiyou short-horned grasshopper	SOC		1	G1	S1					X			
Cryptomastix hendersoni	Columbia Gorge oregonian (snail)			1	G1G2	S1S2		X						
Deroceras hesperium	Evening fieldslug			1	G1	S1			P	X			P	P

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		Federal	state	Heritage										
Euphydryas editha taylori	Taylor's checkerspot	C		1	G5T1	S1								X
Farula constricta	"Constricted" caddisfly (no common name)	SOC		1	G1?	S1?							X	
Fisherola nuttalli	Shortface lanx (=giant Columbia River limpet)			1	G2	S1S2		X						
Fluminicola turbiniformis	Turban pebblesnail			1	G3	S1				X				
Gliabates oregonius	Salamander slug			1	G1Q	S1			X	DG			DG	
Helisoma newberryi newberryi	Great Basin ramshorn			1	G1T1	S1				X				
Helminthoglypta hertleini	Oregon shoulderband (snail)			1	G1	S1					X		X	
Hesperarion mariae	Tillamook westernslug			1	G2	S2			X					
Hochbergellus hirsutus	Sister's hesperian (snail)			1	G1	S1			X					
Icaricia icarioides fenderi	Fender's blue butterfly	LE		1	G5T1	S1								X
Incisalia polia maritima	Hoary elfin (butterfly)			1	G5T2T3	S1?			X					
Juga acutifilosa	Scalloped juga (snail)			1	G2	S1				X				
Juga bulbosa	Bulb juga (snail)			1	G1	S1	X	X						
Juga hemphilli hemphilli	Purple-lipped juga (=Deschutes juga; snail)			1	G2T1	S1	X	X						
Kenkia rhynchida	Malheur Cave flatworm	SOC		1	G1G2	S1S2						X		
Lanx alta	Highcap lanx (snail)			1	G1	S1				X				
Lanx klamathensis	Scale lanx (snail)			1	G1	S1				X				
Lanx subrotunda	Rotund lanx (snail)			1	G2	S2					X			
Mitoura johnsoni	Johnson's hairstreak			1	G2G3	S2?	DG				X		X	
Monadenia chaceana	Chace sideband (snail)			1	G1Q	S1							X	
Monadenia fidelis beryllica	Green sideband (snail)			1	G4G5T1T2	S1S2			X		X			
Monadenia fidelis celeuthia	Traveling sideband (snail)			1	G4G5T1	S1					X		X	
Monadenia fidelis minor	Oregon snail (=Dalles sideband)	SOC		1	G4G5T1	S1		X						
Neothremma andersoni	Columbia Gorge caddisfly	SOC		1	G1	S1							X	
Oncopodura mala	Malheur Cave springtail			1	G3G4	S1						X		
Oreohelix variabilis variabilis	Dalles mountainsnail			1	G1T1	S1		X						
Pisodium ultramontanum	Montane peaclam	SOC		1	G1	S1				X				
Planoorbella oregonensis	Borax Lake ramshorn (snail)			1	G1	S1						X		
Plebeius saepiolus littoralis	Insular blue butterfly	SOC		1	G5T1T3	S1			X					
Polites mardon	Mardon skipper (butterfly)	C		1	G2G3	S2					X		DG	
Pomatiopsis binneyi	Robust walker (snail)			1	G1	S1			X					
Pomatiopsis californica	Pacific walker (snail)			1	G1	S1			X					
Pristiloma arcticum crateris	Crater Lake tightcoil			1	G4T1	S1				X				
Prophysaon vanattae pardalis	Spotted tail-dropper			1	G4T2	S2			X					

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Pterostichus rothi	Roth's blind ground beetle	SOC		1	G1	S1			X					
Pygulopsis archimedis	Archimedes springsnail			1	G1Q	S1				X				
Pyrgulopsis hendersoni	Harney Lake springsnail			1	G1	S1						X		
Pyrgulopsis intermedia	Crooked Creek springsnail			1	G1	S1						X		
Rhyacophila haddocki	Haddock's rhyacophilan caddisfly	SOC		1	G1	S1			X					
Speyeria zerene hippolyta	Oregon silverspot butterfly	LT		1	G5T1	S1			X					
Stygobromus hubbsi	Malheur Cave amphipod	SOC		1	G1	S1						X		
Stygobromus oregonensis	Oregon Cave amphipod			1	G1	S1					X			
Vespericola depressus	Columbia Gorge hesperian (snail)			1	G2	S2		X						
Vespericola sierranus	Siskiyou hesperian (snail)			1	G2	S1				X	X			
Vorticifex effusus dalli	Dall's ramshorn			1	G3QT1	S1				X				
Vorticifex effusus diagonalis	Lined ramshorn			1	G3QT1	S1				X				
Vorticifex klamathensis klamathensis	Klamath ramshorn			1	G1QT1	S1				X				
Vorticifex klamathensis sinitsini	Sinitsin ramshorn			1	G1QT1	S1				X				
Zapada wahkeena	Wahkeena Falls flightless stonefly	SOC		1	G2	S2							X	
MAMMALS														
Antrozous pallidus	Pallid bat	SOC	SV	2	G5	S2	X	X		X	X	X		DG
Arborimus longicaudus	Red tree vole	SOC		1, 4	G3G4TQ	S1, S3			X		X		X	
Bassariscus astutus	Ringtail		SU	4	G5	S3			DG		X		X	
Brachylagus idahoensis	Pygmy rabbit	SOC	SV	2	G4	S2?						X		
Corynorhinus townsendii	Townsend's big-eared bat	SOC	SC	2	G4	S2	X	X	X	X	X	X	X	X
Euderma maculatum	Spotted bat	SOC		2	G4	S2	X	DG		DG		X		
Lasionycteris noctivagans	Silver-haired bat	SOC	SV	4	G5	S3S4	X		X	X	X		X	
Lasiurus cinereus	Hoary bat			4	G5	S3	X	DG	X	X	X	X	X	DG
Lepus townsendii	White-tailed jackrabbit		SU	3	G5	S4?	DG	DG		DG		X		
Martes americana	American marten		SV	4	G5	S3S4	X		X	X			X	
Martes pennanti	Fisher	C	SC	2	G5	S2	ext		DG	DG	X		X	
Myotis californicus	California myotis (bat)		SV	4	G5	S3	X		X	X	X	X	X	X
Myotis thysanodes	Fringed myotis (bat)	SOC	SV	2	G4G5	S2	X		X	X	X		X	
Myotis volans	Long-legged myotis (bat)	SOC	SV	4	G5	S3	X		X	X	X	X	X	
Odocoileus virginianus leucurus	Columbia white-tailed deer	LE (CR)	SV(CR)	1	G5T2Q	S2			X		X			ext
Sciurus griseus	Western gray squirrel		SU	4	G5	S4								X
Spermophilus washingtoni	Washington ground squirrel	C	LE	1	G2	S2		X						

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Vulpes macrotis	Kit fox		LT	2	G4	S1						X		
PLANTS														
Artemisia campestris var. wormskioldii	Northern wormwood	C	LE	1-ex	G5T1	SX		X					X	
Calochortus indecorus	Sexton Mountain mariposa-lily		LE	1-X	GX	SX					X			
Castilleja levisecta	Golden paintbrush	LT	LE	1-ex	G1	SH								X
Plagiobothrys lamprocarpus	Shiny-fruited allocarya		LE	1-X	GX	SX					X			
Abronia umbellata ssp. breviflora	Pink sand-verbena	SOC	LE	1	G4G5T2	S1			X					
Amsinckia carinata	Malheur Valley fiddleneck	SOC	LT	1	G2	S2						X		
Arabis macdonaldiana	Red Mountain rockcress		LE	1	G2	S1					X			
Aster curtus	White-topped aster	SOC	LT	1	G3	S2								X
Aster vialis	Wayside aster	SOC	LT	1	G3	S3					X		X	X
Astragalus applegatei	Applegate's milk-vetch	LE	LE	1	G1	S1				X				
Astragalus collinus var. laurentii	Laurence milk-vetch	SOC	LT	1	G5T1	S1		X						
Astragalus diaphanus var. diurnus	South Fork John Day milk-vetch		LT	1	G3G4T2Q	S2	X							
Astragalus mulfordiae	Mulford's milk-vetch	SOC	LE	1	G2	S1						X		
Astragalus peckii	Peck's milk-vetch		LT	1	G3	S3	X			X				
Astragalus sterilis	Sterile milk-vetch		LT	1	G5T2	S2						X		
Astragalus tyghensis	Tygh Valley milk-vetch		LT	1	G2	S2		X						
Botrychium pumicola	Pumice grape-fern		LT	1	G3	S3				X				
Calochortus coxii	Crinite mariposa-lily	SOC	LE	1	G1	S1					X			
Calochortus howellii	Howell's mariposa-lily	SOC	LT	1	G3	S3					X			
Calochortus umpquaensis	Umpqua mariposa-lily	SOC	LE	1	G1	S1					X		X	
Cordylanthus maritimus ssp. palustris	Saltmarsh bird's-beak	SOC	LE	1	G4?T2	S2			X					
Delphinium leucophaeum	White rock larkspur	SOC	LE	1	G2Q	S2							X	X
Delphinium pavonaceum	Peacock larkspur	SOC	LE	1	G1Q	S1								X
Erigeron decumbens	Willamette daisy	LE	LE	1	G4T1	S1								X
Eriogonum chrysops	Golden buckwheat	SOC	LT	1	G1	S1						X		
Eriogonum crosbyae	Crosby's buckwheat	SOC	LT	1	G3	S2						X		
Erythronium elegans	Coast Range fawnlily	SOC	LT	1	G1	S1			X					
Fritillaria gentneri	Gentner's fritillary	LE	LE	1	G1	S1					X			
Gratiola heterosepala	Boggs Lake hedge-hyssop	SOC	LT	1	G3	S1						X		
Hackelia cronquistii	Cronquist's stickseed	SOC	LT	1	G3	S3						X		
Hastingsia bracteosa	Large-flowered rushlily	SOC	LT	1	G2T2	S2					X			
Howellia aquatilis	Howellia	LT		1	G2	S1								X

Scientific Name	Common Name	STATUS			G Rank	S Rank	BM	CP	CR	EC	KM	NBR	WC	WV
		Federal	state	Heritage										
Ivesia rhypara var. rhypara	Grimy ivesia	SOC	LE	1	G2T1	S1						X		
Lepidium davisii	Davis' peppergrass	SOC	LT	1	G3	S1						X		
Lilium occidentale	Western lily	LE	LE	1	G1	S1			X					
Limnanthes floccosa ssp. grandiflora	Big-flowered wooly meadowfoam	LE	LE	1	G4T1	S1					X			
Limnanthes floccosa ssp. pumila	Dwarf meadowfoam	1	LT	1	G4T1	S1					X			
Lomatium bradshawii	Bradshaw's desert parsley	LE	LE	1	G2	S2								X
Lomatium cookii	Cook's desert parsley	LE	LE	1	G1	S1					X			
Lomatium erythrocarpum	Red-fruited desert parsley	SOC	LE	1	G1	S1	X							
Lomatium greenmanii	Greenman's desert parsley	SOC	LT	1	G1	S1	X							
Lupinus cusickii	Cusick's lupine	C	LE	1	G1T1	S1	X							
Lupinus sulphureus ssp. kincaidii	Kincaid's lupine	LT	LT	1	G5T2	S2					X			X
Mentzelia mollis	Smooth mentzelia	SOC	LE	1	G2	S2						X		
Mentzelia packardiae	Packard's mentzelia	SOC	LT	1	G2	S2						X		
Microseris howellii	Howell's microseris		LT	1	G3	S3					X			
Mirabilis macfarlanei	MacFarlane's four-o'clock	LT	LE	1	G2	S1	X							
Oenothera wolfii	Wolf's evening-primrose	SOC	LT	1	G1	S1			X					
Phacelia argentea	Silvery phacelia	SOC	LT	1	G2	S2			X					
Plagiobothrys hirtus	Rough allocarya	LE	LE	1	G1	S1					X			
Pleuropogon oregonus	Oregon semaphore grass	SOC	LT	1	G1	S1	X			X		X		
Pyrrocoma radiata	Snake River goldenweed	SOC	LE	1	G3	S3	X					X		
Ranunculus reconditus	Dalles Mountain buttercup	SOC	LE	1	G5T2	S1				X				
Sidalcea nelsoniana	Nelson's checker-mallow	LT	LT	1	G2	S2			X					X
Silene douglasii var. oraria	Cascade Head catchfly	SOC	LT	1	G4T1	S1			X					
Silene spaldingii	Spalding's campion	LT	LE	1	G2	S1	X							
Stephanomeria malheurensis	Malheur wire-lettuce	LE	LE	1	G1	S1						X		
Thelypodium eucosmum	Arrow-leaf thelypody	SOC	LT	1	G2	S2	X							
Thelypodium howellii ssp. spectabilis	Howell's thelypody	LT	LE	1	G2T1	S1	X							
Trifolium owyheense	Owyhee clover	SOC	LE	1	G2	S2						X		
REPTILES														
Chrysemys picta belli	Western painted turtle		SC	2	G5	S2	X	X		X			X	X
Crotalus viridis	Western rattlesnake		SV(WV)	4	G5	S5								X
Emys marmorata marmorata	Northwestern pond turtle	SOC	SC	2	G3G4T3T4	S2			X	X	X		X	X
Lampropeltis getula	Common kingsnake	SOC	SV	4	G5	S3					X			
Sceloporus graciosus graciosus	Northern sagebrush lizard	SOC	SV(CB)	4	G5T5	S5		X						

APPENDIX II

Existing Planning and Regulatory Framework for Conservation

Oregon already has a conservation framework in the form of plans, regulations and grass-roots efforts. The Conservation Strategy works to promote integration and innovation within Oregon's existing framework.

Responsibility for fish and wildlife conservation planning and regulatory programs is shared by many agencies, organizations, institutions and individuals. In fact, there are so many entities involved that it is not feasible to describe all of their efforts here. This section addresses activities and responsibilities of state and local government entities, and includes larger-scale public/private efforts to plan for and conserve fish, wildlife and their habitats.

The Foundation: Oregon's Planning Effort

A Solid Foundation

Numerous planning efforts have identified priority species, habitats and actions within Oregon. Plans have been completed at local, state and regional levels by agencies, coalitions, and non-governmental organizations. These plans have differed in their purposes, goals and scales of analysis. These processes as well as more localized efforts have built the knowledge base and relationships that set the stage for establishment of a state conservation strategy. The Conservation Strategy builds upon these existing efforts with the goal of providing an overarching framework for conservation in Oregon.

Listed below are some of the major planning efforts for Oregon. This list is not meant to be comprehensive, as there are many plans available, but rather represents the major efforts consulted during development of this Strategy. A few of these efforts are currently in development. For these, either draft plans were reviewed or ODFW Conservation Strategy staff met with other planning staff.

Major Statewide Planning Efforts in Oregon

Oregon Plan for Salmon and Watersheds - In 1997, when several stocks of Oregon salmon were slated to be listed under the Endangered Species Act, state officials launched an effort to avoid the listing and its many negative consequences by creating a recovery program unique to Oregon. It has evolved into a broad scale effort that involves an extensive array of private and public partners and restoration efforts at all scales of government, society and natural systems.

The Oregon Plan uses funding from the Oregon Watershed Enhancement Board to create a framework for watershed restoration, salmon recovery and improvements in water quality. More than $20 million, primarily derived from lottery funds, is channeled each year through OWEB to a wide variety of voluntary activities across the state that support the Oregon Plan.

Its four components include:

- Voluntary restoration actions by private landowners;
- Coordinated state and federal agency and tribal actions;
- Monitoring watershed health, water quality, and salmon recovery;
- Scientific oversight by an independent panel of scientists who evaluate the plan's effectiveness, identify needed changes, and guide research investments.

Most of the plan's focus is on actions to improve water quality and quantity and restore habitat. Watershed councils and Soil and Water Conservation Districts are the primary facilitators of restoration efforts among local landowners. Many watershed groups have developed detailed, specific local conservation assessments.

The Oregon Gap Analysis Project - The Oregon Gap Analysis Program (OR-GAP) brought together the problem-solving capabilities of federal, state, and private scientists to tackle the difficult issues of land cover mapping, vertebrate habitat characterization, assessment, and biodiversity conservation at the state, regional, and national levels. The program seeks to facilitate cooperative development and use of information. The Oregon Gap Analysis Project began work in 1988, as the second Gap program in the nation. It was a collaborative, multi-partner

effort to map and analyze vegetation, land ownership, land management and species distribution. The major goals were to:

- Produce GIS databases describing actual land cover type, historical land cover type, terrestrial vertebrate species distributions, land stewardship, and land management status at a scale of 1:100,000;
- Identify land cover types and terrestrial vertebrate species that currently are not represented or are under-represented in areas managed for long-term maintenance of biodiversity, i.e., "gaps;"
- Facilitate cooperative development and use of information so that institutions, agencies, and private land owners may be more effective stewards of Oregon's natural resources. The development of the stewardship coverage and the species distribution databases has improved the ability for others to do statewide and local assessments. Oregon Natural Heritage Information Center has continually updated the managed area cover and the species distribution databases to provide crosswalks between the new wildlife habitat models and any new vegetation or land cover maps which become available.

The Oregon Biodiversity Project - The Oregon Biodiversity Project was a privately initiated, collaborative effort envisioned in the early 1990s and launched in 1994 to develop a statewide strategy for conserving biodiversity. This private-sector endeavor engaged public agencies, private organizations and a broad array of stakeholders to develop a statewide biodiversity assessment and strategy, which was completed in 1996. In contrast to the conventional approach of addressing endangered species individually, this was an effort to address biodiversity issues more broadly across political boundaries, using computer mapping technology, satellite imagery and principals of conservation biology. The project was led by the West Coast Office of Defenders of Wildlife in partnership with The Nature Conservancy, the Oregon Natural Heritage Program and a variety of public and private sector partners. The Oregon Biodiversity Project's primary goal was to develop a pragmatic statewide strategy to conserve Oregon's native biodiversity. The Biodiversity project was intended to reduce the risk of future endangered species designations, and give landowners more flexibility in resource management decisions. The project also has sought to establish a process to improve communication among diverse public and private interests and help people find common ground in resource management decisions. The result was *Oregon's Living Landscape: strategies and opportunities to conserve biodiversity*, and other associated products. *Oregon's Living Landscape* described the issues in each ecoregion, identified priority species and habitats, and identified priority conservation areas.

ODFW Wildlife Diversity Plan - The Oregon Fish and Wildlife Commission adopted the Oregon Wildlife Diversity Plan in November 1993 and updated it in January 1999. This plan sets forth the goal, objectives, strategies, sub-strategies, and program priorities for ODFW's Wildlife Diversity Program. Although the focus of this plan is on nongame species, it addresses all fish and wildlife species, both game and nongame. In addition to being a policy document to guide the Wildlife Diversity Program actions, the Oregon Wildlife Diversity Plan is also a reference document containing biological information on fish and wildlife species in the state; habitat information, organized by physiographic provinces; and summaries of state and federal laws and programs affecting fish and wildlife and their habitats.

Oregon Department of Transportation (ODOT) mitigation and conservation bank strategy – Many local, state, and federal regulatory processes include mitigation requirements for unavoidable impacts to protected resources. Mitigation usually includes restoration, creation, or enhancement of that the impacted resource. ODOT has developed a comprehensive mitigation and conservation banking strategy to assess natural resource impacts, prioritize mitigation and conservation investments, and provide ecologically valuable mitigation and conservation projects throughout the state. The Mitigation Bank is intended to focus on regional ecological priorities, improve watershed health, improve habitat connectivity, and make meaningful contributions to the recovery of threatened and endangered species.

Forestry Program for Oregon (FPFO) - describes the Oregon Board of Forestry's vision for the future of all of the state's forest resources, the values that guide the board's decisions on forestry issues, and strategies and actions to achieve its vision. The 2003 edition adapts an internationally recognized sustainable forest management framework for use in discussing and measuring forest issues at the statewide level.

Within the FPFO, one of seven central Board strategies is to "contribute to the conservation of diverse native plant and animal populations and their habitats in Oregon's forests" (Strategy E). Beneath this strategy, the Board and the Department of Forestry are committed to the following actions:

ACTIONS:

E.1. The board will collaborate with other state, federal, and tribal agencies; universities; conservation groups; and private landowners to promote the development of a comprehensive, science-based, coarse-scale statewide assessment that evaluates the characteristics, conditions, and trends of native vascular plant and vertebrate animal populations and habitats on all land uses and ownership classes. (KEY ACTION)

E.2. Following completion of the assessment, and within the broader context of continuing to meet Oregon's environmental, economic, and social needs, the board will collaborate with other agencies, universities, organizations, and landowners to promote development of a coordinated, statewide Oregon native plant and animal conservation policy addressing all land uses and ownership classes. This policy should be ratified by all of Oregon's natural resource boards and commissions, as well as the Oregon Legislature, and acknowledged by federal natural resource agencies. The adopted policy should:

- Recognize that the primary purpose of most private forestland is to grow and harvest commercial tree species.
- Clearly consider public expectations for the contributions of private landowners on all uses to achieve state goals and how, in light of the technical assessment results, those expectations can be met in a fair and equitable manner.
- Ensure that any additional contributions by private forest landowners are sought first through non-regulatory methods and only through regulation if the assessment shows a clear, compelling need, consistent with ORS 527.714. (KEY ACTION)

E.3. The board will promote a variety of non-regulatory tools, such as landowner recognition, incentives, easements, exchanges, and technical assistance, to help implement the state native plant and animal habitat conservation policy. (KEY ACTION)

E.4. The board will support continued active management of Oregon's state forests using structure-based management combined with ongoing science-based implementation monitoring and evaluation. (KEY ACTION)

E.5. The board will evaluate and develop Oregon forest policies in the context of the diverse roles and management objectives of the state's public and private forest landowners, along with other land uses, to sustain the state's natural heritage of native plant and animal species and communities.

E.6. The board will promote continued monitoring and evaluation of both the short-term and long-term effects of current forest practices on Oregon's biological resources.

For additional information on the Forestry Program for Oregon see *http://oregon.gov/ODF/BOARD/index.shtml*

State of the Environment Report (SOER)

The *Oregon State of the Environment Report* is a scientifically credible, comprehensive assessment of Oregon's environment completed in 2000. The report, prepared under the direction of the Oregon Progress Board, summarizes the environmental condition of many of Oregon's major natural systems and resources. The health of each resource is defined in terms of the three perspectives of a healthy environment: naturally functioning landscapes, sustainable productivity and compliance with environmental law. Current conditions and trends and future risks to the health of these natural systems are described and a set of indicators is proposed to provide a baseline for understanding the health of Oregon's environment. The report also examines the status of individual natural systems and resources in each of Oregon's eight ecoregions. The Oregon Benchmarks were modified as a result of the SOER work.

Regional and Broad-Scale Multi-State Planning Efforts and Entities

Oregon conservation planning has occurred within the context of several multi-state efforts. These plans examine the complex interactions between multiple species and habitats across broad areas. Although each of these planning efforts has slightly different goals and objectives, they provide a solid basis for natural resources planning in Oregon. These plans were consulted in development of the Conservation Strategy, and will continue to be referenced as appropriate, as the Conservation Strategy is implemented.

Northwest Forest Plan (NWFP) – Adopted in 1994, the Northwest Forest Plan is an integrated, comprehensive design for ecosystem management, intergovernmental and public collaboration, and rural community economic assistance for federal forests in western Oregon, Washington, and northern California. The intent of the NWFP is to adopt coordinated management direction for the lands administered by the USDA Forest Service and the USDI Bureau of Land Management and to adopt complimentary approaches by other Federal agencies within the range of the northern spotted owl. The management of these public lands must meet dual needs: the need for forest habitat and the need for forest products. Although focused on the northern spotted owl, the plan was intended to address the needs of a wide array of species affected by loss and fragmentation of late successional forests, and covers over 1,000 species of plants, animals, and fungi. The NWFP has yet to be fully implemented. For example, the ten federal adaptive management areas established in the NWFP to emphasize research on ecosystem function in forested landscapes have not been utilized. Full implementation of the economic, social and environmental goals of the NWFP is needed to ensure sustainable use of Federal forestlands.

The Nature Conservancy's Ecoregional Assessments – The Nature Conservancy's ecoregion planning approach divides the nation into physiographically-similar areas to identify large tracts of land that are

characterized by unique natural areas and features. The Conservancy is developing strategic plans for threatened areas within each ecoregion to protect and maintain biodiversity. The process includes assessment of species and ecosystems within an ecoregion, setting species and habitat goals, designing a network that will meet those goals and identifying highest priority areas to conserve. The Conservancy then works with partners to establish the conservation network.

Interior Columbia Basin Ecosystem Management Project – The project developed a framework for ecosystem management and a scientific assessment of the ecological, biophysical, social and economic conditions of the Columbia basin, including all of Eastern Oregon. Instead of a formal, basin-wide decision from the project, federal decision makers adopted a strategy of incorporating the science into ongoing USDA Forest Service and USDI Bureau of Land Management land management plans.

Federal land management plans: National Forest Plans (USDA Forest Service) and Resource Management Plans (USDI Bureau of Land Management) – These plans provide management direction for the many multiple uses of individual national forests (USFS) and resource management areas (BLM) including outdoor recreation, range, timber, watershed, fish and wildlife, minerals, wilderness, roadless areas, and cultural resources. These plans were amended by the Northwest Forest Plan on the westside and the Interior Columbia Basin Strategy on the eastside.

An Ecosystem Approach to Salmonid Conservation (Spence et al., 1996; ManTech Environmental, Inc.; developed for National Marine Fisheries Service [now NOAA Fisheries Services], Environmental Protection Agency and U.S. Fish and Wildlife Service): Provides a natural-science based framework for government agencies and landowners to incorporate an ecosystem approach to habitat conservation planning, protection, and restoration of aquatic habitat on nonfederal lands in the Pacific Northwest. Includes guidance for developing, monitoring and implementing habitat conservation plans in a larger regional context of conservation goals. *www.nwr.noaa.gov/1habcon/habweb/ManTech/front.htm*.

Western Governor's Association "Ten Year Comprehensive Wildfire Strategy." Advisory committee with experts on forest health policy, including timber industry representatives, state and federal land managers, rural community leaders and environmental representatives developed a comprehensive, state-of-the-science strategy to best protect communities and the environment from the dangers of severe wildfire.

Northwest Power and Conservation Council - The Northwest Power and Conservation Council is an agency representing Idaho, Montana, Oregon, and Washington and is directed by the Northwest Power Act of 1980 to develop a program to protect, mitigate, and enhance fish and wildlife of the Columbia River Basin affected by hydropower dams. The Council has three primary responsibilities:

- Develop a 20-year electric power plan that will guarantee adequate and reliable energy at the lowest economic and environmental cost to the Northwest,
- Develop a program to protect and rebuild fish and wildlife populations affected by hydropower development in the Columbia River Basin, and
- Educate and involve the public in the Council's decision-making processes.

Northwest Power and Conservation Council Subbasin Planning - In 2000, the Council adopted a set of amendments to begin a comprehensive revision of the fish and wildlife mitigation program and directed that successful mitigation for hydropower impacts on fish and wildlife will be accomplished through the implementation of subbasin goals, objectives, and strategies. As part of the comprehensive review, integrated subbasin plans for up to 62 sub-basins and mainstem tributaries of the Columbia Basin have been or will be developed to guide future actions for hydropower mitigation. Currently, 48 sub-basin plans have been approved by the Council.

Sub-basin plans contain an assessment of historic and current conditions, an inventory of existing fish and wildlife projects and accomplishments, and a management plan that proposes strategies for 10-15 years in the future. They are intended to guide the implementation of projects for the fish and wildlife program and provide federal agencies with information for endangered species recovery planning. Sub-basin plans have been developed through the collaboration of non-government organizations, watershed councils, local governments, and state, federal, and tribal agencies.

Columbia River Estuary Study Taskforce (CREST) - CREST is a council of governments that includes local counties, cities, and port districts surrounding the Columbia River Estuary in both Oregon and Washington. CREST is a non-regulatory, regional organization providing a forum for members to identify and discuss issues of regional importance; to monitor and comment on governmental activities related to the development and management of the natural, economic, and human resources of the Columbia River Estuary; and to improve communication and cooperation between member governments.

CREST provides coastal and estuarine technical services for members, coordinates activities between agencies, and provides information, maps, and educational materials to residents of the region. Examples include permitting issues, zoning ordinance, comprehensive plan and shoreline master plan amendments, estuarine impact analysis, wetlands issues, dredging issues, and water quality issues. CREST developed a 1977 publication, Columbia River Estuary Inventory of Physical, Biological, and Cultural Characteristics that was used to develop the Columbia River Estuary Regional Management Plan in 1979, which was adopted in the local comprehensive plans in Oregon and shoreline master programs in Washington. For additional information, see *www.columbiaestuary.org*.

The Columbia Basin Fish and Wildlife Authority - Established by charter in 1987, the Columbia Basin Fish and Wildlife Authority's objectives includes coordinating the fish and wildlife activities of interagency and tribal concern, facilitating interagency and tribal involvement in the implementation of the Northwest Power Planning Council's Fish and Wildlife Program, and interacting with the water and land planning and management authorities of the Columbia River Basin. The Authority's members include the four state (Oregon, Washington, Idaho, and Montana) and two federal (U.S. Fish and Wildlife Service and NOAA Fisheries Service) fish and wildlife management entities and thirteen Indian tribes of the Columbia River Basin.

Columbia River Gorge Commission - The Columbia River Gorge Commission was authorized by the 1986 Columbia River Gorge National Scenic Area Act and created through a bi-state compact between Oregon and Washington in 1987. The Commission was established to develop and enforce policies and programs that protect and enhance the scenic, natural, cultural and recreational resources of the Gorge, while encouraging compatible growth within existing urban areas of the Gorge and allowing economic development outside urban areas consistent with resource protection. The Commission works in partnership with a number of entities to implement a regional Management Plan. Partners include Oregon and Washington; the USDA Forest Service; four treaty Indian Tribes -- the Nez Perce, Umatilla, Warm Springs, and Yakima Indian Nations; Clark, Klickitat and Skamania counties in Washington; and Hood River, Multnomah, and Wasco counties in Oregon.

Columbia River Intertribal Fish Commission - The Columbia River Inter-Tribal Fish Commission (CRITFC) is the technical support and coordinating agency for fishery management policies of the four Columbia River treaty tribes. These tribes include: The Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes and Bands of the Yakima Indian Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe. Membership is composed of the fish and wildlife committees of these tribes. CRITFC, formed in 1977, employs biologists, other scientists, public information specialists, policy analysts, and administrators who work in fisheries research and analyses, advocacy, planning and coordination, harvest control and law enforcement.

Lower Columbia River Estuary Partnership - The Lower Columbia River Estuary Partnership, one of 28 programs in the National Estuary Program is a two-state, public-private initiative. Its primary responsibility is to implement the Comprehensive Conservation and Management Plan for the 146 miles of the lower Columbia River and estuary. The Management Plan was developed by bringing together diverse interests to reach consensus on how to protect this complex portion of the Columbia River system. Using a watershed approach, the Estuary Partnership cuts across political boundaries, integrating 28 cities, nine counties, and the states of Oregon and Washington. The Plan identifies 43 actions to address seven priority issues (biological integrity, impacts of human activity and growth, habitat loss and modification, conventional pollutants, toxic contaminants in sediments, institutional constraints, and public awareness and stewardship). The actions and issues were derived from scientific studies and input from citizens of the lower Columbia River and estuary. The Management Plan has no regulatory authority, and relies on voluntary participation.

Local and Regional Plans

The following local or regional plans are of broad significance. See Ecoregional sections below for further discussion of local planning efforts, including voluntary citizen-based efforts.

Oregon Department of Forestry (ODF) state forest management plans – ODF forest management plans provide management direction for all Board of Forestry Lands and Common School Forest Lands within each planning region. Plans include a description of each forest resource, information about current management programs for these resources, and key management strategies. The resource management goals and strategies are intended to achieve a desired balance among the resources, such as achieving more desirable fish and wildlife habitats and improved forest biological diversity, while providing revenue through harvesting of forest products.

Oregon Nearshore Strategy – ODFW's Marine Resources Program is preparing the Oregon Nearshore Strategy to provide a comprehensive, sustainable approach to marine species and habitat management in Oregon. The Oregon Nearshore Strategy will be both a stand-alone document, focused on nearshore marine resource issues, and an integral part of this Conservation Strategy. The Oregon Nearshore Strategy

will address fully marine species, including saltwater fish, shellfish, and marine mammals, and their habitats.

Oregon Estuary Plan – Compiled by Oregon's Department of Land Conservation and Development, the Oregon Estuary Plan book provides an overview of the values and functions of estuaries and the requirements of Statewide Planning Goal 16 (Estuarine Resources). The purpose of Goal 16 is to maintain the environmental, economic and social value of estuaries. The Oregon Estuary Plan Book describes how cities and counties have addressed Goal 16 requirements in local comprehensive plans and land use ordinances, and how these local requirements are applied during review of individual projects. Because estuaries often have complex ownerships and jurisdictions, the Oregon Estuary Plan book promotes coordinated action by local, state and federal agencies that have an interest in Oregon's estuaries.

Working to Restore Oregon's Eastside Forest Ecosystems and Community Health: Oregon's Experience – Presents broad overview and specific, practical information about sustainable forestry in Oregon, including discussions about community based stewardship, forest products, and Oregon's role in achieving national goals for forestry. Presented to Governor Kitzhaber by the Governor's Eastside Forest Advisory Panel, 2002.

Willamette River Initiative's Willamette Restoration Strategy – With increasing population and development pressures within the Willamette Valley, the governor appointed a group to address water quality and habitat issues in the basin and adopt a strategy to protect and restore the basin's ecological health. It was developed through a collaborative process involving over 150 partners and participants from businesses, government agencies, tribes, academia, watershed councils, agriculture, forestry, and environmental organizations. Completed in 2001, the Willamette Restoration Strategy includes plans to protect and restore fish and wildlife habitat and increase populations of declining species within the context of continuing population growth in the basin.

Species Conservation and Management Plans

Many plans have been completed for single species or related groups of species. These plans address needs of threatened or endangered species, game species, and other species of interest.

ODFW Species Conservation and Management Plans – ODFW creates species management plans to guide management of game and other species. Examples include Big-Horned Sheep and Rocky Mountain Goat Management Plan, Elk Management Plan, Mule Deer Management Plan, and Black Bear Management Plan. In some cases, the plans are interagency, multi-stakeholder efforts, such as the Greater Sage-Grouse Conservation Assessment and Oregon Conservation Strategy: A Plan to Maintain and Enhance Populations and Habitat.

ODFW Native Fish Conservation Policy and Stock Status Reports – ODFW is currently reviewing the status of salmonid populations. This review includes production of a Native Fish Status report on each Species Management Unit and population of selected native fish in the state. The review identifies status using four criteria: Distribution, Abundance, Productivity, and Reproductive Independence. This report is currently in draft form and should be available in 2006.

Oregon Coastal Coho Assessment – A multi-stakeholder effort coordinated by ODFW and National Oceanic and Atmospheric Administration – Fisheries (NOAA Fisheries Service) to evaluate the status of Oregon Coast Coho Salmon Evolutionarily Significant Unit. The Coho Assessment will evaluate actions under Oregon Plan to conserve and rebuild coastal coho populations and develop conservation plan consistent with state and federal recovery plan guidelines.

Federal Recovery Plans – The U.S. Fish and Wildlife Service and the NOAA Fisheries Service (also known as the National Marine Fisheries Service) are the two agencies charged with the administration and implementation of the Endangered Species Act. The goal of the Endangered Species Act is the recovery of listed species to levels where protection under the Act is no longer necessary. To meet this goal, Recovery Plans delineate reasonable actions that are believed to be required to recover and protect listed species. Plans are published by the U.S. Fish and Wildlife Service and the NOAA Fisheries Service for some species. Plans have been prepared with the assistance of recovery teams, contractors, state and federal agencies, and others.

Individual species conservation assessments developed by Forest Service and Bureau of Land Management – Federal agencies have developed detailed assessments for many species of interest. These assessments include reviews of the distribution, habitat, ecology and population biology. They often include status, potential threats and conservation actions already taken or needed. They may cover all or only a portion of a species range.

Bird Conservation Plans – Many regional and national bird plans have identified conservation priorities for birds. These plans were consulted in determining Strategy Species. Examples include Partners in Flight Species Scoring, Regional Shorebird Conservation Plans, Regional Waterbird Conservation Plans, OR-WA Partners in Flight Bird Conservation Plan

Focal Species, National Audubon "WatchList" status, geographical area-specific bird conservation plans and American Bird Conservancy State Green Lists.

Eastern Oregon All-Bird Plan – Prepared by the Oregon Habitat Joint Venture, this planning effort reviewed, merged and synthesized the goals and objectives of existing bird conservation plans into a coordinated planning document that reflects the species and habitat priorities of all bird conservation programs in eastern Oregon.

Other Natural Resource Planning Efforts for Oregon's Ecoregions

Some major planning efforts specific to Oregon's eight ecoregions are listed below. This list is not comprehensive, but demonstrates some of the local efforts to determine issues and priorities. Linking to local planning and restoration efforts will be an effective way to work toward the Strategy's goals, while providing a greater context and recognition for the efforts of communities.

Blue Mountains Ecoregion

- Wallowa County Nez Perce Tribe Salmon Habitat Recovery Plan – Wallowa County citizens, the Nez Perce Tribe and agency professionals developed a plan to restore and maintain habitat for Chinook salmon and other salmonid species in Wallowa County.
- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Hells Canyon Initiative (multi-state, multi-agency bighorn sheep restoration effort)
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

Coast Range Ecoregion

- Northwest Forest Plan – addresses management of late successional forests on federal land. Includes extensive areas of forest in the Coast Range ecoregion.
- Oregon Department of Forestry state forest plans: Northwest and Southwest Oregon State Forest Management Plans; Elliot State Forest Management Plan; and Elliot State Forest Habitat Conservation Plan
- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Oregon Coastal Coho Assessment: Evaluate status of Oregon Coast Coho Salmon Evolutionarily Significant Unit. ODFW, NOAA Fisheries Service. Assess actions under Oregon Plan to conserve and rebuild coastal coho populations; develop conservation plan consistent with state and federal recovery plan guidelines. Work with multi-stakeholder teams.
- Comprehensive Conservation and Management Plans, completed for the Columbia River Estuary (by the Lower Columbia River Estuary Program) and Tillamook Bay (by the Tillamook Bay National Estuary Project): Identify issues, actions and indicators.
- Lower Columbia and Columbia Estuary Bi-State Subbasin Plan: Comprehensive and detailed effort to catalogue wildlife and biological dynamics in the Columbia Estuary; extensive database efforts.
- Oregon Estuary Plan: Compilation of city and county planning effort to address critical needs of Oregon's estuaries
- Oregon Parks and Recreation Department Plans: Ocean Shore Management Plan and Habitat Conservation Plan for Snowy Plover (in development).
- Pacific Coast Estuarine Information System: Database developed by USGS and US EPA to catalogue native and invasive estuarine species, sediment, contaminant, and nutrient levels in estuaries of the Pacific Coast
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments.

Columbia Plateau Ecoregion

- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

East Cascades Ecoregion

- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Klamath Basin Ecosystem planning effort – An interagency effort managed by the U.S. Fish and Wildlife Service to address habitat conservation and water management issues.
- The Upper Klamath Basin Working Group – Chartered by Congress in 1996 to develop a plan for the Upper Basin that focuses on enhancing ecosystem restoration, improving economic stability, and minimizing impacts associated with drought on all resources and stakeholders. The Working Group is comprised of over 30 individuals appointed by the Governor of Oregon, representing federal, state, and local governments and agencies; the Klamath Tribes; conservation organizations; farmers and ranchers; and industry and local businesses. The Working Group completed a restoration plan in 2002.

- Oregon Department of Forestry state forest plans: Sun Pass State Forest
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

Klamath Mountains Ecoregion

- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Northwest Forest Plan. Addresses management of late successional forests on federal land. Includes extensive areas of forest in the western part of the Klamath Mountains ecoregion.
- Oregon Coastal Coho Assessment: evaluate status of Oregon Coast Coho Salmon Evolutionarily Significant Unit. ODFW, NOAA Fisheries Service. Assess actions under Oregon Plan to conserve and rebuild coastal coho populations; develop conservation plan consistent with state and federal recovery plan guidelines. Work with multi-stakeholder teams.
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

Northern Basin and Range Ecoregion

- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Greater Sage-Grouse Conservation Assessment and Oregon Conservation Strategy
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

West Cascades Ecoregion

- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Northwest Forest Plan. Addresses management of late successional forests on federal land. Includes extensive areas of forest in the West Cascades ecoregion.
- Oregon Department of Forestry state forest plans: Santiam State Forest
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

Willamette Valley Ecoregion

- Watershed Council watershed assessments and action plans
- Sub-basin Plans
- Oregon Coastal Coho Assessment: evaluate status of Oregon Coast Coho Salmon Evolutionarily Significant Unit. ODFW, NOAA Fisheries Service. Assess actions under Oregon Plan to conserve and rebuild coastal coho populations; develop conservation plan consistent with state and federal recovery plan guidelines. Work with multi-stakeholder teams.
- The Portland Metropolitan Greenspaces Master Plan describes a vision for a unique regional system of parks, natural areas, greenways and trails for fish, wildlife and people, identifying urban natural areas, trails, and greenway corridors for the Portland metropolitan region.
- Willamette Restoration Initiative. 2002. Community conference on riverfront issues, discussed ecology, history, tourism, and riverfront revitalization. Identified priority actions for conservation in lowlands and midlands. Emphasized importance of reconnecting floodplain.
- Willamette River Basin Planning Atlas: looks at three alternative scenarios of the Basin's future, showing effects of management of urban, rural and natural lands and waters across the entire basin through the year 2050.
- Local comprehensive land use plans, conservation plans or assessments developed by local city, county, municipal or tribal governments

Existing Planning Efforts: Conclusions

Creative planning work has been done at all levels. Plans are produced by federal state and local public agencies, private land managers, regional bodies, and local, regional, or watershed volunteer groups. Many agencies have built collaborative alliances and are streamlining processes while investing public funds more frugally and wisely. Oregon's land use planning program provides a consistent framework for local governments to assess open space and natural area protection.

However, Oregon has no overarching framework for conservation planning. Many current and recent plans have focused on solving an individual problem, or managing an individual species, habitats , or geographical areas. The result is a collection of plans with limited coordination and limited means of addressing landscapes. The broad umbrella of the Conservation Strategy offers an opportunity to increase coordination of plans, thereby knitting together efforts across purposes, entities and scales.

Although the Conservation Strategy takes a large-scale view of Oregon's conservation needs, implementation of Conservation Strategy priorities will occur at the local level. Linking to local planning and restoration efforts will be an effective way to work toward the Strategy's goals, while providing a greater context and recognition for the efforts of communities.

For example, watershed assessments and action plans provide one such opportunity to build bridges across efforts. A number of watershed councils and other local groups have conducted watershed assessments to evaluate the current health and functional values of the watershed in light of historical conditions. The assessments identify conditions that limit aquatic production and function in particular geographic areas. Many groups have developed an action plan for restoration and protection based on their assessment's findings. Implementation of the Strategy will bring technical assistance, improved access to incentive programs, and landscape approaches to complement local knowledge and priorities.

Oregon's Existing Regulatory and Land Management Framework

This section highlights some of Oregon's regulatory framework. A complete evaluation of the federal regulatory framework is beyond the scope of the Conservation Strategy.

Oregon's Statewide Land Use Planning Program

Oregon's statewide land use planning program originated in 1973 under Senate Bill 100. The foundation of the program is 19 statewide planning goals covering a range of resources and issues including citizen involvement, protection of farm and forestlands, transportation, public facilities, natural resources and open space, and coastal resources. A summary of the goals is located at *www.oregon.gov/LCD/docs/goals/goalssummary.pdf*.

The statewide goals are achieved through local comprehensive planning. State law requires each local government to adopt a comprehensive plan that is consistent with the statewide goals, and the implementing ordinances needed to put the plan into effect. The state Land Conservation and Development Commission (LCDC) reviews local comprehensive plans and implementing ordinances for consistency with the Statewide Planning Goals. When LCDC officially approves a local government's plan, the plan is said to be ´acknowledged. After acknowledgment, the plan becomes the controlling document for land use in the area covered by that plan. State law requires local governments to go through a periodic review process at specified intervals of time to revise and update plans and ordinances to address new or amended state requirements and changing conditions.

Oregon's planning laws apply not only to local governments but also to special districts and state agencies. The laws strongly emphasize coordination -- keeping plans and programs consistent with each other, with the goals, and with acknowledged local plans. Except as provided in ORS 197.277 or 197.180(2) or unless expressly exempted by another statute, ORS 197.180 requires state agencies with programs affecting land use to carry out these programs in compliance with the statewide planning goals and in a manner compatible with local comprehensive plans and land use regulations.

The Oregon Forest Practices Act

Voted into law by the Legislature in 1971, the Oregon Forest Practices Act was the first of its kind in the nation. The Act encourages economically efficient forest management in Oregon and the continuous growing and harvesting of trees and maintenance of forestland on privately owned land consistent with the protection of forest resources through the sound management of soil, air, water, fish and wildlife resources. It also helps preserve scenic resources along visually sensitive corridors and reduces the risk of serious bodily injury or death caused by shallow, rapidly moving landslides directly related to forest practices. Under the authority of the Act, the Oregon Department of Forestry regulates forest operations on nearly 12 million acres of nonfederal forestland. They guide forest landowners and operators on how to conduct forest operations and activities so they are in compliance with the Forest Practices Act administrative rules. These rules apply to harvesting, reforestation, road construction and repair, slash disposal (treetops, branches, brush and tree limbs left on the ground after a logging operation), chemical use, and stream, lake and wetland protection. Sensitive resource sites, such as bird nesting and roosting locations, and threatened and endangered species sites are also protected under the rules. Oregon's forest ecosystems are diverse and dynamic. The Department of Forestry provides scientific information for adapting policies, management practices, and restoration activities to better achieve management, protection, and restoration goals. The success of the program reflects the vision created by the 1971 Legislature, as well as the tremendous efforts of landowners and stewardship foresters who collaborate on the ground to focus on results, rather than process.

Oregon's Regulatory Streamlining Initiative

Executive Order 03-01 requires state agencies to review their regulations of business activities and their regulatory processes to reduce the burden of regulation on business without compromising Oregon's standards and protections. The Office of Regulatory Streamlining at the Department of Consumer and Business Services was established to facilitate this effort. The Office of Regulatory Streamlining provides ongoing research to identify opportunities for regulatory streamlining and serves as a clearinghouse for agency streamlining efforts.

Oregon State Agencies

Oregon Department of Fish and Wildlife is the state agency with a primary responsibility for conserving the state's living fish and wildlife,

with a mission of protecting and enhancing species and habitat. The agency manages fish hatchery programs, sets and enforces angler catch limits and hunting tag limits, develops species conservation plans, establishes fish and wildlife policies, manages wildlife areas, and sponsors landowner conservation incentives programs.

Other state agencies hold jurisdiction over individual habitat types such as forests, wetlands, or open waterways.

Oregon Department of Environmental Quality (DEQ) regulates water quality by establishing and enforcing state standards for point and nonpoint pollution for each watershed or subbasin. DEQ requires that plans be developed by the appropriate federal, state or local land management agency for complying with Total Maximum Daily Load limits for each regulated pollutant identified in the watershed.

DEQ maintains a nonpoint source program to manage water pollution from surface runoff. The program works to enhance watershed protection, voluntary stewardship, and stakeholder partnerships. Among other activities, the program provides technical assistance, a cost-share program, stewardship recognition, and education about watershed enhancement projects. For more information: *http://www.deq.state.or.us/wq/nonpoint/npp.htm*.

DEQ has a number of permits and programs designed to reduce point or nonpoint source pollution, including: the Nonpoint Source Program; the National Pollution Discharge Elimination System (NPDES) Permit; Water Pollution Control Facilities (WPFC) Permit; NPDES Storm Water Discharge permit; Underground Discharge Permits; Sewage Disposal permits. For additional information, see: *http://www.deq.state.or.us/wq/wqpermit/wqpermit.htm*.

The Oregon Department of Forestry (ODF) manages forested lands owned by the residents of Oregon and enforces the requirements of the State Forest Management Act on private land. The Forestry Program for Oregon and the Oregon Forest Practices Act provide the legal and regulatory framework for managing forestlands in Oregon. ODF develops an annual strategic plan and management plans for each state forest. The Department of Forestry also requires plans from landowners harvesting timber on private property, requiring the operation meet a variety of stipulations including riparian buffers, clearcut size, road design and maintenance, and slope stabilization.

The mission of the Oregon Department of Forestry is to serve the people of Oregon by protecting, managing, and promoting stewardship of Oregon's forests to enhance environmental, economic, and community sustainability. Four key department programs work to achieve this mission:

a. The Private and Community Forests Program's mission is to implement progressive policies and programs, including technical assistance, incentives, and regulation that promote healthy sustainable private and community forestlands. Administration of the Oregon Forest Practices Act and other services to private forest landowners through this program will continue to be important, proven delivery mechanisms for any state wildlife policies affecting these lands.
b. The Protection From Fire Program's mission is to provide a complete and coordinated forestland fire protection system, and in so doing, safely prevent and suppress fire on or threatening forestland within forest protection districts, in a manner, which minimizes costs and resource losses.
c. The State Forests Program's mission is to manage Board of Forestry lands to achieve the greatest permanent value (healthy, productive, and sustainable forest ecosystems), and to manage Common School Forest Lands to maximize revenues over the long term in a manner that is consistent with protecting environmental values. Science-based approaches that include active and integrated resource management techniques will be utilized to ensure that economic, environmental, and social benefits are produced in a sustainable manner.
d. The Forest Resources Planning Program's mission is to lead strategic planning, to provide credible and objective analyses for the Board of Forestry and ODF, and to actively promote policies that encourage sustainable forest management and further the strategies and actions of the Forestry Program for Oregon on all Oregon forestlands.

Oregon Department of Land Conservation and Development (DLCD) is in charge of Oregon's unique and acclaimed land use planning system. DLCD does not manage land. Instead it stipulates practices and processes required of local land managers—cities, counties and Metro Regional Government--to meet 19 goals that cover a broad range of public interests including conservation of farms and forests, natural resources, open space, estuaries, air and water quality and the Willamette River Greenway. Cities and counties are required to develop comprehensive plans that address the 19 goals. The goal that most closely addresses fish and wildlife habitat, Goal 5, requires that cities and counties adhere to a process which requires them to inventory natural resources, determine their significance, identify conflicting uses and determine whether to allow the conflicting use. Goal 6 provides broad authority to regulate land uses to address water quality. Goal 7 covers areas subject to natural hazards and disasters, including floodplains.

Goal 14 has probably had the greatest effect on conserving wildlife habitat by requiring each city or metropolitan area to establish an urban growth boundary that restricts urban development from encroaching on adjacent farms and forests. Goal 15 establishes the Willamette Greenway. Goals 16 (Estuarine Resources), 17 (Coastal Shorelands) and 18 (Beaches and Dunes) regulate development in coastal areas. To learn more about the 19 Statewide Planning Goals, see *www.lcd.state.or.us/LCD/goals.shtml*.

The Department of State Lands (DSL) is the administrative agency of the State Land Board, handling the work of the board in managing the land and other resources dedicated to the Common School Fund. Its holdings include 784,000 acres of upland property including the 78,000-acre Elliot State Forest. DSL also manages the state's submerged public lands and regulates excavation and filling of waterway beds and banks. DSL regulates wetlands permits in Oregon and helps local governments inventory, assess, designate, and develop management plans for wetlands under Oregon's land use Goals 5 (Natural Resources), 16 (Estuaries) and 17 (Coastal Shorelands).

Oregon Watershed Enhancement Board (OWEB) is the state agency that promotes and funds efforts to restore salmon runs, improve water quality and strengthen aquatic and terrestrial ecosystems to improve conditions of watersheds throughout the state. It is the primary vehicle for funding the activities of watershed councils and provides financial and technical support to Soil and Water Conservation Districts and other local conservation groups. With OWEB support, many watershed councils have completed watershed assessments and watershed action plans. OWEB also provides funding for some capacity building as well as on-the-ground restoration activities. OWEB is building a restoration database, and produces progress reports and educational materials.

A number of state agencies do not directly manage species or habitat but, as they manage state lands, infrastructure or a wide variety of state-run activities, they are required to consider their effects on species and habitat.

The Oregon Department of Agriculture (ODA) is responsible for development of agricultural water quality plans and rules (Senate Bill 1010) for each basin in the state. These plans were developed by ODA , working with local stakeholders. The plans include goals, objectives and recommended practices for agriculture to improve water quality and the rules require certain conditions to be met.

Oregon Parks and Recreation Department manages publicly-owned properties throughout the state including the Willamette Greenway. While the department's primary emphasis is on recreation, park land management conserves and supports a variety of conservation goals. Each state park management plan addresses the unique features of the site and identifies specific actions to enhance them. For example, park managers are reintroducing fire at Champoeg State Heritage Area and Elijah Bristow State Park as a tool for restoring Willamette Valley white oak savannas.

Oregon Department of Transportation (ODOT) shares staff and consults with Oregon Department of Fish and Wildlife regarding the effects of road construction on habitat, particularly fish passage. ODOT is increasingly addressing habitat connectively and exploring opportunities to incorporate wildlife passage into road and highway plans. A statewide bridge reconstruction project launched in 2002 has served as a means to streamline planning and work in concert with fish and wildlife programs.

Water Resources Department manages Oregon surface and groundwater. The agency enforces water laws, facilitates voluntary efforts to restore stream flows and works with watershed groups on water supply issues. Oregon water rights are based on seniority. On many streams throughout the state, by the end of summer, there is only enough water to supply users who established their rights in the late 1800s. In settings where water rights are over allocated--more rights exist than water in the stream--the Water Resources Department is the arbitrator of competing uses: industries, agriculture, municipalities or fish and wildlife.

Federal Agencies

Oregon state government is one player among a broad spectrum of organizations engaged in conservation activities. The federal government manages over 34 million acres of publicly-owned land in Oregon, comprising over 50 percent of the state. Management of these lands primarily falls under the Departments of Interior and Agriculture. Specific entities within those departments include:

- The US Forest Service -- manages approximately 15.6 million acres of national forests and grasslands in Oregon.
- The US Bureau of Land Management -- manages approximately 15.7 million acres of lands in Oregon.
- The US National Park Service -- manages almost 200,000 acres in Oregon, mostly in Crater Lake National Park.
- The US Fish and Wildlife Service -- manages an extensive refuge system.

In addition to the federal government's role as landowner, it establishes laws and executive orders that place requirements on states to comply with regulations, most of which require planning, federal and local oversight, monitoring and reporting.

Additionally, a number of federal agencies provide services that are not primarily focused on fish and wildlife species or habitat management but are strongly linked through land use. For example, the Natural Resource Conservation Service primarily provides technical support to agricultural landowners, but by virtue of that connection, it provides regional conservation support through its Resource Conservation and Development program as well as incentives programs to rural landowners for projects such as wildlife habitat enhancement and fish passage.

Local Governments

Oregon's lands include 240 incorporated cities and 36 counties that each must comply with state and federal requirements for wildlife and fish habitat conservation, but each exercises considerable individuality in doing so, based on financial resources, local habitat conditions and direction from local officials and citizens. All cities and counties have developed local comprehensive plans to address statewide planning goals. Many cites and counties have developed conservation plans to address local conservation issues.

In a number of urbanized areas of the state, cities and counties have formed voluntary councils of government to pool resources and cooperate on issues that cross jurisdictional boundaries. The nature and purpose of these councils is widely varied, reflecting their respective natural and political landscapes. There are nine such councils counting Metro Regional Government, the only such regional body to hold regulatory authority. Several engage in wildlife conservation planning and management activities ranging from open space acquisition to riparian restoration to conservation education. As an example of their capabilities, the Lane Council of Governments has partnered with Eugene and Springfield, The Nature Conservancy and the Bureau of Land Management to develop a land acquisition plan called Rivers to Ridges, acquiring and restoring the West Eugene Wetlands as native wetlands and wet prairies that also provide urban residents with open space, recreation, storm water management and flood control. Another example in the Portland area is the Metro program "Title 3." This is a regulatory program for water quality protection and floodplain management that also addresses vegetation corridors within the urban growth boundary. Also in Portland, the Metro 2040 program is a significant land use planning program that integrates fish and wildlife habitat protection, concerns about water quality and quantity, and regional growth.

In addition to these local jurisdictions and regional bodies, Oregon has a variety of special districts that deal with aspects of fish and wildlife conservation. Soil and Water Conservation Districts provide assistance to landowners primarily in rural areas. As part of that service, they assist with habitat conservation planning ranging from stream buffers to fish passage and provide assistance with incentives programs to help fund these projects.

Parks districts often pool funding from counties and cities to provide recreational services across jurisdictional boundaries. Many of them restore native vegetation on their sites, partner in planning for public open space and provide natural resource based educational activities and interpretation.

In some cases, water treatment agencies contribute significant services in restoring fish and wildlife habitat, restoring water flows to declining streams and providing educational services. For example, Clean Water Services in Hillsboro shifted its role as a municipal water treatment facility to include watershed enhancement. In addition to operating four water treatment facilities serving urban Washington County, it developed the Healthy Streams Plan, a coordinated approach for meeting the requirements of the federal Endangered Species Act and Clean Water Act in the Tualatin Basin. Oregon Department of Environmental Quality issued a Clean Water Act integrated municipal watershed-based permit for the basin, the first of its kind in the nation, which allows for creative trading between permit holders and landowners in the basin to collectively achieve water quality levels while restoring habitat.

Native American Tribes

Oregon's Native American tribes are recognized as sovereign nations by the federal and state government and are unique legal entities representing distinct communities. There are five groupings of tribes called confederations as well as four independent tribes. Their land holdings within reservations vary in size, population, governing structure and natural resource base.

In 1954, the federal government passed the Termination Act, which severed the trust relationship between the government and many native people with the result that they lost federal tribal recognition and control of their reservation lands. Of the 109 tribes and bands terminated, 62 were native to Oregon. The results were devastating and it has taken many years for Oregon's tribes to restore the trust relationship and rebuild cultural structure and economic stability, including determining the appropriate use and conservation of natural resources on reservation lands.

Many of the tribes have natural resources staff and get financial and technical assistance through the federal Bureau of Indian Affairs as well as work through partnerships. The reservations are at various stages of planning for and management of natural resources.

Table A-II.1

Tribe	Trust Restoration	Reservation size	Enrollment	Ecoregion
Burns Paiute Tribe		13,738	341	Northern Basin and Range
Confederated Tribes of Grand Ronde	1983	11,040	4,926	Willamette Valley
Coquille Tribe	1989	6,512	819	Coast Range
Confederated Tribes of Warm Springs		644,000	3,980	East Cascades/Blue Mountains
Confederated Tribes of Siletz	1977	4,204	4,094	Coast Range
Confederated Tribes of Umatilla Indian Reservation		172,882	2,447	Columbia Plateau/Blue Mountains
Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians	1984		754	Klamath Mountains/ West Cascades
Klamath Tribes	1986		3,466	East Cascades
Cow Creek Band of Umpqua Indians	1982		1,289	Klamath Mountains

Source: Oregon Blue Book (2005-2006), www.bluebook.state.or.us/national/tribal/tribal.htm.

APPENDIX III

Existing Voluntary Conservation Programs

In Oregon there are dozens of voluntary programs that contribute to habitat conservation across the state. Some programs are funded and administered by the state. Some are federally funded but administered by the state. Others are both federally funded and administered. Some private or non-profit organizations also offer conservation incentives. Here are some of the major programs available in Oregon. For a complete summary of incentive programs, visit www.biodiversitypartners.org/incentives/programoregon.shtml.

State Programs

Oregon offers a variety of voluntary conservation programs, allowing landowners to choose which type of benefit to receive and which habitats or species to protect or restore. In 2002, the Conservation Incentives Work Group, representing a variety of agencies and organizations, reviewed Oregon's landowner conservation programs and made recommendations to the 2003 Legislature. During the 2003 legislative session, the Wildlife Habitat Conservation and Management Program and the Stewardship Agreement Program were adjusted to expand eligibility for participants.

Access and Habitat Program

www.dfw.state.or.us/AH/overview.html

This program, administered by the Oregon Department of Fish and Wildlife, provides direct funding to improve wildlife habitat, with an emphasis on game species, and public hunting access to private lands. Projects can be implemented on private or public lands although the program's focus is primarily on private lands. Projects include improvement of vegetation, development of water in arid regions, invasive plant control, and fencing to control wildlife or livestock. Projects are given high priority if they reduce economic loss to landowners and involve funding commitments or in-kind contributions from other organizations and agencies. This program is funded through a surcharge on hunting licenses.

Forestry and Agricultural Stewardship Agreement Program

(Note: This program is currently under review and revision.)

In this program a landowner may enter into a voluntary stewardship agreement with the Oregon Department of Forestry and/or the Oregon Department of Agriculture. The program is open to landowners who agree to meet and exceed applicable regulatory requirements and to conserve, restore, and improve fish and wildlife habitat or water quality. In return, the program provides conservation incentives such as expedited permitting, assistance with permits, regulatory certainty, and priority access to financial and technical assistance. Statutory changes were made to this program in 2003 to expand eligibility from forest owners to all rural landowners and to identify additional incentives for landowners. In 2005, the Oregon Departments of Forestry, Agriculture, and Fish and Wildlife are working with a committee of landowner, conservation, farming, and timber interests to develop the details of this program and the administrative rules. The program is unavailable while the administrative rules are being developed, but should be available in 2006.

Oregon Watershed Enhancement Board (OWEB) Grants

www.oregon.gov/OWEB/Grants

State lottery funding for fish, wildlife and watershed restoration (From Ballot Measure 66 passed in 1998) has increased every biennium since it's passage. The 2005-2007 biennium budget for OWEB includes $41.3 million for "capital" or restoration grants.

Since 1999, the Oregon Watershed Enhancement Board has adopted priorities and is refining them to make the funding decisions more strategic. The Board has adopted land acquisition priorities that are similar to the strategy habitats. The agency is currently developing watershed restoration priorities to be geographically specific. The OWEB Board has discussed the opportunity to align priorities with those developed in the Comprehensive Wildlife Conservation Strategy.

OWEB's Small Grant Program (www.oregon.gov/OWEB/GRANTS/smgrant_main.shtml) establishes 28 local "small grant groups" com-

posed of watershed councils, soil and water conservation districts, and tribal members. Each small grant group has been allocated $100,000 each biennium for the last three biennia. The small grant program is based on local priorities developed by the local group that identifies priorities for urban, agricultural and forested land areas within their basin. The program offers expedited funding for projects that meet standardized designs. The ability to distribute relatively small amounts of grant funds (up to $10,000) for routine restoration projects has proven to be popular.

ODFW Restoration and Enhancement Program

The program supports increased recreational fishing opportunities and works to improve the commercial salmon fishery. The restoration program focuses on projects to repair and replace fish production equipment and facilities, and on collecting information on physical and biological characteristics of streams, lakes or estuaries. The enhancement program focuses on projects to increase fish production (either hatchery or natural production), increase recreational or commercial opportunities or access to the fish resources, or improve fish management capabilities. Any public or private non-profit organization may request funds to implement fish restoration or enhancement projects.

Oregon Department of Fish and Wildlife Fish Screening or Passage Cost Share Grant

www.dfw.state.or.us/ODFWhtml/InfoCntrFish/application.pdf

Oregon water users may be eligible for an Oregon Department of Fish and Wildlife cost-share incentive program and state tax credit designed to promote the installation of agency approved fish screening or fish passage devices in water diversions. Funds for fish screening and passage projects are to be used to share costs with applicants. The cost-share formula is 60/40: the state's share is 60 percent of the total cost of the project, up to $75,000, and the applicant provides 40 percent. While the per-project grant cap is $75,000, there may be exceptions based on basin- or site-specific considerations. Fish screening and passage project eligibility will be based primarily on fish species present and their status. Highest priority is given to protecting fish listed under the state or federal Endangered Species Act. Priority also is given to projects benefiting native migratory fish.

Oregonians Working for Healthy Watersheds

www.oregon-plan.org/awards

Each year, the governor recognizes exceptional actions and leadership by individuals and others toward the Oregon Plan for Salmon and Watersheds. Oregonians Working for Healthy Watersheds presents awards from the state's natural resource agencies. In the spirit of further recognizing people for their conservation efforts, and to encourage other agencies and organizations to recognize the efforts of their members, the 2004 honorees are listed.

Oregon Department of Agriculture: Leadership in Conservation Award (Klamath Water Users Association), Environmental Stewardship Awards (Ron and Vonnie Hurliman of Cloverdale, Bernie Faber of Salem, Larry and Patti Ferreira of Beaver, Port of Tillamook Bay and Jack Crider of Tillamook, Earhardt Steinborn and Don Laymon of Sherwood, and Rickreall Dairy of Rickreall).

Oregon Department of Energy: Energy Efficiency and Renewable Energy Awards (Brooks Resources Corporation and Awbrey Glen Golf Course of Bend, Tim Wood and Jay Beeks of Oregon Parks and Recreation Department).

Oregon Department of Fish and Wildlife and Oregon Department of Forestry: Fish and Wildlife Steward Award (Mark and Jolly Krautmann and Heritage Seedlings Inc. of Salem, Green Diamond Resource Company and Gerald Palmer of Tillamook, George Sandberg of Roseburg, Doug and Jo Winn and Jaussaud Ranches of Walla Walla).

Oregon Department of Forestry: Operator of the Year Award (Mark and Sarah Tsiatsos and M&S Timber Company of LaGrande, Brent Parries and Pacific Forest Contractors of Estacada, Lone Rock Logging and Lone Rock Timber Company of Roseburg), Tree Farmer of the Year (Chris and Donna Heffernan and North Slope Hay Company of North Powder).

Oregon Department of State Lands: State Land Board Lessee Award (Mark and Debbie Knaupp and Mud Slough Wetland Mitigation Bank of Rickreall), State Land Board Stream Award (Ted Reese and Janet Oatney of Washington County DLUT Operations Division), State Land Board Wetland Award (Jett Blackburn and Sodhouse Farms of Burns).

Oregon Department of Water Resources: Stewardship and Conservation Award (Lucien and Juliette Gundermand and Crown Hill Farm of McMinnville, Arnold Irrigation District of Bend).

Other programs that recognize exceptional conservation efforts and leadership in Oregon include: The Oregon Watershed Enhancement Board's Spirit of the Oregon Plan for Salmon and Watersheds Award, Oregon Association of Conservation Districts Annual Awards, The Nature Conservancy's Conservation Leadership Awards (Lifetime Achievement, Community Partner, Business), Ecotrust's Award for Indigenous Leadership in Conservation, and numerous awards from local watershed, extension, and other landowner groups.

Riparian Lands Tax Credit Program

www.dor.state.or.us/pit/mytaxes.lasso *(click on "Browse all credits", then scroll to "Riparian")*

This income tax credit program, administered by the Oregon Department of Revenue, encourages farmers to voluntarily grow riparian vegetation along waterways while adjacent lands remain in agricultural production. Farmers must use conservation practices that improve water quality, habitat, and stream bank condition and are consistent with the local agricultural water quality management plan. Farmers can receive a state income tax credit equal to 75% of the market value of crops replaced by riparian vegetation up to 35 feet from a stream.

Riparian Lands Tax Incentive Program

www.dfw.state.or.us/lands/tax_overview.html

This property tax program, administered by Oregon Department of Fish and Wildlife offers a property tax exemption for riparian land up to 100 feet from a stream. Landowners conserve and restore riparian lands to protect the economic and ecological benefits to soil, water, fish, and wildlife. For riparian land to qualify for this program, it must be outside adopted urban growth boundaries, and zoned for forest or agricultural use. Landowners within urban growth boundaries may qualify if individual cities choose to participate.

Western Oregon Stream Restoration Program

www.dfw.state.or.us/lands/wosrp.html

Administered by Oregon Department of Fish and Wildlife, this program provides direct technical support to watershed councils and private landowners in western Oregon to implement the Oregon Plan for Salmon and Watersheds. Technical support includes pre-project assessment; design; assistance with grants, permits, implementation; and effectiveness monitoring. Projects to restore and enhance salmon habitats include increasing in-stream habitat complexity by adding large wood or boulders, enhancing riparian areas by protection or planting, and correcting fish passage problems. Program staff are located in Tillamook, Newport, Charleston, Gold Beach, Clackamas, Corvallis and Roseburg.

Wildlife Habitat Conservation and Management Program

www.dfw.state.or.us/lands/whcmp_overview.html

This program provides property tax benefits and technical assistance to landowners. Participating counties and cities identify farmland, forestland, and/or other significant habitats and ask the Oregon Fish and Wildlife Commission to designate these lands as eligible for the program. An eligible landowner develops a fish and wildlife management plan approved by Oregon Department of Fish and Wildlife. The property receives a wildlife habitat special assessment, and is assessed for property taxes as if the land was being farmed or used for commercial forestry. Farming and forestry may continue, as long as they are compatible with fish and wildlife objectives of the management plan. For most landowners, this program allows their property to be used for conservation, and the property shifts from farm or forest special assessment to wildlife habitat special assessment. The program does not provide cost-share, grant, or rental payments to landowners. Leaving the program may obligate landowner to back taxes if the property is not eligible for another special assessment category.

County participation in the program is optional. Fourteen of Oregon's 36 counties are currently participating: Benton, Clackamas, Deschutes, Douglas, Hood River, Jefferson, Lake, Lane, Marion, Morrow, Multnomah, Polk, Sherman, and Wheeler. Within participating counties, landowner participation is influenced largely by landowner familiarity and interest in the program rather than any strategic approach based on priority habitats. The highest participation occurs in Deschutes and Polk counties, where Oregon Department of Fish and Wildlife staff, county staff or other conservation partners actively promote the program.

Some non-participating counties may simply have other priorities. Some counties found that the mechanics of the program were complex, but this issue has been addressed through statutory changes. Other counties may perceive that their revenue from property taxes will be reduced. However, in most cases landowners' property taxes remain the same if they were already participating in a special assessment program (for example, farm or forest special assessment) prior to participating. Lack of county participation significantly limits the potential conservation benefits of this program.

Federal Conservation Programs in Oregon

Farm Bill Programs

The Farm Bill is the largest federal funding source for resource conservation, with $36 million allocated to Oregon for fiscal year 2005. It includes several programs specialized for habitat conservation, including the Conservation Reserve (and Enhancement) Program, the Wetlands Reserve Program, and the Wildlife Habitat Incentives Program. While the Farm Bill primarily subsidizes eight intensively-farmed commodity crops and not habitat and species conservation, some crops do provide habitat functions for certain wildlife species, and lands that are less suited to production can be managed for habitat values.

The 2002 Farm Bill authorized over $5 billion a year for resource conservation that primarily focuses on traditional soil and water conserva-

tion programs, which may provide secondary benefits for species and habitat conservation. There is little federal funding for urban landowners, or for family forest owners, even though the land in family forest ownership is about the same area as land owned by farmers. The only remaining family forest program in the Farm Bill is the Forest Land Enhancement Program (*www.fs.fed.us/spf/coop/programs/loa/flep.shtml*), which lost the majority of its current and future funding to fire management in the 2003 fire season.

When the federal Farm Bill is reauthorized for 2007, some of the programs listed here may change.

Conservation Reserve Program

www.fsa.usda.gov/dafp/cepd/crp.htm

The Conservation Reserve Program allows farmers to retire highly erodible cropland or other environmentally sensitive areas to vegetative cover. The program improves water quality, restores floodplains, reduces soil erosion and sedimentation, and establishes or enhances wildlife habitat. The program provides technical assistance, cost-sharing for conservation practices, and annual rental payments over the 10 - 15 year contract.

In Oregon, most lands that are eligible for the Conservation Reserve Program are in the Columbia Basin and already enrolled in the program. Starting in 2007 these 10-15 year contracts will be ending, creating an opportunity for landowners and for the Farm Service Agency in Oregon to decide whether to re-enroll these lands, which are mostly marginal for agriculture. In 2004 eligibility for this program in Oregon was expanded to include rare and declining habitats including oak savanna and wet prairie. This change makes the program available to more landowners in western Oregon, and adds a specific habitat emphasis that is well aligned with this Conservation Strategy. Because of the recent expansion of the Conservation Reserve Enhancement Program to include aquatic habitats in the entire state, the Conservation Reserve Program will focus more on uplands.

Conservation Reserve Enhancement Program

National program: *www.fsa.usda.gov/dafp/cepd/crep.htm*

Oregon program: *www.fsa.usda.gov/or/creporegon.html*

The Conservation Reserve Enhancement Program is a federal/state partnership that allows states to target local conservation priorities. The program aims to reduce water temperature to natural levels, reduce sediment and nutrient pollution, stabilize stream banks, and restore natural hydraulic and stream channel conditions. Riparian areas must be in a condition that benefits from restoration or is not providing normal riparian functions.

The Oregon Conservation Reserve Enhancement Program, which began in 1998, is authorized to enroll 100,000 acres, or about 4,000 stream miles. As of Fall 2004, less than 20,000 acres had been enrolled. Landowners must meet the eligibility criteria for the federal Conservation Reserve Program. Eligible agricultural lands include pasture, range, annual crops, grass seed, clover, and mint. Orchards, vineyards, berry fields, Christmas trees, and nursery crops are not eligible. In exchange for retiring land from agricultural production, the program provides landowners rental payments, cost-share assistance, and technical assistance. If more than 50% of the stream bank within a five-mile stream segment is enrolled, all participants within that stream segment receive a one-time bonus payment, regardless of when they enrolled in the program.

In 1999, the Farm Service Agency in Oregon worked with the National Marine Fisheries Service (now NOAA Fisheries Service) and U.S. Fish and Wildlife Service, the two agencies that have jurisdiction over federally listed species, to develop a statewide biological opinion for Oregon's Conservation Reserve Enhancement Program. This biological opinion meets the overarching requirement for "consultation" between federal agencies when federally listed species are affected by other federal programs and therefore streamlines the regulatory process for most landowners. The Biological Opinion is currently being updated because it does not apply to areas that were made eligible through recent improvements to the Oregon Conservation Reserve Enhancement program.

In the Tualatin River Basin just west of Portland, the Tualatin Soil and Water Conservation District (*www.swcd.net*) and Clean Water Services (*www.cleanwaterservices.org*) have formed an innovative partnership to further augment the Conservation Reserve Enhancement Program and tailor it to local conservation and landowner needs. The program had no participants in the Tualatin River Basin because agricultural land produces very high-value crops and the rental payments offered by the program provided little incentive for area landowners to retire land from production. In response, the partnership developed the "Enhanced" Conservation Reserve Enhancement Program by using local funds to increase rental payments for landowners who participate in the program. Clean Water Services provides surface water management and sewage treatment for the urban areas of the Tualatin Basin. Customer fees supplement landowner financial incentives to invest in healthy riparian areas. Clean Water Services has identified priority areas to focus the program's conservation efforts. The Tualatin Soil and Water Conservation District, which has long worked with rural landowners, delivers the program in coordination with the Farm Service Agency and the Natural Resources Conservation Service. The partnership has also developed a

parallel incentive program that is not based on the Conservation Reserve Enhancement Program, for landowners who find those guidelines too rigid or prefer not to participate in a federal program. In the future, the partnership also plans to develop an incentive program for forest-land and a program to reward landowners who currently conserve intact habitat.

Conservation Security Program

National program: www.nrcs.usda.gov/programs/csp

Oregon program: www.or.nrcs.usda.gov/programs/csp-2005.html

This program, new in 2004, rewards farmers for ongoing and planned conservation activities on private and tribal lands in agricultural use. Activities include improving soil, water, air, energy, plant, and wildlife resources. The Conservation Security Program is an example of a program that makes stewardship payments that reward whole-farm conservation efforts. Farmers like the program because it rewards good stewardship of their land. The program also encourages landowners to improve their stewardship to qualify for a higher level of the program.

The Conservation Security Program provides equal access to all producers in participating watersheds, regardless of size of operation, crops produced, or geographic location. Eligibility and priority for individual landowners is based on the level of current and planned conservation activities. A self-assessment allows landowners to determine if they are eligible. Stewardship payments are based on a complex formula that considers existing, new, and enhanced conservation practices. The application process is complex, but the Natural Resources Conservation Service provides landowners with technical assistance.

In 2004, only 18 priority watersheds were chosen to participate in the United States, including the Umatilla watershed in Oregon. There, 149 applicants were selected with combined acreage covering nearly 50 percent of the private land in the watershed. More than $5 million will be distributed to reward these landowners for conservation. For 2005, there are ten watersheds participating in Oregon: Chetco, Coquille, Hells Canyon, Lower Grande Ronde, Lower Willamette, Middle Columbia-Hood, Sixes, Warner Lakes, Willow, and Yamhill. The amount of funding that Oregon gets will depend on how competitive the applications are compared to the other eligible areas. The program will move to other watersheds in future years.

Environmental Quality Incentives Program (EQIP)

National: www.nrcs.usda.gov/programs/eqip

Oregon: www.or.nrcs.usda.gov/programs/fy05-eqip/eqip-fy05.html

This program, administered by the Natural Resources Conservation Service, provides direct funding and technical assistance to promote agricultural production and environmental quality as compatible goals. The program has four national priorities: reducing nonpoint source water pollution, reducing air emissions, reducing soil erosion, and promoting habitat for at-risk species. Nationally, a minimum of 60 percent of the program's funding is to be invested in improvements for livestock operations. Each state develops more specific statewide and local priorities. Private land in agricultural production is eligible for this program with an approved plan and a contract for one to ten years. The program provides cost-share and incentive payments to assist landowners in implementing structural and management changes.

Oregon received about $12 million in 2005 for the Environmental Quality Incentives Program. Nonpoint source pollution is a high priority in Oregon, with significant funding available to assist farmers and ranchers in completing and implementing required Comprehensive Nutrient Management Plans. Another statewide funding priority is water conservation, with a special program available for the Klamath Basin. Water conservation projects generally focus on irrigation efficiency, but innovative approaches such as juniper removal, that may have secondary habitat benefits, are also eligible. The Environmental Quality Incentives Program also assists landowners in becoming eligible for the Conservation Security Program. In Oregon, most funds from this program are distributed at the county level, based on locally-identified resource concerns. Many counties have identified aquatic and/or wildlife habitat as a high priority local concern.

Farm and Ranch Lands Protection Program

www.nrcs.usda.gov/programs/frpp

The purpose of the Farm and Ranch Lands Protection Program (FRPP) is to protect working agricultural land from conversion to nonagricultural uses. The program provides matching funds for the cost of purchasing agricultural conservation easements. The Natural Resources Conservation Services share of the conservation easement cannot exceed 50 percent of the appraised fair market value. The program is available to State, tribal, and local governments and certain non-governmental organizations with existing farm and ranch land protection programs. As part of its share of the cost of purchasing a conservation easement, a cooperating entity may include a charitable donation by the landowner not to exceed 25 percent of the appraised fair market value of the conservation easement. The program has eligibility requirements that apply to non-governmental organizations, eligibility requirements for lands that can be included in the program, and Adjusted Growth Income (AGI) limitations.

Wetlands Reserve Program

National: www.nrcs.usda.gov/programs/wrp

Oregon: www.or.nrcs.usda.gov/programs/wrp.html

The Wetlands Reserve Program, administered by the Natural Resources

Conservation Service, allows landowners to voluntarily retire current and former wetlands from agricultural production and restore the land for fish and wildlife habitat. The program uses conservation easements to ensure long-term conservation, while retaining it in private ownership. The land can be used for hunting, fishing, and other uses that are compatible with providing wetland functions. For landowners with a permanent conservation easement, the program covers the easement value and restoration costs. For landowners with a 30-year easement or restoration only, the benefits are reduced.

In Oregon, the Wetlands Reserve Program is well funded, with about $7 million distributed each year. The Oregon program is focused on these priorities: restoring the functional role of wetlands in agricultural ecosystems, developing habitat for migratory birds, restoring and preserving ancient crop areas for traditional cultural practices and subsistence, and restoring and connecting aquatic and riparian habitat for endangered species. Projects have been funded throughout Oregon, with almost 30,000 acres enrolled through 2005 under about 100 contracts. Soil and water conservation districts adapt the program to local priorities. In the Willamette Valley, the U.S. Fish and Wildlife Service helps implement projects.

Wildlife Habitat Incentive Program

www.nrcs.usda.gov/programs/whip

The Wildlife Habitat Incentive Program, administered by the Natural Resources Conservation Service, assists non-federal landowners who want to establish and improve fish and wildlife habitat, including landowners who are unable to meet eligibility requirements of other Farm Bill conservation programs. The program provides technical and cost-share assistance for activities identified in a wildlife habitat plan. Landowners voluntarily limit their use of the land during a five- to 15-year agreement.

Oregon's funding priorities for the Wildlife Habitat Incentive Program focus on enhancement and restoration of rare and declining habitats, habitats used by state or federally listed species, and multiple habitats with multiple species. The program has been used across Oregon with annual funding levels between $250,000 and $600,000 per year. The Oregon program provides funding to local cooperators who work with landowners, which increases the efficiency of program delivery and encourages coordination of efforts. The Wildlife Habitat Incentive Program is one of the few Natural Resources Conservation Service incentive programs that can be used in urban areas.

Conservation of Private Grazing Land Program

www.nrcs.usda.gov/programs/cpgl

The Conservation of Private Grazing Lands Program is a voluntary program that helps owners and managers of private grazing land address natural resource concerns while enhancing the economic and social stability of grazing lands and the rural communities that depend on them. The Natural Resources Conservation Service provides technical assistance to owners and managers of private, state, tribal, and other non-federally owned land managed to produce livestock and wildlife. Landowners are assisted in maintaining and improving private grazing land and its management, conserving water and improving water quality, providing habitat for fish and wildlife, maintaining and improving the aesthetic character of private grazing lands, and improving recreational opportunities. This program does not include financial assistance.

Grasslands Reserve Program

www.or.nrcs.usda.gov/programs/grp.html

The Grassland Reserve Program is a voluntary program that helps landowners and operators restore and conserve grasslands--including rangeland, pasturland, and shrubland--while maintaining the areas as grazing lands. The program emphasizes support for working grazing operations, enhancement of plant and animal biodiversity, and protection of grassland and land containing shrubs and forbs under threat of conversion to cropping or urban development.

Eligible land includes privately owned and tribal lands, such as grasslands; land that contains forbs or shrubs (including improved rangeland and pastureland); or land that is located in an area that historically has been dominated by grassland, forbs, or shrubs that has the potential to serve as wildlife habitat of significant ecological value. Offers for enrollment must contain at least 40 contiguous acres, unless the Natural Resources Conservation Service state conservationist determines that special circumstances exist to accept a lesser amount. There are also income eligibility requirements. Enrollment options are: 30-year and permanent easements; 10-year, 15-year, 20- year, or 30-year rental agreements; and cost share restoration agreements which may be used in conjunction with any easement or rental agreement. Applications are accepted by either the Natural Resources Conservation Service or the Farm Service Agency on a continuous sign-up basis.

Other Federal Programs

U.S. Forest Service Programs

Forest Legacy Program (FLP)

National: www.fs.fed.us/spf/coop/programs/loa/flp.shtml

Oregon: 159.121.125.11/forasst/Legacy/legacy.htm

The Forest Legacy Program is administered by the USDA Forest Service and individual states to protect private forest lands from conversion to non-forest uses, and to ensure that both economic uses of private forest lands and the public benefits they provide are protected for future generations. Forest land can be conserved through purchase of a conservation easement, which acquires the landowner's development rights and allows the land to remain in private ownership, or through purchase in fee simple. Each state develops an assessment of need that identifies high-priority private forest-lands to protect. To receive federal funding, states submit an application package to the Forest Service, which uses a competitive process in distributing grant funds. The program funds up to 75 percent of project costs.

In 2001, an Assessment of Need for Oregon was developed cooperatively by the Oregon Department of Forestry, the Oregon Natural Heritage Program, and the USDA Forest Service. The assessment identified 15 Forest Legacy Areas where private forest land is significantly threatened by potential conversion to residential, urban, and other non-forest uses within the next ten years. The Forest Legacy Areas, which cover about 13 percent of Oregon's private forest-land, were chosen to focus efforts where important forest resources are at risk. Ecological, social, and economic factors were considered in identifying and prioritizing the Forest Legacy Areas.

The 15 Forest Legacy Areas occur in five ecoregions: Coast Range (2), Willamette Valley (6), Klamath Mountains (3), Eastern Cascades (3), and Blue Mountains (1). The habitat priorities in each ecoregion correspond closely to the forest Strategy Habitats identified in this document.

- *Coast Range:* Forest Legacy Areas include forest habitats dominated in different areas by Sitka spruce, shore pine, Port-Orford-cedar, Oregon white oak, tan oak, grand fir, Douglas-fir, and coast redwood. Other important habitats include wetlands, saltmarshes, and coastal dunes.
- *Willamette Valley:* Forest Legacy Areas include oak woodlands, oak savanna, riparian and floodplain forests, mixed forests, and conifer forests. Forest Legacy Areas cover most of the Willamette Valley because these forest types occur across the landscape and most of this ecoregion is privately owned.
- *Klamath Mountains:* Forest Legacy Areas include oak woodlands, oak savannas, white oak/black oak/madrone forests, low-elevation ponderosa pine forests and woodlands, mixed forests, riparian bottomland forests, knobcone pine, Jeffrey pine, Port-Orford-cedar, and canyon live oak.
- *Eastern Cascades:* Forest Legacy Areas include oak woodlands, oak savannas, oak/ponderosa pine forests, ponderosa pine forests and woodlands, riparian and wetland habitats.
- *Blue Mountains:* Forest Legacy Areas include riparian and bottomland woodlands with cottonwood, alder, aspen, and spruce.

Oregon is not currently participating in the Forest Legacy Program. The Department of Forestry indicates that before the Forest Legacy Program could be implemented, the assessment of need must be updated and compatibility with the statewide land use program determined.

U.S. Fish and Wildlife Service Programs

Landowner Incentive Program

National program: fa.r9.fws.gov/lip/lip.html

Oregon program: www.dfw.state.or.us/LIP

This federal program is funded by the U.S. Fish and Wildlife Service and administered by individual states. Oregon Department of Fish and Wildlife administers the program in Oregon. It supports projects that conserve or restore habitats that benefit at-risk species on private lands. ODFW provides a significant amount of technical assistance to interested landowners, and evaluates and ranks proposals. ODFW then submits Oregon's application package to the U.S. Fish and Wildlife Service to compete with other states for a portion of the federal funding. Priority is placed on projects that benefit multiple at-risk species, have permanent benefits, and involve multiple project partners. The average annual funding level for Oregon is about $1 million.

North American Wetlands Conservation Act

birdhabitat.fws.gov/NAWCA/act.htm

This program, administered by the U.S. Fish and Wildlife Service, provides funding to promote conservation of wetlands and associated habitats for migratory birds, fish, and other wildlife. A funded grant, with partner match, serves as a four-year plan of action to conserve wetlands and wetland-dependent fish and wildlife through acquisition, easements, restoration, and/or enhancement. The application process is rigorous but provides substantial funding, between $50,000 and $1,000,000. A small grants program designed as a stepping stone to help applicants prepare for larger projects provides grants up to $50,000. Projects must include adequate wetlands-associated uplands to buffer and protect conserved wetlands and to meet the needs of wetland-associated fish and wildlife. In 2005, $65 million is available nationally for standard grants and $2 million is available for small grants.

Partners for Fish and Wildlife

partners.fws.gov/index.htm

This program, administered by the U.S. Fish and Wildlife Service, provides direct funding and/or technical assistance for voluntary restoration of fish and wildlife habitats on private land (including non-state and

non-federal land). Projects are designed to restore habitats to function as naturally as possible, preferably resulting in a self-sustaining system. Projects focus on habitats that benefit migratory birds, migratory fish, or federally threatened and endangered species, or on habitats that are designated as globally or nationally imperiled. High priority projects also complement habitat functions on National Wildlife Refuges, occur in areas identified by state fish and wildlife agencies and other partners, or reduce habitat fragmentation.

There is no formal application process. Instead, an interested landowner contacts the state program coordinator and they work together, along with public and private conservation partners, to develop the project. Program funds are used for sharing restoration project costs and are not available to lease, rent, or purchase property. Landowners commit to retain the restoration project for at least ten years.

Funding for this program is allocated for all states, with $33 million available nationally in 2004 and $17 million projected for 2005. In Oregon, this program has focused on wetlands and wet prairies, oak savanna, floodplain and in-stream habitat restoration, and fish passage in the Klamath Basin, the John Day Basin, the Lower Columbia Basin, the Willamette Valley, and along the Oregon Coast. Increased efforts have been made to build partnerships in the Rogue, Umpqua, Warner, Harney and Malheur basins to expand the program's ability to address resource issues in these areas. Other priority habitats in Oregon include sagebrush steppe and riparian areas.

Private Stewardship Grants Program

endangered.fws.gov/grants/private_stewardship

This program provides federal grants on a competitive basis to landowners engaged in voluntary conservation efforts on private lands. Individuals, groups, or local governments can apply for funding if they have identified specific private landowners to participate. Projects benefit imperiled species including federally listed, proposed, candidate and other at-risk species. This program supports on-the-ground conservation efforts on private lands, but does not fund the acquisition of property through fee title or easements.

About $6.5 million is available in 2005 for this program, with proposals competing at a regional level. In 2004, Oregon had four projects funded, totaling about $500,000, out of 97 projects and $7 million nationally.

State and Tribal Wildlife Grants

federalaid.fws.gov/swg/swg.html or *www.teaming.com*

Through the State and Tribal Wildlife Grants Program, the U.S. Fish and Wildlife Service provides annual grants to states, territories, and tribes to support cost effective conservation aimed at keeping wildlife from becoming endangered. The funding is allocated based on land area and population, with Oregon typically receiving about $1 million per year. In 2005, about $70 million is available to the states, while about $6 million is available to federally recognized tribes. Currently, these funds are used to support analysis and planning to create this Conservation Strategy. After the Conservation Strategy is completed, part of the state wildlife grant funds will be available for funding its implementation.

Other U.S. Fish and Wildlife Service Programs

A comprehensive summary of grant programs administered by the U.S. Fish and Wildlife Service can be found under "Grants-At-A-Glance" at *www.fws.gov/grants/*.

Environmental Protection Agency Programs

Targeted Watersheds Grant Program

www.epa.gov/owow/watershed/initiative

This Environmental Protection Agency program provides grants to encourage community-based protection and restoration of the nation's watersheds. This competitive grant program funds watershed organizations whose restoration plans set clear goals, focusing on water quality monitoring, innovation, and public education. At the request of the Governor's office, the Oregon Watershed Enhancement Board and the Oregon Department of Environmental Quality coordinate Oregon's involvement with this program. These agencies evaluate applications from Oregon and forward two (the maximum allowed) for national consideration. The Siuslaw Watershed is one of 14 watersheds nationwide to receive a grant in the most recent round of funding. The two state agencies are working toward coordinating priorities for Oregon's involvement in this program. In 2004, this program had about $15 million available nationally.

APPENDIX IV

Methods

Data Sources and Analysis for Species and Habitats Distribution and Abundance

Overview

We determined "species and habitats of greatest conservation need," hereafter referred to as "Strategy species" and "Strategy habitats," using updated information on species distribution and abundance from Oregon State University's Oregon Natural Heritage Information Center (ORNHIC). We also considered current studies on the habitat and distribution of species and incorporated this information into our analysis.

ORNHIC, TNC, and NatureServe: Background and previous work

ORNHIC, part of the Oregon State University's Institute for Natural Resources, has been gathering, integrating and analyzing information related to fish, wildlife and plants in Oregon since its creation in 1974. Over the last 10 years, work on statewide assessments included the Oregon Biodiversity Project, the Forest Legacy Assessment of Need, Important Bird Areas, and the Oregon Gap Analysis Project. ORNHIC has worked with the Northwest Power and Conservation Council, the U.S. Geological Survey, and many other agencies to provide updated vegetation information for Oregon and areas in adjacent states. For the development of the Conservation Strategy, ORNHIC was under contract with ODFW to provide several spatial datasets (including current and historic vegetation for each ecoregion, wildlife species distribution maps, and statewide land management information).

Under a subcontract with ORNHIC, The Nature Conservancy (TNC) provided some of the background information used in analyses towards this Strategy's development. ORNHIC has had a long working partnership with the Oregon Field Office of TNC, a national not-for-profit conservation organization with field offices in every state. Throughout the country, Natural Heritage Information Centers in many states work closely with TNC to assess the conservation status and needs of native species and plant communities. TNC uses Heritage data, among other sources, to conduct assessments of biologically important areas of land and water in ecoregions across the United States. For the purposes of this Strategy, TNC summarized pertinent information from its assessments of Oregon's ecoregions and provided this material to ODFW. TNC also coordinated a comprehensive review on invasive species (see below). In addition, TNC researched and provided descriptions of voluntary collaborative conservation success stories.

NatureServe is a non-governmental organization that develops standards for the reporting and classification of biological information and, along with its network of state natural heritage programs, manages data on at-risk species and communities. More information on the working relationships between state Natural Heritage Information Centers, TNC, and other partners, including standard protocol development, can be found at www.natureserve.org.

ORNHIC products provided to ODFW

Product: Updated vegetation maps

A revised vegetation map was created at a 30-meter pixel resolution using the NatureServe Ecological System Classification. Ecological systems are major habitat types defined by their ecological processes (e.g., fire, hydrology) and environmental components (e.g., soils, geology), which create a mosaic of characteristic plant communities and associated wildlife species (Comer et al. 2003). This classification identifies approximately 115 ecological systems in Oregon.

The vegetation map was put together using the most detailed local vegetation maps available, gathered from local land management agencies, including national forests (Deschutes, Fremont, Malheur, Mt. Hood, Ochoco, Siuslaw, Umatilla, Wallowa-Whitman, and Winema), Bureau of Land Management districts (Burns, Lakeview, Prineville, and Vale), national parks (Crater Lake, John Day Fossil Beds), SSURGO (USDA 1:24,000 soils mapping), and some regional mapping efforts including the Coastal Landscape Assessment and Modeling Study (CLAMS), the Interagency Vegetation Management Project (IVMP), new 2004 data from the Sage Map USGS project and the R6 Potential Vegetation Mod-

eling project. This information provided the initial vegetation information, and the habitat modeling further refined the analysis.

A map of the historic vegetation of Oregon was complied using detailed coverage based on the General Land Office's surveyor's notes from the 1850's where they have been developed, primarily in the Willamette, Umpqua and Rogue Valleys, along the coast and in the Columbia Plateau ecoregion, and from a regional coverage of forests, developed in the 1930's by H.J. Andrews and the U.S. Forest Service. The vegetation types in these historic maps and coverages were reclassified into the proper ecological system types.

ORNHIC calculated Davis Index scores for ecological system and wildlife habitat classifications. The Davis Index ranks habitats based on the change from the historic and existing maps and amount of remaining habitat managed for conservation values. This approach is similar to the Oregon Gap Analysis Project, which identified as priorities those habitat types that have lost significant acreage since European settlement and are underrepresented in the existing network of conservation lands in the state.

Product: Species distribution maps and wildlife habitat relationships for native vertebrate species.

For Oregon's Strategy, ORNHIC updated distribution maps for native vertebrate species. The species distribution maps were predicted with a model that considers the intersection of the updated vegetation map, an updated wildlife habitats relationships matrix, and a habitat suitability index.

Data sources for species distributions include the Oregon Breeding Bird Atlas (Adamus et al. 2001), Birds of Oregon (Marshall et al. 2003), Land Mammals of Oregon (Verts and Carraway 1998), Reptiles of the Northwest (St. John 2002), Reptiles of Washington and Oregon (Storm and Leonard, eds. 1995), Amphibians of Washington and Oregon (Leonard et al. 1993), Amphibians of Oregon, Washington and British Columbia (Corkran and Thoms 1996), information in the Oregon Natural Heritage databases, Gap Analysis Project data sets, and collected via field surveys.

Species distribution maps were developed using several different data layers. A hexagon data set, last updated in 2002, depicted species presence in each of 441 equal-area hexagons. The hexagons were originally developed for the Environmental Monitoring and Assessment Program (EMAP) of the U.S. Environmental Protection Agency. These hexagon distribution maps were reviewed by experts for each species group. ORNHIC overlaid the hexagon distribution maps with sixth field watersheds (HUCs), resulting in distribution maps with watershed boundaries. Then, for each HUC, ORNHIC assigned species a value based on the likelihood of occurrence (primarily from the hexagon data set):

- C (Confident) – 95 percent confident that the species occurs in the watershed (based on a specimen or confirmed observation.
- P (Probable) – 80-95 percent confident that the species occurs in the watershed.
- ? (Possible) – 20-75 percent confident that the species occurs in the watershed.

For the distribution maps, ORNHIC used all watersheds that were classified as "confident" or "probable" because this provided the most definitive representation of distribution.

A wildlife habitat map was created from the existing and historic vegetation maps, based on the National Vegetation Classification System (NVCS) because it is an existing, well-accepted regional and national system. Also, the NVCS is hierarchical, so can be used to group vegetation types according to wildlife use. Wildlife associated with vegetation groupings was determined through statistical analysis. The process used to identify wildlife-habitat types and associated wildlife is more fully described in Johnson and O'Neil (2001). The revised vegetation map was used, along with ancillary data on forest diameters and a ten-meter digital elevation model (to identify cliffs and canyons), to create an updated wildlife habitat map with 62 habitat types.

Wildlife Habitats Relationships matrices (WHR) were created for each ecoregion. A habitat suitability index was applied to all terrestrial vertebrate species in Oregon. The use of this index greatly improves the ability to map species distributions, since habitats of differing qualities can be mapped separately. The habitat suitability index developed was entirely based on the work of Paul Adamus and others from the Willamette Ecosystem Research Consortium (Adamus et al. 2000). The habitat's suitability for each species was scored from 0 to 5, as follows:

0 Seldom or never used habitat
1 Unsuitable habitat infrequently used
2 Poor potential habitat
3 Mediocre potential habitat
4 Good potential habitat
5 High quality potential habitat

To create the species distribution maps, wildlife habitat maps were intersected with the watershed-based distribution map. The WHR was used to identify those habitats where the species likely occurs, and the confirmed or probable presence of a species at the watershed level was used to predict the distribution of that species. Watershed occurrence limits the predicted distribution to only the regions where species have a confirmed or probable occurrence. Therefore, species are not

depicted as occurring in "suitable" habitat where use is not considered to be likely.

In providing information to ODFW for the Conservation Strategy, ORNHIC developed and applied minimum and maximum elevations to species, and modified habitat relationships and elevational limits on an ecoregional basis for some species. Wide-ranging species often use different habitats in different ecoregions, or are found at different elevations in different ecoregions. For these species (mainly birds), the species distributions were created independently for each of the 8 ecoregions where the key variables differ.

ORNHIC also calculated Davis Index scores for each wildlife species. The Davis Index scores species based on historic habitat loss and amount of remaining habitat managed for conservation values.

Product: species distribution maps for select non-native vertebrate species

ORNHIC also developed distribution maps for several widespread, introduced nonnative vertebrate species in Oregon as part of the updated Atlas of Oregon Wildlife (Csuti et al. 2001). These include birds such as European starlings and English sparrows, mammals such as the Norway rat, and amphibians such as the bullfrog. Improved maps allow us to show the distribution and spread of introduced non-native species over time.

Product: land management data layer

A statewide 1:24,000 GIS coverage showing all protected and conservation lands in Oregon was produced for the Conservation Strategy and used to display data. The land management data layer displays public and private lands with designations that strive to promote or maintain fish and wildlife habitats. The land management data layer includes designated public lands, lands owned by land trusts, and lands with easements owned by public agencies or conservation agencies designed to promote or maintain wildlife and their habitat. Efforts were made to include lands that were voluntarily protected on private lands, as well as lands that were managed for fish and wildlife based on current laws and regulations, although showing all of these lands was not always possible. All lands being managed for wildlife were included in the coverage and designated as "landscapes managed for conservation values." As part of this project, ORNHIC worked with NatureServe, the USGS Gap Analysis Program, Fish and Wildlife Agencies and Heritage Programs around the country to assure that coding and management designations were standardized to allow for integration of similar maps and coverages created in adjacent states.

Methods for determining Species and Habitats of Greatest Conservation Need ("Strategy Species and Habitats")

Approach: coarse filter/fine filter

To meet Congressional intent and to obtain plan approval, priority must be placed on "low and declining species" and "species that are indicative of the diversity and health of wildlife of the state." To achieve this, the Strategy follows a "coarse filter" (habitat) – "fine filter" (species) approach to conservation planning. Coarse-filter conservation efforts capture a larger number of species by casting a wide net over the landscape. Conservation actions focused on the maintenance of natural habitats are likely to benefit a wider range of organisms than conservation actions developed for single species. It is the best way to maintain diverse and healthy wildlife communities. In addition, conserving larger areas of terrestrial or freshwater habitat preserves system-wide ecological processes critical to the viability of the ecosystems and the survival of wildlife species inhabiting them.

However, not all species are best represented by coarse-filters. For example, species dependent on multiple habitats at different times during their life cycle, those that occur in a very narrow habitat type or small geographic area, or those that travel across a large geographic area may require special attention. To ensure that the needs of "low and declining species" were addressed, the process to identify Strategy Species focuses on rare and/or at-risk wildlife. Species covered include terrestrial and freshwater wildlife, fish, vascular plants, and invertebrates. Marine species and habitats will be addressed through the Oregon Nearshore Strategy planning process.

Coarse-filter – Strategy Habitats

In the Conservation Strategy, we use the term "habitat" in two ways. The first use is Strategy Habitats, which are derived from the wildlife habitat spatial data layers provided by ORNHIC. Strategy Habitats consist of a suite of vegetation types grouped based on similarity of wildlife use. Strategy Habitats are not species-specific, but rather encompass the need of many species. This differs from the use of "habitat" throughout the text to describe the conditions essential for an individual species to live and successfully reproduce over time.

To identify Strategy Habitats, we examined ORHNIC's wildlife habitats that had a high degree of historic loss and cross-walked the wildlife habitat maps to ecological system maps to further examine patterns of loss. We considered limiting factors and conservation issues such as invasive species and altered fire regimes. We also reviewed the life history

traits of Strategy Species to identify critical habitats for roosting, nesting, migrating, breeding, hibernating, and other requirements. Working on an ecoregional basis, we incorporated local expert knowledge, other planning efforts, and published information to evaluate habitats with high habitat loss and to select Strategy Habitats based on historic importance at the ecoregional level, amount of remaining habitat managed for conservation values, known limiting factors, and importance to Strategy Species.

Fine-filter – Strategy Species

We consulted federal, state, and ORNHIC species lists to create a list of species considered declining or otherwise at-risk within each ecoregion. Due to the considerable planning effort already completed for birds, we consulted existing management plans and other prioritization efforts to determine at-risk bird species. Introduced non-native species were not considered as potential Strategy Species.

Second, we evaluated the list of declining and at-risk species on an ecoregional basis. We removed species from the ecoregional "long list" using several criteria:

- The species is considered extirpated.
- The species is peripheral to the ecoregion and would benefit more from conservation efforts in other ecoregions.
- The species is truly peripheral to Oregon, based on life history characteristics.
- If there are significant questions regarding whether it is a valid species.

Species with significant taxonomic questions are considered "data gaps," under the subcategory "taxonomy undetermined." For these species, the priority would be to determine species taxonomic status. We did not remove peripheral species if the ecoregional or statewide Oregon population was considered important to overall species conservation.

Third, a set of taxonomically specific criteria were applied. In coordination with Oregon Department of Agriculture (ODA), all plants listed as "threatened" or "endangered" under the Oregon Endangered Species Act were adopted as Strategy Species. Oregon Administrative Rule provides ODA with management authority for plant conservation in Oregon. Invertebrates were evaluated based on number and distribution of known occurrences, endemism [when all or a high percent of the national or global population and/or habitat is within Oregon], and known limiting factors. In coordination with ODFW fish research biologists, ODFW district biologists, and technical experts, fish were evaluated based on species distribution, taxonomic changes, habitat degradation, known limiting factors, life history traits, and declining abundance.

Finally, for terrestrial vertebrates, several "conservation criteria" were used to evaluate species:

1. Population size is small and at risk OR greatly restricted from historic population size. The species could become extirpated in much or all of the ecoregion.
2. Declining population in ecoregion OR declining population statewide and ecoregion is important to conservation of species on statewide level
3. Estimated historic habitat loss is greater than 50% (based on GIS analysis)
4. Habitat degradation that results in detrimental effects on populations. Degradation may be due to invasive plants, absence of natural disturbance regimes (such as fire or flooding), alteration of ecological processes (such as stream hydrology or nutrient flows)
5. Other threats to populations from either natural or man-made factors including disease, predation, non-native competitors or predators, pollutants, hybridization, parasitism, or nest disturbance.
6. Restricted distribution: one of three criteria is met:
    - greater than 10% of the species' current or historic range occurs in an ecoregion (to address endemism or near-endemism)
    - OR there is a significant retraction from historic geographic range
    - OR it is a disjunct (isolated) population that is important to conservation of species throughout its range
7. Other life history traits that render the species vulnerable to potential threats, such as low reproductive rates, low dispersal ability, dependence on multiple at-risk habitats, dependence on uncommon or at-risk structures, or it gathers in concentrations for some part of it's life cycle including nesting, roosting, or feeding sites.

Vertebrate species were removed from the long list if they do not meet three "conservation criteria."

Here is an example application of these criteria.

(Example: Lewis' woodpecker in Columbia Plateau ecoregion[1])

Conservation Criteria: Population size is small and at risk OR greatly restricted from historic population size. Extirpation appears possible.

Yes – small population and has been extirpated from parts of ecoregion

Conservation Criteria: Declining population in ecoregion OR declining population statewide and ecoregion is important to conservation of species on statewide level

Yes – Breeding Bird Survey data indicate significant short-term and long-term population declines

Conservation Criteria: Considerable habitat loss (more than 50% loss based on GIS analysis and the Davis Index; calculated by ORNHIC in modeling process)

Yes – habitat loss for Lewis' woodpecker is estimated to be 52% in Columbia Plateau

Conservation Criteria: Considerable habitat degradation to the extent of having detrimental effects on populations (may include introduction of invasive plants, absence of disturbance regimes, alteration of ecological processes such as hydrologic or nutrient flows, etc.)

Yes – loss of large-diameter snags in bottomland riparian forests

Conservation Criteria: Considerable non-habitat loss threats to populations (either natural or man-made factors; includes disease, predation, exotic competitors or predators, pollutants, hybridization, parasitism, disturbance/nest destruction)

Yes – this species is vulnerable to competition from invasive European starlings

Conservation Criteria: Restricted distribution: more than 10% of species' current or historic range occurs in ecoregion (to address endemism or near-endemism and responsibility species [a high percent of the national or global population and/or habitat is within Oregon]) OR significant retraction from historic geographic range OR disjunctive population that is important to conservation of species throughout its range

No – occurs in several ecoregions

Conservation Criteria: Other life history traits that render the species vulnerable to potential threats (e.g., low reproductive rates, low dispersal ability, dependent on multiple at-risk habitats, dependent on uncommon or at-risk structures, aggregates in vulnerable maternal, roosting, or feeding sites).

None

[1]*Lewis' woodpecker is also a Strategy Species in Blue Mountains, East Cascades and Klamath Mountains ecoregions.*

For many species, data or other information was not available to answer the questions posed by the Conservation Criteria. These information gaps were used to identify survey, monitoring and research needs. We obtained additional research and monitoring needs by reviewing current research, existing plans and management efforts.

Specialized and Local Habitats

Some natural, localized habitats and landscape features are not adequately represented through the "coarse filter" of Strategy Habitats. These features often have a patchy distribution across the landscape. They may be difficult to map, particularly using satellite data, so are not represented well in spatial datasets. Some are highly specialized to the local environment and host a suite of rare or endemic species. To address the conservation needs of these habitat features, and their associated species, a second "fine filter" was used, called Specialized and Local Habitats. They were determined through review of geographic vegetation data, rare plant or animal occurrences, importance to Strategy Species, and occurrences of animal concentrations, such as migrating or wintering birds. Generally, they fell into one or more of three broad categories:

1. Landscape features that are difficult to map through satellite-derived vegetation data.
2. Vegetative communities that have less historic loss or a smaller historic distribution than Strategy Habitats, but are unique and/or particularly important to Strategy Species or other wildlife.
3. Specific types of Strategy Habitats highlighted due to their importance to Strategy Species.

Limiting Factors Assessment

To meet USFWS required elements for state strategies, the Conservation Strategy lists limiting factors for species and habitats. ODFW addressed limiting factors on a state-wide, ecoregional, and habitat-specific basis, and finally, addressed limiting factors that particularly affect a fine-filter Strategy Species where needed. ODFW used published reports and professional opinion to define and describe limiting factors. Where possible, ODFW linked its discussion of limiting factors to the list of indicators used by the Oregon State of the Environment Report (2000) to evaluate changes in the environment (egov.oregon.gov/DAS/OPB/soer2000index.shtml). This report is the result of extensive expert and stakeholder efforts to define measurable indicators for the environmental health of the state. ODFW also considered other approaches to broad-scale assessment of limiting factors (e.g., Salafsky et al. 2003, Foran and Ferenc 1999, Ferenc and Foran 2000).

Invasive Species Assessment

Established or reported non-native species of greatest management concern were determined through an analysis of Oregon Department of Agriculture's (ODA) Noxious Weed List, ODFW's Wildlife Integrity Rules, ODFW's Introduced Fish Management Strategies report, and local expert review. Factors considered included ecological impact, current distribution and abundance, trend in distribution and abundance, and management difficulty. Species were considered for an ecoregion list if they have been documented within that ecoregion.

Potentially harmful non-native species were determined through review of the Oregon Invasive Species Council's 100 Worst List, ODFW's Wildlife Integrity Rules, ODFW's Introduced Fish Management Strategies report, and local expert review. Factors considered included potential ecological impact and invasion patterns in nearby states and other similar climates. Species were determined potential invasives for an ecoregion if they have not been reported from that ecoregion, but could become established due to a favorable climate and other influencing factors.

Many invasive species may also impact farms, rangelands, managed forests, and urban areas. However, this analysis focused on those that cause the most severe ecological damage. Experts consulted included ODFW biologists, The Nature Conservancy preserve managers, county weed boards, OSU researchers, ODA staff, PSU Center for Lakes and Reservoirs, and federal land management agency botanists.

Developing Conservation Opportunity Areas

One of the major goals of this Conservation Strategy is to identify areas of land and water that provide the best opportunities for conservation actions for Strategy Species and Habitats. We define "conservation opportunity areas" (COA) as those areas where the likelihood of successful conservation is strongest, and the conservation needs of wildlife and their habitats would be best met. To select these COAs, we used a three-step process comprised of a computerized site selection program, validation of the results using expert opinion, and peer review.

The first step of COA selection involved the use of a computer program called MARXAN. MARXAN is a site selection tool developed by researchers at the University of Santa Barbara which prioritizes areas for conservation based on user input. For this process, we input the locations of our priority species and habitats, along with several suitability factors, and the program output areas that were consistently selected as having the best suitability for multiple species and habitats.

Overall, conservation is most likely to succeed in areas where the fewest threats to wildlife and resource conflicts exist. For instance, an area with a higher road density may be less favorable for wildlife conservation than areas with comparatively fewer roads due to the additional hazards to wildlife that are associated with roads including increased vulnerability to vehicular accidents, pollutants to habitats from runoff, noise disturbance, and a higher occurrence of non-native species. In addition to road density, factors we considered for suitability include human population density, relative stream quality, conversion of habitat to non-native land cover, and the distance an area was from lands already managed for conservation values.

The second step of the process was to validate the selected sites and then form meaningful COAs. The areas selected by the program were checked against other spatially-explicit planning efforts (see listing below) and then reviewed by ODFW biologists. We considered dropping sites if they were isolated, were not identified in other planning efforts, or upon recommendation from biologists who gave valid justification why the habitat may be less suitable than other areas. We considered adding an area that did not get selected initially if it showed a high degree of overlap between other planning efforts and contained Strategy Species and Habitats, provided an important corridor between existing COAs, or if a biologist recommended it for having outstanding values for wildlife (such as estuaries).

Although the other planning efforts all had different goals, there was a surprising amount of overlap between their identified priority areas. We focused on the places with the most overlap between other efforts that still met our goals of having priority species and habitats. Taking a holistic approach, we emphasized areas that were suitable for a wide range of targets, linking terrestrial and aquatic habitats whenever possible.

Data Layers used for analysis and development of Conservation Opportunity Areas:

- Existing vegetation (30m pixels): ORNHIC
- Historic vegetation (30m pixels): ORNHIC
- Current Wildlife habitat (30m pixels): ORNHIC
- Historic Wildlife habitat (30m pixels): ORNHIC
- Terrestrial Wildlife species grids (30m pixels): ORNHIC
- Managed Lands: ORNHIC
- Non-game fish: ORNHIC
- 6th field HUCs
- Ecoregion boundaries
- 2004 urban growth boundary
- 2000 census population data
- Public ownership

- Streams (100k)
- 303d limited streams (DEQ)
- Roads (24k): Bureau of Land Management
- Forest ownership coverage
- Other planning efforts (see below)

Other Planning efforts referenced (where available) in developing Conservation Opportunity Areas:

- The Nature Conservancy ecoregional assessments
- Oregon Biodiversity Project Conservation Opportunity Areas
- Oregon Habitat Joint Ventures plans and Eastern Oregon All-Bird Plan
- Oregon's Important Bird Areas
- Willamette Basin Alternative Futures project
- Oregon Plan core salmon areas
- American Fisheries Society Aquatic Diversity Areas
- OWRD/ODFW stream flow restoration priorities
- Interior Columbia Basin Ecosystem Management Project
- National Forest High Priority Restoration Areas (Siuslaw National Forest)
- Coastal Salmon Restoration Initiative Priorities
- Pacific Coast Watershed Partnership (ecotrust) Conservation Priorities
- *Greater Sage-Grouse Conservation Assessment and Strategy for Oregon*

APPENDIX V

List of References

Listed below are the primary references used to develop this Strategy.

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APPENDIX VI

A Brief Look at Global Warming

In addition to the six Key Conservation Issues, the Stakeholder Advisory Committee for Oregon's Conservation Strategy identified global warming as an important issue that could impact fish and wildlife populations in the future. Oregon Department of Fish and Wildlife considered global warming to be beyond the scope of this Conservation Strategy. This issue is currently being addressed at a larger scale through the West Coast Governors' Global Warming Initiative and through other planning efforts. Here, we present a brief overview of the issue and acknowledge its potential impacts on Strategy Species and Habitats. Monitoring Strategy species and habitats will provide invaluable information about any potential effects of global warming in Oregon.

Efforts to address global warming at the national and state-wide levels

Climate greatly influences the distribution and abundance of species worldwide. There is growing consensus in the scientific community that the Earth's climate is changing, and that increasing greenhouse gas emissions appear to be contributing to the current warming trend. Recently the Intergovernmental Panel on Climate Change, an international workgroup of several thousand scientists, reviewed scientific evidence and concluded that global warming and greenhouse gas emissions represent a serious threat to human civilization and to species and habitats. The group also addressed broad-scale recommendations for managing and mitigating for global warming and other changes. To address global warming, political decision-makers must make management decisions while recognizing that these large-scale climatic processes cross political boundaries. Currently in the United States, many corporations and other entities have recognized the need to plan for the potential impacts of global warming, and their potential implications for the economy.

However, the impacts of these changes on Oregon's ecosystems are not clear. Global warming could potentially affect overall water availability by watershed; change the distribution and composition of habitat types; alter disease outbreak dynamics; and increase the intensity or frequency of wildfires, floods, droughts or other events. Evaluating these impacts requires an understanding of background levels of variability in climate data, and results vary depending on the scale considered (local, regional, global). Landscapes are already impacted by a variety of human activities, invasive species, and other disturbances. Global warming has the potential to interact with these processes in complex ways. For example, changes in landscapes that result from the changing climate could facilitate the spread of invasive species and could also affect native species at the margins of their range.

In response to the West Coast Governors' Global Warming Initiative, Governor Kulongoski and the Oregon Department of Energy convened the Governor's Advisory Group on Global Warming. The Advisory Group included 28 leaders of the business, academic, and environmental communities and state agencies, and the group received input from approximately 400 Oregonians in development of the document. The Advisory Group presented its recommendations in the report, Oregon Strategy for Greenhouse Gas Reduction (egov.oregon.gov/ENERGY/GBLWRM/Strategy.shtml). The report contains recommendations for energy efficiency, transportation, renewable energy, electric generation and other topics.

Benefits of addressing global warming in Oregon

Addressing global warming in Oregon can bring Oregonians many benefits, such as greater energy efficiency, stability of energy prices, and cleaner air and water. Farmers could benefit from cooler winters resulting in more consistent and reliable fruit crops, and cooler summer temperatures resulting in lower pest pressure and pesticide use.

Research needs include an imperative to understand links between climate and hydrology, to understand climate impacts on both unmanaged and managed habitats, and to understand the effects of increased atmospheric carbon dioxide on vegetation and runoff. There is an overall need for incentives to conserve and reallocate supplies as conditions change. Investing in these innovative technological ideas and market strategies will be vital to offset warming trends over the next decades, and bring broad economic and social benefits.

The ultimate results and impacts of global warming in Oregon are unknown. However, these impacts could significantly influence the measurement of objectives and targets identified for Strategy Species and Habitats, and the outcomes of conservation actions recommended in the Conservation Strategy. Therefore, efforts to continue evaluating and addressing the impacts of global warming are important aspects of a comprehensive conservation program.

Potential effects of Global Warming on Strategy Species and Habitats

In general, effects of climate warming on species are consistently predicted to have the greatest impact 1) alpine species, 2) coastal species, and 3) species at the southern end of their geographic range. Coastal dynamics are complex and influenced by marine processes. Alpine communities could be affected by changes in the timing of precipitation caused by global warming.

Species distribution could be an indicator for changes induced by global warming. For example, in California, range reductions in Edith's checkerspot butterflies have been linked to global climate change. Distribution is often the basis for monitoring the overall condition of a species, for determining restoration targets, and for understanding its habitat requirements. Therefore, evaluating potential disturbances that alter species' range and distribution is an important component in any conservation program.

Changes in habitats linked to global change are complex. In northern climates, boreal forest habitats could expand in distribution and productivity, with potential positive effects on industrial wood supply. However, global warming could also make forests vulnerable to disease, insect outbreaks, or competition by invasive species. Therefore, considering the local and regional dynamics is critical in evaluating and managing for global warming.

Changes in habitat that could result from anticipated global warming in Oregon include increased coastal and river flooding, snow pack declines, and lower summer river flows. Many of these changes are associated with lowered farm and forest productivity and with increased costs of energy. In Oregon, global warming can affect water resources, altering the timing and regional patterns of precipitation, increasing runoff, flood frequencies and drought frequency and severity and reducing stream flow. These changes differ by regional characteristics, historical climate and hydrology. For example, where most precipitation and stream flow is in the form of snowfall, such as alpine habitats, there could be a greater likelihood of flooding early in the year, and reduced availability of water during peak periods of demand (irrigation, etc).

Understanding historical range of variability and how to apply this understanding to natural resource management is important to manage for the impacts of global change on habitats. Restoration often assumes that desired conditions are well defined (e.g., "restore natural fire regimes; improve the health of fish and wildlife populations; rebuild forest structure"). However, this is not always the case: understanding and considering the range of variability is an essential first step in setting goals for management of impacts across the landscape.

Climatic change has a profound influence on habitat condition over time, and can influence the impacts of other factors on habitats. Therefore, efforts to evaluate and understand the impacts of global warming on habitats are an essential component to managing and monitoring the Strategy Habitats identified in this effort.

Understanding global warming in Oregon: an opportunity for Conservation Strategy monitoring

In support of Oregon's Conservation Strategy, monitoring will take place to evaluate changes in species distribution, changes in vegetation and other measures of Strategy Species and Habitats. ODFW recognizes that global warming could impact Strategy Habitats, and could alter Strategy Species' range and distribution. Information gathered in support of Conservation Strategy monitoring could contribute to understanding the potential impacts of global warming on species and habitats.