FISH & WILDLIFE RECOMMENDED BUFFER WIDTHS

	Function	Citation	Recommended Width/Range
Physical Properties	Sediment and Nutrient Reduction	Corley et. al. 1999	>33 ft
		Nichols et. al. 1998	>60 ft
		Woodward and Rock 1995	>50 ft
		Desbonnet et. al. 1994	80 ft
		Peterson et. al. 1992	>33 ft
		Castelle et. al. 1992	>50 ft
		Schellinger and Clausen 1992	75 ft
		Welsch 1991	>85 ft
		Dillaha et. al. 1989	>30 ft
		Gilliam and Skaggs 1988	290 ft- 50% sediment deposition
		Budd et. al. 1987	50 ft
		Jacobs and Gilliam 1985	50 ft
		Lynch et. al. 1985	98 ft
		Erman et. al. 1983	98 ft
		Lowrance 1984	60-120 ft
		Moring 1982	98 ft
		Young et. al. 1980	80 ft
		Erman et. al. 1977	98 ft
		Karr and Scholosser 1977	75% removal 98-125 ft
		Broderson 1973	50-200 ft (one tree height)
		Wilson 1967	49 ft (silt), and 400 ft (clay)
	Removal of Fecal Coliform	Johnson and Ryba 1992*	75-300 ft
	Moderation of Stream Temperature/Microclimate	Lynch and Corbett 1990	100 ft
		Jones et. al. 1988	100-140 ft
		Lynch et. al. 1985	98 ft
		Steinblums et. al. 1984	75-125 ft for 60-80% shade
		Hewlet and Fortson 1982	50-100 ft
	Channel Complexity	Marcus 2002	4X bankfull width
		Brosofske et. al. 1997	>145 ft
		Chapel et. al. 1992	135-220 ft
		Lynch et. al. 1985	65-100 ft
Biological Properties	Salmonid Habitat	Ligon et. al. 1999	>150 ft
		USFS/BLM 1994	300 ft
		Welsch 1991	>85ft
	Reptile/Amphibian Habitat	Burbink et. al. 1998	>325 ft
		Semlitsch 1998	540 ft
		Buhlmann 1998	440 ft
		Rudolph and Dickson 1990	98 ft
	Bird Habitat	RHJV 2000	250 ft
		Whitaker and Montevechi 1999	>160 ft
		Hagar 1999	>130 ft
		Kilgo et. al. 1998	>1600 ft
		Richardson and Miller 1997	>160
		Mitchell 1996	>325 ft
		Hodges and Krementz 1996	>325 ft
		Spackman and Hughes 1995	450 ft for 90% of species diversity
	Mammal Habitat	Dickson 1989	>160 ft
	Plant Diversity	Spackman and Hughes 1995	30-100 ft for 90% of species
	General Riparian/Ecosystem Function	Levey et. al. 2002	>80 ft
		NH FSSWT 2000	100 ft, 300 ft, 600 ft by stream order
		Spence et. al. 1996	98-145 ft
		Johnson and Ryba 1992*	> 98 ft
		Chapel et. al. 1992	160-650 ft
		Welsch 1991	>85ft

*article does not present new data, but instead is a review of existing data

Local Setback Ordinances Currently in Effect or Proposed	Buffer Width
Sonoma County	upland/urban = 50ft Russian River = 200ft flatland/valleys = 100ft
Marin County	coastal/rural = 100ft urban = 50ft
Humbolt County	100 ft perennial streams 50 ft intermittent streams
Santa Cruz County	50 ft no development zone on perennial streams 30 ft no development zone on intermittent streams
Contra Costa County	Development near Natural Creeks and Streams • new urban development = 50 ft • buildings = 30-50 ft (depending on site specific calculations) • intensification of cattle grazing = 100 ft (as part of discretionary use permit)
Santa Clara County (proposed)	150ft on all streams draining watersheds ≥ 1mi^2 (320 acres), unclear on smaller drainages
Solano County HCP	Lead agency is proposing a minimum 100 ft setback from top of bank or edge of existing riparian vegetation, whichever is greater on all 3rd order or higher streams
City of Palo Alto	100 ft buffer zone for any development other than single family residential
City of Santa Cruz	all watercourses = 100ft

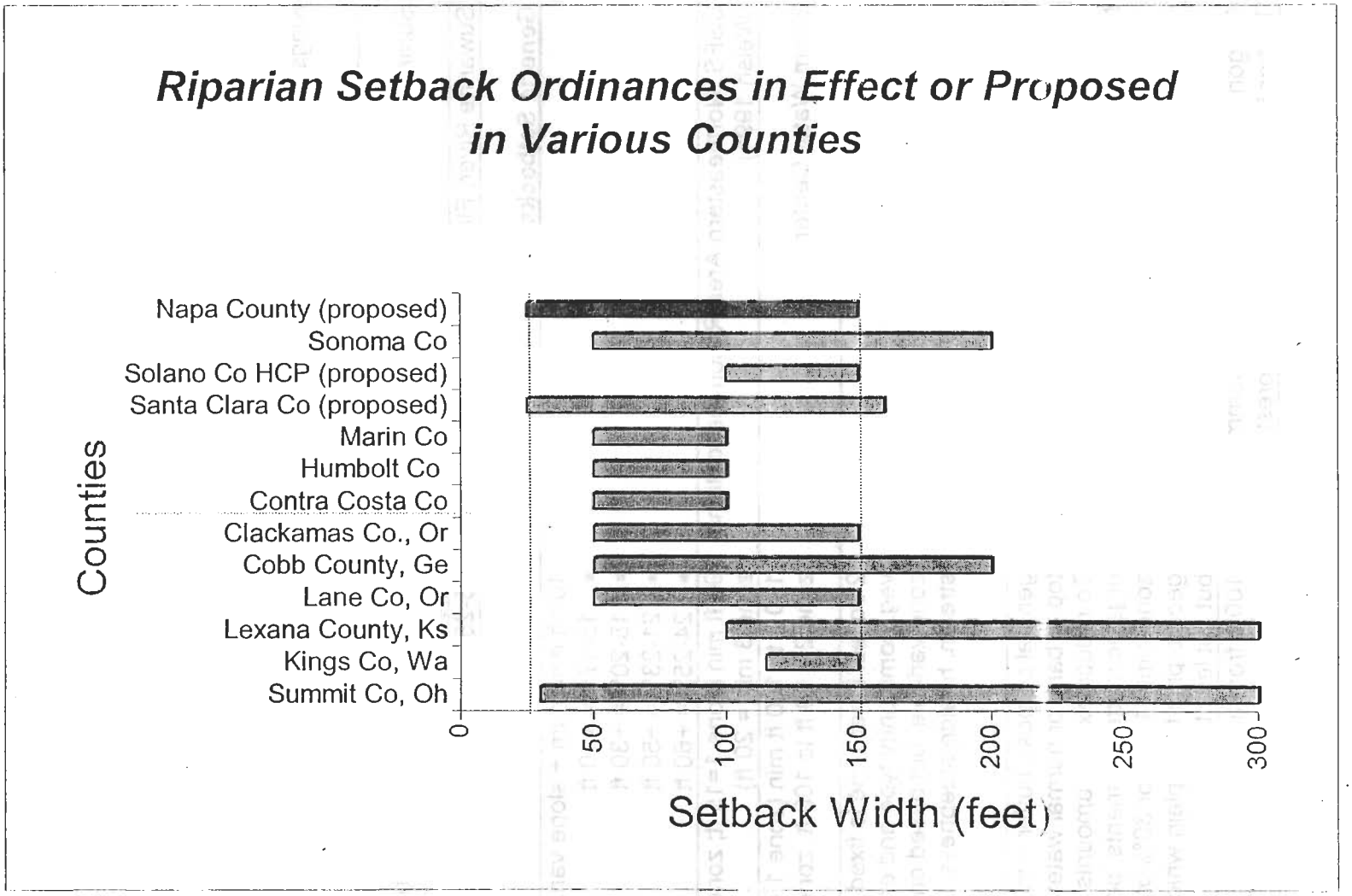
Selected Setback Ordinances in Effect Elsewhere in the U.S.	
Clackamas County, Oregon	Principal River 100 -150 ft from MHW Large Streams - 100 ft from MHW Medium Stream - 70 ft from MHW Small Stream - 50 ft from MHW
Cobb County, Georgia	50-200 ft depending on the size of the watershed
Lane County, Oregon	Large Streams w/ T&E species = 150 ft Other streams with T&E species = 125 ft Fish-bearing streams w/o T&E = 50-100 ft
Lexana County, Kansas	Sensitive Streams: • Stream order 1 = 150 ft • Stream order 2 = 250 ft • Stream order 3 = 300 ft

	Restorable Streams: • Stream order 1 = 125 ft • Stream order 2 = 200 ft • Stream order 3 = 250 ft Impacted Streams: • Stream order 1 = 100 ft • Stream order 2 = 150 ft • Stream order 3 = 200 ft
Kings County, Washington	150 ft - if property is outside urban growth area 115 ft - if property is inside urban growth area
Summit County, Ohio	Watershed >300 sq.mi. =300 ft Watershed >20 sq. mi. = 100 ft Watershed <.5 sq. mi.=30-75 ft
Suwanne River, Florida	75-250 ft depending on soil type

Generic Setbacks

EPA Ideal	100 ft minimum + slope variable • 15-17%= +10 ft • 18-20%= +30 ft • 21-23%= +50 ft • 24-25%= +60 ft
USFS, Northeastern Area Recommendations (Welsh 1991)	95 ft min (zone 1=15 ft; zone 2 min = 60; zone 3 min = 20 ft)
Storm Water Center	100 ft to 150 ft min (zone 1 = 25 ft min, zone 2 = 50 ft to 100 ft, zone 3 = 25 ft min)
Kondolf et. al. 1996	2 zones: inner zone is fixed, but based on veg. community type and energy; outer zone variable, but based on proximity to stream, hillside steepness, soil erodibility
NRCS	general purpose buffer – min. 15 ft from top of bank or normal water line To reduce excess amounts of sediment, organic matter, nutrients, pesticides – 2 zones: min 100 ft or 30% of the geomorphic flood plain whichever is less, but not less than 35 ft
Oregon Forest Practices Act - Commercial Timber Harvesting on Private Forest Land	100 ft from fish bearing streams

Chart 3.


Riparian Setback Ordinances in Effect or Proposed in Various Counties
Napa County (proposed)
Sonoma Co
Solano Co HCP (proposed)
Santa Clara Co (proposed)
Marin Co
Humbolt Co
Contra Costa Co
Clackamas Co., Or
Cobb County, Ge
Lane Co, Or
Lexana County, Ks
Kings Co, Wa
Summit Co, Oh
Counties
0
50
100
150
200
250
300
Setback Width (feet)