

NPAFC

Doc. 1179

Rev.

Rev. Date:

**HIGH SEAS SALMONID
CODED-WIRE TAG RECOVERY DATA, 2009**

**Adrian G. Celewycz¹, Jerald D. Berger², Jonathan Cusick³, Nancy D. Davis⁴,
Masa-aki Fukuwaka⁵, and Patrick W. Malecha¹**

¹**NOAA, NMFS, Alaska Fisheries Science Center, Auke Bay Laboratories
Ted Stevens Marine Research Institute,
17109 Point Lena Loop Road, Juneau, AK 99801 USA**

²**NOAA, NMFS, Alaska Fisheries Science Center
7600 Sand Point Way N.E., Building 4
Seattle, WA 98115, USA**

³**NOAA, NMFS, Northwest Fisheries Science Center
2725 Montlake Boulevard East
Seattle, WA 98112, USA**

⁴**School of Aquatic and Fishery Sciences, University of Washington
Box 355020, Seattle, WA 98195, USA**

⁵**Hokkaido National Fisheries Research Institute, Fisheries Research Agency
116 Katsurakoi, Kushiro, 085-0802, Japan**

Submitted to the

NORTH PACIFIC ANADROMOUS FISH COMMISSION

by

the United States of America

October 2009

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:

Celewycz, A.G., J.D. Berger, J. Cusick, N.D. Davis, M. Fukuwaka, and P.W. Malecha.
2009. High seas Salmonid coded-wire tag recovery data, 2009. NPAFC Doc. 1179. 22
pp. (Available at <http://www.npafc.org>).

HIGH SEAS SALMONID CODED-WIRE TAG RECOVERY DATA, 2009

ABSTRACT

Information on high seas recoveries of salmonids (*Oncorhynchus* spp.) tagged with coded-wire tags (CWTs) has been reported annually to the International North Pacific Fisheries Commission (1981-1992) and to the North Pacific Anadromous Fish Commission (NPAFC, 1993-present). Data from these CWT recoveries are also reported into the coastwide on-line CWT recovery database (<http://www.rmpec.org>) maintained by the Regional Mark Processing Center (RMPC) of the Pacific States Marine Fisheries Commission (PSMFC). This document lists recovery data for 34 CWT salmonids that will be reported to PSMFC/RMPC for the first time. These 34 CWTs were recovered from the 2008 U.S. groundfish trawl fishery in the Gulf of Alaska (13 Chinook salmon, *Oncorhynchus tshawytscha*), the 2003, 2006, 2007, and 2009 U.S. groundfish trawl fishery in the eastern Bering Sea-Aleutian Islands (7 Chinook salmon), the 2008 Pacific hake (*Merluccius productus*) trawl fishery in the Northern Pacific Ocean off Washington/Oregon/California (WA/OR/CA, 10 Chinook salmon), the 2008 limited-entry non-hake groundfish trawl off WA/OR/CA (2 Chinook salmon), and 2008 U.S. trawl research in the northern Gulf of Alaska (2 coho salmon, *Oncorhynchus kisutch*).

INTRODUCTION

Since 1981, Pacific salmon (*Oncorhynchus* spp.) tagged with coded-wire tags (CWTs) have been recovered in commercial fisheries and research programs in the North Pacific Ocean, Gulf of Alaska, and Bering Sea-Aleutian Islands. Data from these high seas CWT recoveries have been reported annually to the International North Pacific Fisheries Commission (Dahlberg 1981-1982; Wertheimer and Dahlberg 1983-1984; Dahlberg and Fowler 1985; Dahlberg et al. 1986-1992; Margolis 1985; Margolis et al. 1989; McKinnell et al. 1991) and to the North Pacific Anadromous Fish Commission (Dahlberg et al. 1993-97; Myers et al. 1998-2005; Morris 2004; Celewycz et al. 2006-08). Data from these CWT recoveries have also been reported into the coastwide on-line CWT recovery database (<http://www.rmfc.org>) maintained by the Regional Mark Processing Center (RMPC) of the Pacific States Marine Fisheries Commission (PSMFC).

In this document, we list previously unreported data for CWT recoveries from the salmon bycatch of U.S. groundfish trawl fisheries for walleye pollock (*Theragra chalcogramma*) in the Gulf of Alaska and the eastern Bering Sea-Aleutian Islands, from the salmon bycatch of U.S. groundfish trawl fishery for Pacific hake (*Merluccius productus*) in the North Pacific Ocean off Washington/Oregon/California (WA/OR/CA), from the salmon bycatch of the limited-entry non-hake groundfish trawl fishery (WA/OR/CA), and from U.S. trawl research in the northern Gulf of Alaska. New recoveries of CWT salmonids are compared to previous recoveries of CWTs reported to the International North Pacific Fisheries Commission (INPFC, 1981-1992) and to NPAFC (1993-present).

RESULTS AND DISCUSSION

This document lists recovery data for 34 CWT salmonids that will be reported to PSMFC/RMPC database for the first time. Of these 34 new CWT recoveries, 13 CWT Chinook salmon were recovered from the Gulf of Alaska trawl fishery in 2008 (Table 1), 7 CWT Chinook salmon were recovered from the Bering Sea-Aleutian Islands trawl fishery in 2003, 2006, 2007, and 2009 (Table 2), 10 CWT Chinook salmon were recovered from the Pacific hake trawl fishery in the North Pacific Ocean off WA/OR/CA in 2008 (Table 3), 2 CWT Chinook salmon were recovered from the limited-entry non-hake groundfish trawl fishery in the North Pacific Ocean off WA/OR/CA in 2008 (Table 4), and 2 CWT coho salmon were recovered from U.S. trawl research in the central North Pacific Ocean (Table 5). Unlike past years, no CWT steelhead were recovered from Japanese gillnet research in the central North Pacific Ocean, although 13 adipose fin-clipped steelhead were examined for the presence of tags.

The geographic locations of new recoveries of CWT Chinook and coho salmon are compared to previous recoveries and are summarized by region, province, or state of origin (Figures 1-9). A recovery in the northern Gulf of Alaska in July, 2008 is a northeastern extension of the known ocean range of a Cook Inlet, Alaska hatchery Chinook salmon (Fig. 2; Table 1, recovery_id 2008091011).

ACKNOWLEDGMENTS

Fishermen, processors, observers, and scientists who participated in the high seas CWT recovery program are gratefully acknowledged. Cathy Robinson dissected salmon snouts, decoded CWTs, and entered CWT recovery data in an electronic database.

LITERATURE CITED

- Carlson, H.R., E.V. Farley, Jr., and K.W. Myers. 2000. The use of thermal otolith marks to determine stock-specific ocean distribution and migration patterns of Alaskan pink and chum salmon in the North Pacific Ocean 1996-1999. N. Pac. Anadr. Fish Comm. Bull. No. 2: 291-3000.
- Celewycz, A. G., J. D. Berger, J. Cusick, and M. Fukuwaka. High seas salmonid coded-wire tag recovery data, 2006. NPAFC Doc. 978 NOAA, NMFS, Auke Bay Laboratory, Juneau, AK. 66 p.
- Celewycz, A. G., J. D. Berger, J. Cusick, N. D. Davis, and M. Fukuwaka. 2007. High seas salmonid coded-wire tag recovery data, 2007. NPAFC Doc. 1058. 21 p. (Available at <http://www.npafc.org>).
- Celewycz, A. G., J. D. Berger, J. Cusick, N. D. Davis, and M. Fukuwaka. 2008. High seas salmonid coded-wire tag recovery data, 2008. NPAFC Doc. 1111. 25 p. (Available at <http://www.npafc.org>).
- Dahlberg, M. L. 1981. Report of incidence of coded-wire tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean during June and July 1980-1981. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 6 p.
- Dahlberg, M. L. 1982. Report of incidence of coded-wire tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea during 1980-1982. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 11 p.
- Dahlberg, M. L., and S. Fowler. 1985. Report of incidence of coded-wire tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea during 1984-1985. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 16 p.
- Dahlberg, M. L., S. Fowler, and R. Heintz. 1996. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1995-1996. NPAFC Doc. 220. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 12 p.

- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1989. Incidence of coded-wire tagged salmonids in catches of commercial and research vessels operating in the North Pacific Ocean and Bering Sea in 1988-1989. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 33 p.
- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1990. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1989-1990. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 19 p.
- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1991. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1990-1991. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 17 p.
- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1992. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1991-1992. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 12 p.
- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1993. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1992-1993. NPAFC Doc. 34. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 15 p.
- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1994. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1993-1994. NPAFC Doc. 68. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 16 p.
- Dahlberg, M. L., S. Fowler, N. Maloney, and R. Heintz. 1995. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1994-1995. NPAFC Doc. 153. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 14 p.
- Dahlberg, M. L., S. Fowler, and F. Thrower. 1997. Incidence of coded-wire tagged salmonids in commercial and research catches in the North Pacific Ocean and Bering Sea, 1996-1997. NPAFC Doc. 276. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 12 p.
- Dahlberg, M. L., S. Fowler, F. P. Thrower, and R. Heintz. 1988. Incidence of coded-wire tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea during 1987-1988. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 29 p.
- Dahlberg, M. L., F.P. Thrower, and S. Fowler. 1986. Incidence of coded-wire-tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea in 1985-1986 INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 26 p.

- Dahlberg, M. L., F. P. Thrower, and S. Fowler. 1987. Incidence of coded-wire-tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea during 1986-1987. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 50 p.
- Farley, E.V., Jr., and K. Munk. 1998. Incidence of thermally marked pink, chum and sockeye salmon in the coastal waters of the Gulf of Alaska, 1997. NPAFC Doc. 341. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, 11305 Glacier Highway, Juneau, AK 99801-8626. 18 p.
- Ignell, S.E., C.M. Guthrie III, J.H. Helle, and K. Munk. 1997. Incidence of thermally-marked chum salmon in the 1994-96 Bering Sea Pollock B-season trawl fishery. NPAFC Doc. 246. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, 11305 Glacier Highway, Juneau, AK 99801-86-26. 16 p.
- Margolis, L. 1985. Recoveries of coded wire-tagged steelhead trout, *Salmo gairdneri*, in the central and western North Pacific Ocean in 1984, and recoveries of other fin-clipped or maxillary-clipped steelhead in 1983 and 1984 by Japanese research vessels. INPFC Doc. Department of Fisheries and Oceans, Pacific Biological Station, Nanaimo, British Columbia. 7 p.
- Margolis, L., T. E. McDonald, and N. B. Hargreaves. 1989. Recoveries of coded-wire tagged and fin- and maxillary-marked salmonids in Canadian research and experimental fishing operations in the eastern North Pacific Ocean during 1985-1988, and coded-wire tagged steelhead trout in port sampling of salmonid catches from the Japanese landbased salmon fishery, 1987 and 1988. INPFC Doc. Department of Fisheries and Oceans, Pacific Biological Station, Nanaimo, British Columbia. 7 p.
- McKinnell, S.M., M.L. Dahlberg, and Y. Ishida. 1991. Incidence of coded-wire tagged salmonids in the 1991 Japanese squid driftnet fishery. INPFC Doc. Joint report by the national Sections of Canada, Japan, and the United States. 2 p.
- Morris, J. F.T., M. Trudel, D.W. Welch, M. E. Thiess, and T. B. Zubkowski. 2004. Canadian highseas salmon surveys: CWT recoveries from juvenile chinook and coho salmon on the continental shelf off British Columbia and Southeast Alaska from 1998 to 2003. (NPAFC Doc. 823.) Fisheries and Oceans Canada, Science Branch, Pacific Region, Pacific Biological Station, Nanaimo, BC, Canada. 35 p.
- Myers, K.W., K.Y. Aydin, R.V. Walker, S. Fowler, and M.L. Dahlberg. 1996. Known ocean ranges of stock of Pacific salmon and steelhead as shown by tagging experiments, 1956-95. NPAFC Doc. 192. FRI-UW-9614. Fisheries Research Institute, University of Washington, Seattle, WA. 4 p. + figs. and appends.
- Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2000. High seas salmonid coded-wire tag recovery data, 2000. (NPAFC Doc. 476.) SAFS-UW-2007. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 16 p.

- Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2001. High seas salmonid coded-wire tag recovery data, 2001. (NPAFC Doc. 557.) SAFS-UW-0111. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 31 p.
- Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2002. High seas salmonid coded-wire tag recovery data, 2002. (NPAFC Doc. 610.) SAFS-UW-0203. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 42 p.
- Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2003. High seas salmonid coded-wire tag recovery data, 2003. (NPAFC Doc. 701.) SAFS-UW-0307. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 39 p.
- Myers, K.W., A.G. Celewycz, and E.V. Farley, Jr. 2004. High seas salmonid coded-wire tag recovery data, 2004. (NPAFC Doc. 804.) SAFS-UW-0404. School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 21 p.
- Myers, K.W., N.D. Davis, A.G. Celewycz, E.V. Farley, Jr., J. Morris, M. Trudel, M. Fukuwaka, S. Kovalenko, and A. Shubin. High seas salmonid coded-wire tag recovery data, 2005. (NPAFC Doc. 905.) SAFS-UW-0505, School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. 42 p.
- Myers, K.W., R.V. Walker, A.G. Celewycz, and E.V. Farley, Jr. 1998. Incidence of coded-wire tagged salmonids in commercial catches in the North Pacific Ocean and Bering Sea, 1997-1998. NPAFC Doc. 351. FRI-UW-9811. Fisheries Research Institute, University of Washington, Seattle, WA. 8 p.
- Myers, K.W., R.V. Walker, A.G. Celewycz, and E.V. Farley, Jr. 1999. High seas salmonid coded-wire tag recovery data, 1999. NPAFC Doc. 411. FRI-UW-9911. Fisheries Research Institute, University of Washington, Seattle, WA. 31 p.
- Urawa, S., M. Kawana, G. Anma, Y. Kamei, T. Shoji, M. Fukuwaka, K.M. Munk, K.W. Myers, and E.V. Farley, Jr. 2000. Geographic origin of high-seas chum salmon determined by genetic and thermal otolith markers. NPAFC Bull. No. 2:283-290.
- Wertheimer, A. C., and M. L. Dahlberg. 1983. Report of incidence of coded-wire tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea during 1982-1983. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 14 p.
- Wertheimer, A. C., and M. L. Dahlberg. 1984. Report of incidence of coded-wire tagged salmonids in catches of foreign commercial and research vessels operating in the North Pacific Ocean and Bering Sea during 1983-1984. INPFC Doc. Auke Bay Laboratory, Alaska Fisheries Science Center, NMFS, NOAA, Juneau. 14 p.

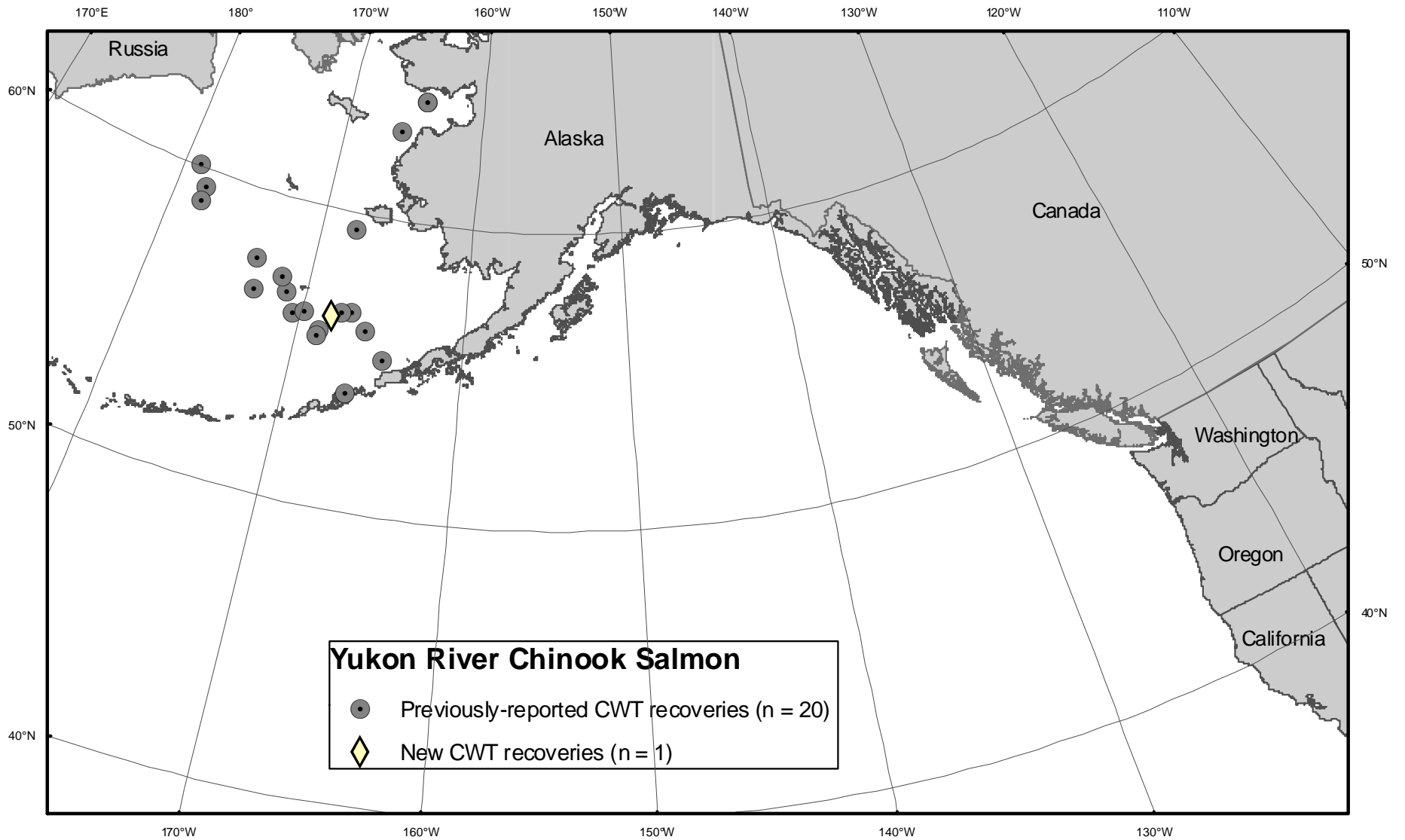


Figure 1. Ocean distribution of Yukon River Chinook salmon from CWT recoveries, 1981-2009.

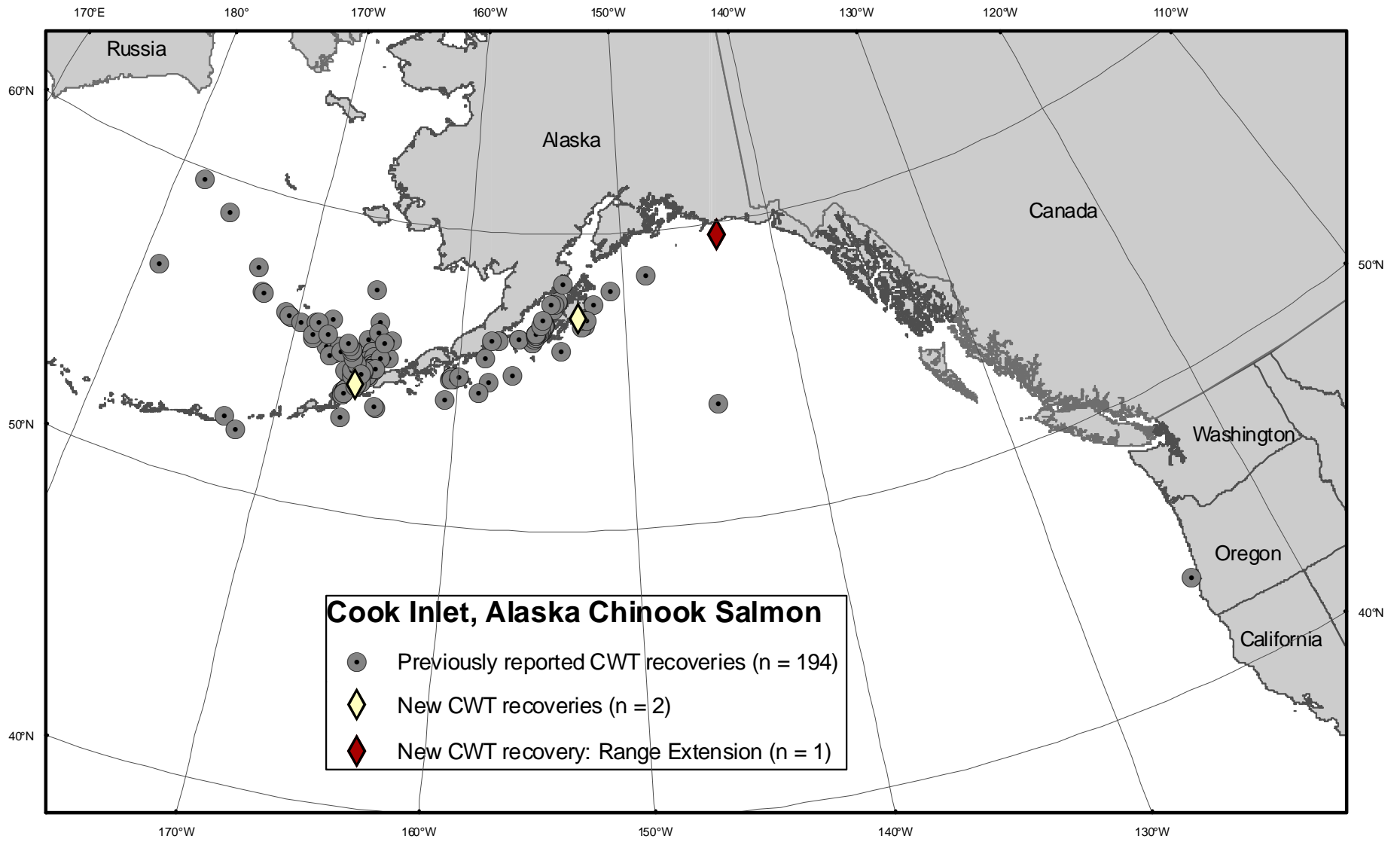


Figure 2. Ocean distribution of Cook Inlet, Alaska Chinook salmon from CWT recoveries, 1981-2009.

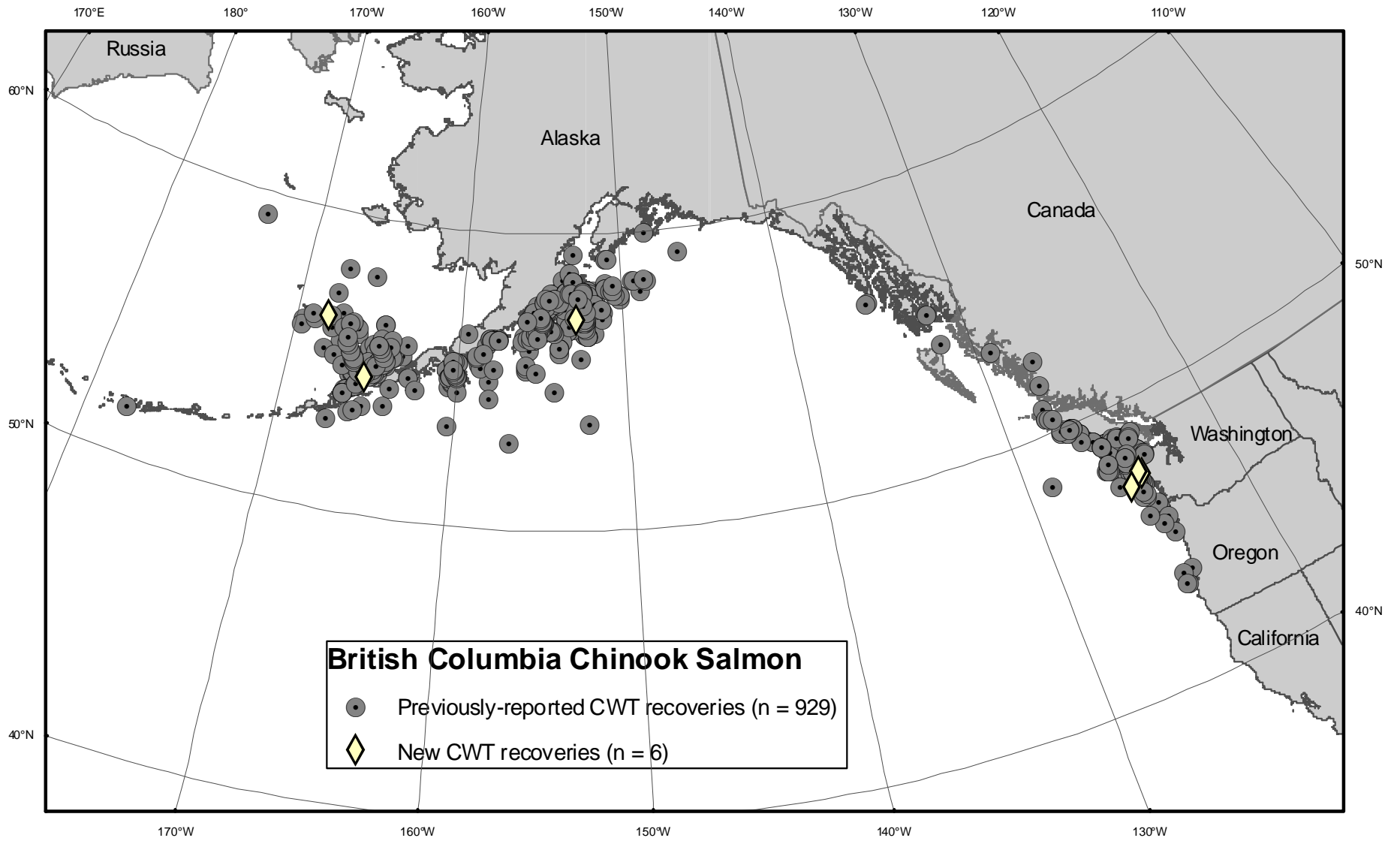


Figure 3. Ocean distribution of British Columbia Chinook salmon from CWT recoveries, 1981-2009.

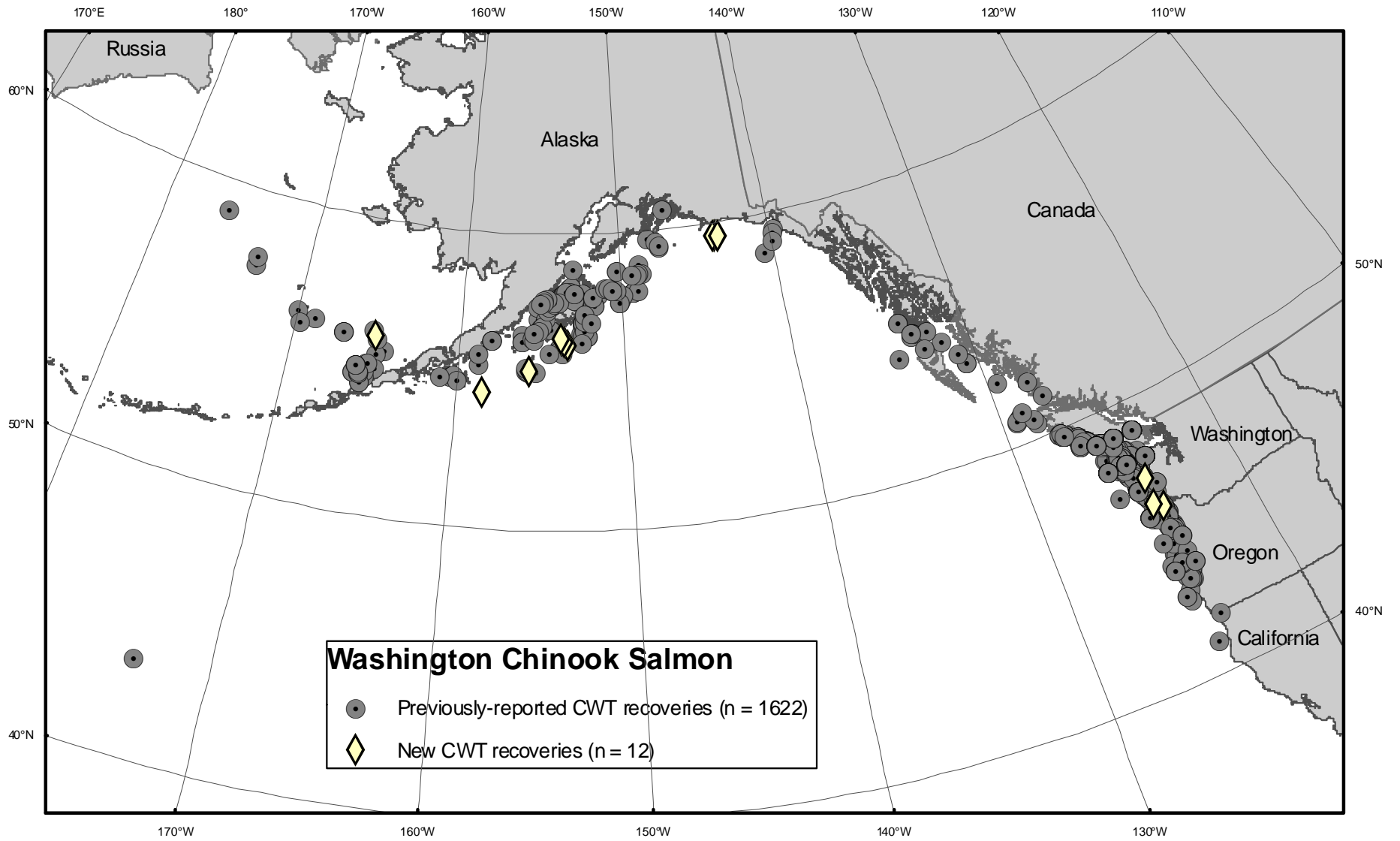


Figure 4. Ocean distribution of Washington Chinook salmon from CWT recoveries, 1981-2009.

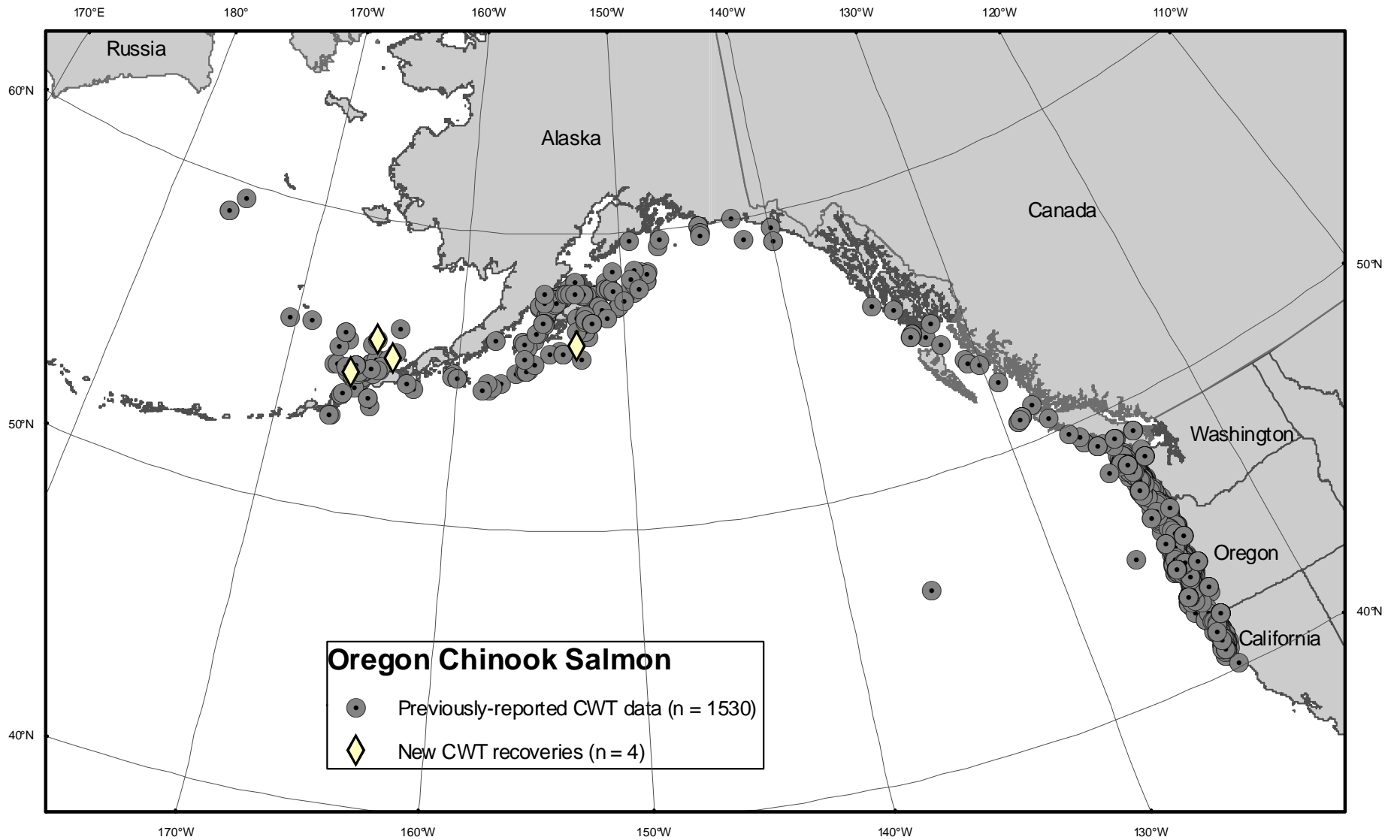


Figure 5. Ocean distribution of Oregon Chinook salmon from CWT recoveries, 1981-2009.

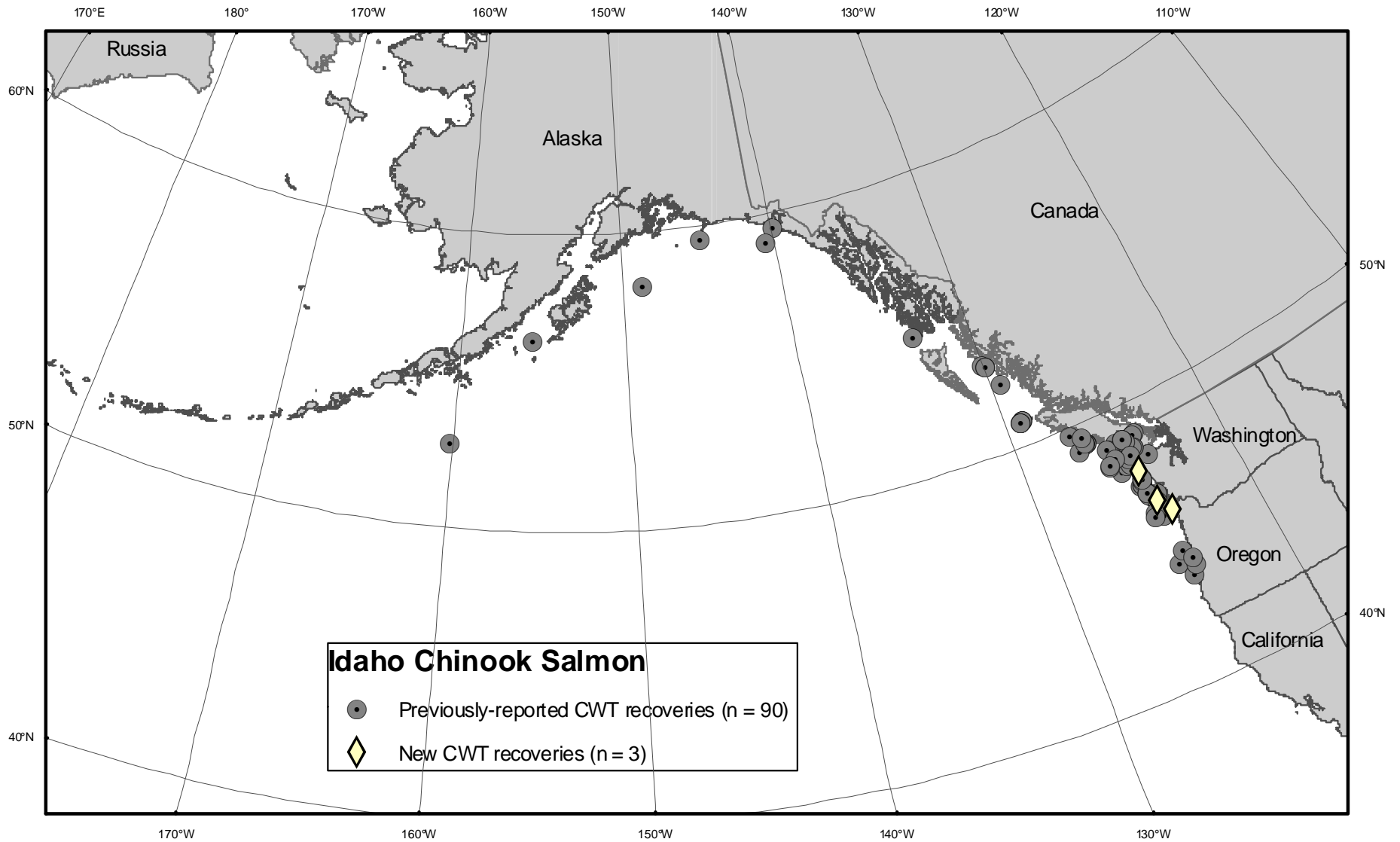


Figure 6. Ocean distribution of Idaho Chinook salmon from CWT recoveries, 1981-2009.

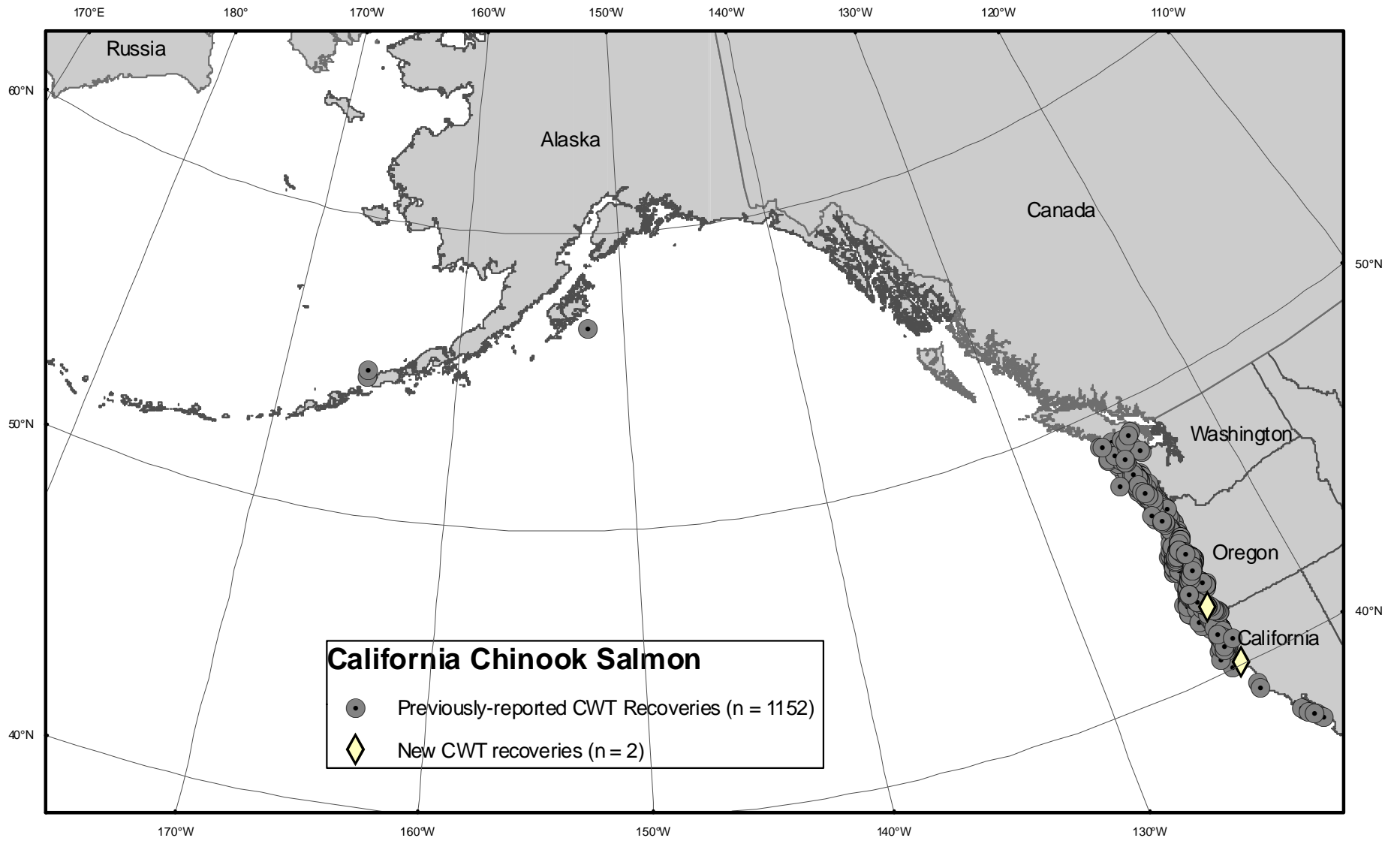


Figure 7. Ocean distribution of California Chinook salmon from CWT recoveries, 1981-2009.

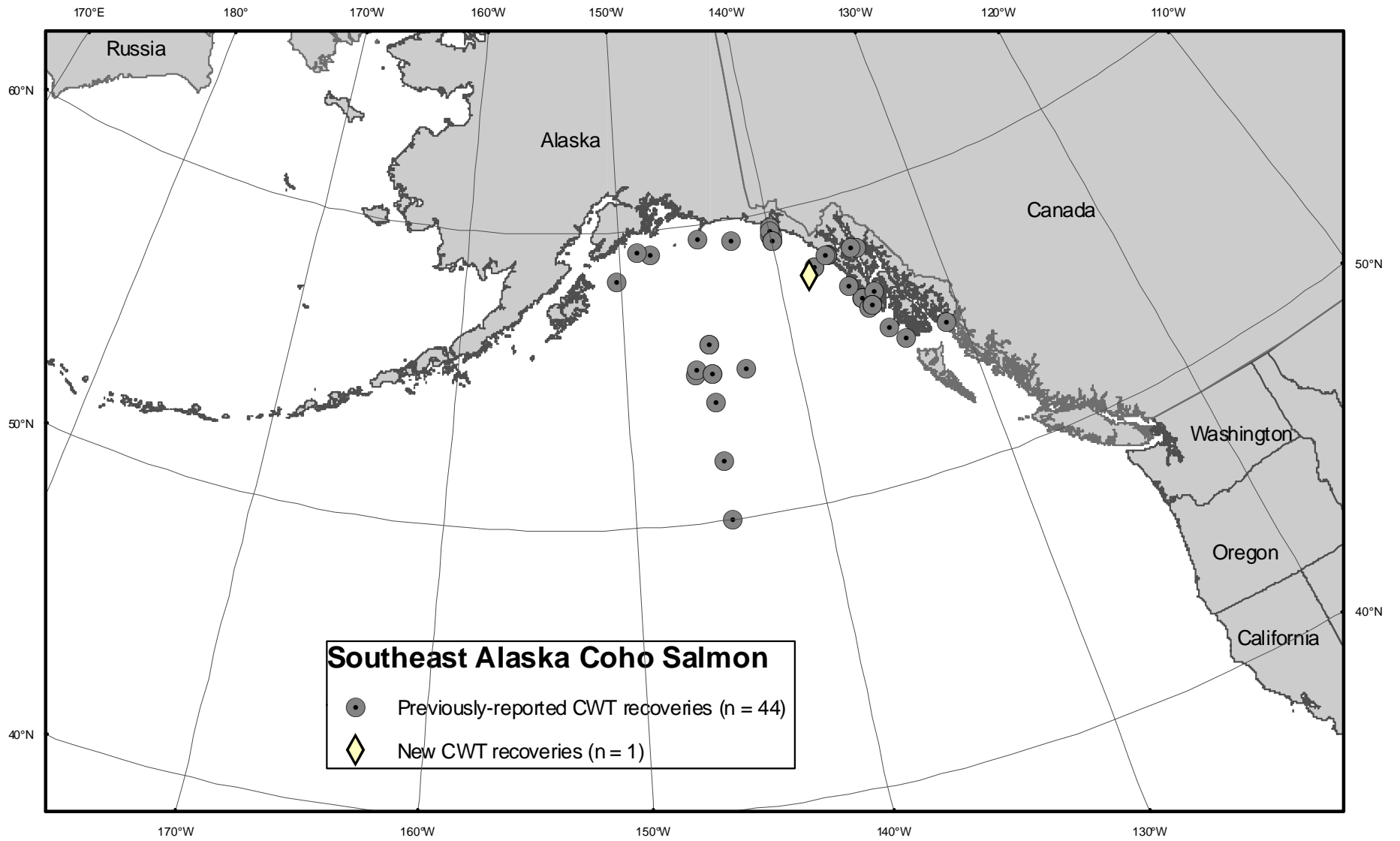


Figure 8. Ocean distribution of Southeast Alaska coho salmon from CWT recoveries, 1981-2009.

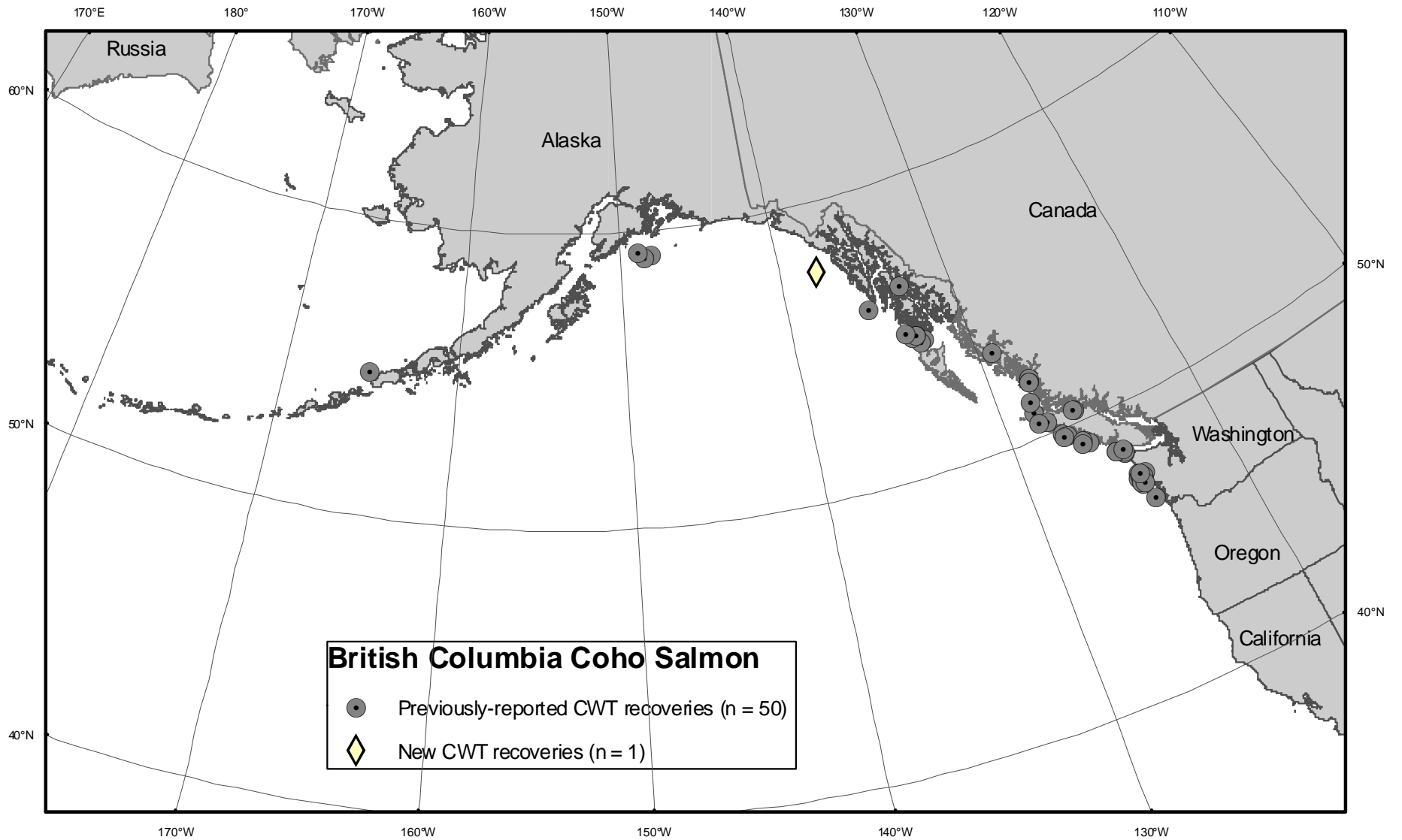


Figure 9. Ocean distribution of British Columbia coho salmon from CWT recoveries, 1981-2009.

Table 1. Release and recovery information for CWT salmon (*Oncorhynchus spp.*) captured as bycatch in the Gulf of Alaska (GOA) trawl fishery for walleye pollock (*Theragra chalcogramma*). Species: 1 = Chinook salmon; run: 1 = Spring, 2 = Summer, 3 = Fall, 8 = Late Fall Upriver Bright Chinook; rearing type: H = hatchery, W = Wild; release state: AK = Alaska, BC = British Columbia, OR = Oregon, WA = Washington. NMFS_areas are shown in Appendix Table 1.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	¹ release_location_psc_region	² release_location_psc_basin	release_location_name	release_location_state	³ release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)	NMFS_area
2008091003	632268	1	VAN WINKLE C 22.0240	3	H	GRAY	GHLC	VAN WINKLE C 22.0240	WA	WDFW	2003	2008	59	-143	
2008091008	610407	1	HANFORD REACH STOCK	8	W	UPCR	MNPR	COL R @ HANFORD REACH(36)	WA	CRFC	2004	2008	59	-143	
2008091009	632387	1	WILLAPA R 24.0251	3	H	WILP	WILR	FORK CR 24.0356	WA	WDFW	2003	2008	59	-143	
2008091011	310357	1	CROOKED CR 244-30	1	H	CNAK	COOK	CROOKED CR 244-30	AK	ADFG	2004	2008	59	-143	
2008091013	210679	1	QUEETS R 21.0016	3	H	NWC	QEUQ	SALMON R -MF 21.0139	WA	QDNR	2005	2008	54	-158	
2008091018	210679	1	QUEETS R 21.0016	3	H	NWC	QEUQ	SALMON R -MF 21.0139	WA	QDNR	2005	2008	56	-153	
2008091020	094140	1	WILLAMETTE R MID FK	1	H	LOCR	WILL	WILLAMETTE R M FK-1	OR	ODFW	2005	2008	57	-152	
2008091024	094132	1	ELK R (ELK R HT)	3	H	SOOR	SIXE	ELK R	OR	ODFW	2004	2008	56	-153	
2008091025	633384	1	HUMPTULIPS R 22.0004	3	H	GRAY	GHLC	STEVENS CR 22.0356	WA	WDFW	2005	2008	56	-153	
2008091026	210679	1	QUEETS R 21.0016	3	H	NWC	QEUQ	SALMON R -MF 21.0139	WA	QDNR	2005	2008	56	-153	
2008091028	184833	1	S-DOME CR	1	H	FRTH	UPFR	R-DOME CR	BC	CDFO	2004	2008			630
2008091029	210593	1	QUEETS R 21.0016	3	H	NWC	QEUQ	SALMON R 21.0139	WA	QDNR	2004	2008	55	-155	
2008091032	310326	1	DECEPTION CR 247-41	1	H	CNAK	COOK	DECEPTION CR 247-41	AK	ADFG	2005	2008			630

¹Region: CNAK=Alaska Central, FRTH=Fraser R.-Thompson R., COBC=Coastal British Columbia, GRAY=Grays Harbor, LOCR=Lower Columbia R. (mouth to Bonneville Dam), NOOR=North Coastal Oregon, NWC=North Washington Coast, SOOR=South Coastal Oregon, UPCR=Upper Columbia R. (above McNary Dam; excluding Snake R.), WILP=Willapa Bay.

²Basin (if different than region): COOK=Cook Inlet, GHLC=Grays Harbor, Lower Chehalis R., MNPR=NcNary Dam to Priest Rapids Dam; Walla Walla River / OR, WA; QEUQ=Queets R- Quinault R, SIXE=Sixes R.-Elk R.-Floras Cr., UPFR=Upper Fraser River (above Hope + tribs; excluding Thompson R.; WILL=Willamette River; Multnomah Channel; Milton Creek / OR; WILR=Willapa R.

Table 1 cont.

³Agency: ADFG=Alaska Department of Fish & Game, CDFO=Canadian Department of Fisheries and Oceans, CRFC=Columbia River InterTribal Fish Commission; ODFW=Oregon Department of Fish & Wildlife, QDNR=Quinault Department of Natural Resources, WDFW=Washington Department of Fish & Wildlife.

Table 2. Release and recovery information for CWT salmon (*Oncorhynchus spp.*) captured as bycatch in the Bering Sea-Aleutian Islands (BSAI) trawl fishery for walleye pollock (*Thragra chalcogramma*). Species: 1 = Chinook salmon; run: 1 = Spring, 2 = Summer, 3 = Fall; rearing type: H = hatchery; release state: AK = Alaska, BC = British Columbia, OR = Oregon, WA = Washington. NMFS_areas are shown in Appendix Table 1.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	¹ release_location_psc_region	² release_location_psc_basin	release_location_name	release_location_state	³ release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)	NMFS_area
2003091057	092109	1	GARDINER CR (UMPQUA)	3	H	SOOR	UMPQ	GARDINER CR (STEP)	OR	ODFW	2001	2003	55	-163	
2003091058	093534	1	SALMON R	1	H	NOOR	SIYA	SALMON R HATCHERY	OR	ODFW	2001	2003			509
2003091059	050785	1	QUINAULT R 21.0398	3	H	NWC	QEQU	QUINAULT NFH -COOK C	WA	FWS	2001	2003			509
2006091115	093962	1	SALMON R	3	H	NOOR	SIYA	SALMON R HATCHERY	OR	ODFW	2003	2006	54	-166	
2008091027	310330	1	DECEPTION CR 247-41		H	CNAK	COOK	FORT RICHARDSON	AK	ADFG	2003	2007	54	-165	
2009091001	080166	1	S-YUKON R	1	H	YUKN	YUKN	H-WHITEHORSE	BC	CDFO	2005	2009	56	-168	
2009091002	186062	1	S-SHUSWAP R LOW	2	H	FRTH	TOMF	H-SHUSWAP R	BC	CDFO	2006	2009	54	-165	

¹Region: CNAK=Alaska Central, FRTH=Fraser R.-Thompson R., NOOR=North Coastal Oregon, NWC=North Washington Coast, SOOR=South Coastal Oregon, YUKN=Yukon Territory (Yukon River in Yukon Territory only).

²Basin (if different than region): COOK=Cook Inlet, QEQU=Queets R- Quinault R, SIYA=Siletz R.-Yaquina R; TOMF=Thompson R. (North & South forks); UMPQ=Umpqua R..

³Agency: ADFG=Alaska Department of Fish & Game, FWS=U.S. Fish and Wildlife Service, CDFO=Canadian Department of Fisheries and Oceans, ODFW=Oregon Department of Fish & Wildlife.

Table 3. Release and recovery information for CWT salmon (*Oncorhynchus spp.*) captured as bycatch in the trawl fishery for Pacific hake (*Merluccius productus*) in the North Pacific Ocean off Washington/Oregon/California (WA/OR/CA). Species: 1 = Chinook salmon; run: 2 = Summer, 3 = Fall, 8 = Late Fall Upriver Bright Chinook; rearing type: H = hatchery, W = Wild; release state: BC = British Columbia, CA = California, ID = Idaho, WA = Washington.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	¹ release_location_psc_region	² release_location_psc_basin	release_location_name	release_location_state	³ release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)
1114	185239	1	S-CHILLIWACK R	3	H	FRTH	LWFR	R-CHILLIWACK R	BC	CDFO	2005	2008	47	-125
1738	632964	1	VOIGHT CR 10.0414	3	H	MPS	PUYA	VOIGHT CR 10.0414	WA	WDFW	2004	2008	47	-124
1740	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2008	42	-124
2503	185210	1	S-CHEMAINUS R	3	H	GST	GSVI	R-CHEMAINUS R	BC	CDFO	2005	2008	47	-124
2504	185238	1	S-CHILLIWACK R	3	H	FRTH	LWFR	R-CHILLIWACK R	BC	CDFO	2005	2008	47	-124
3003	633284	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2004	2008	47	-124
4984	633592	1	WENATCHEE R 45.0030	2	H	UPCR	WECH	WENATCHEE R 45.0030	WA	WDFW	2005	2008	46	-124
4985	633587	1	COWLITZ R @ MAYFIELD		W	LOCR	COWL	COWLITZ R @ MAYFIELD	WA	WDFW	2005	2008	46	-124
4992	108977	1	SNAKE R	3	H	SNAK	UPSN	SNAKE @ HLLS CNYON DM	ID	IDFG	2005	2008	46	-124
4996	094419	1	LYONS FERRY HATCHERY	8	H	SNAK	UPSN	SNAKE R@PITT. LNDG	ID	NEZP	2005	2008	46	-124

¹Region: FRTH=Fraser R.-Thompson R., GST=Georgia Strait, KLAM=Klamath R.-Trinity R., LOCR=Lower Columbia R. (mouth to Bonneville Dam), MPS=Puget Sound Mid, SNAK=Snake R. (ID), SOOR=South Coastal Oregon, UPCR=Upper Columbia R. (above McNary Dam; excluding Snake R.).

²Basin (if different than region): COWL=Cowlitz R. / WA; GSVI=Georgia Strait-Vancouver Island, LWFR=Lower Fraser R. (below Hope + tributaries), PUYA=Puyallup R., SNAKG=Snake R., general, TRIN=Trinity R., UPSN=Headwaters above the Clearwater R.; excluding the Salmon R. / ID; WECH=Wenatchee R.-Entiat R.-Lk. Chelan/WA.

³Agency: CDFO=Canadian Department of Fisheries and Oceans, HVT=Hoopa Valley Tribe (CA), IDFG=Idaho Department of Fish & Game; NEZP=Nez Perce Tribe (ID), WDFW=Washington Department of Fish & Wildlife.

Table 4. Release and recovery information for CWT salmon (*Oncorhynchus spp.*) captured as bycatch in the Limited-Entry Non-Hake Groundfish Trawl (CA/OR/WA). Species: 1 = Chinook salmon, 2 = Coho salmon; run: 3 = Fall; rearing type: H = hatchery; release state: WA = Washington, CA = California.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	¹ release_location_psc _region	² release_location_psc _basin	release_location_name	release_location_state	³ release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)
100306848	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2008	40	-124
100314020	051481	2	WILLARD (L WHT SALM)		H	UPCR	MEOK	METHOW R 48.0002	WA	FWS	2002	2008	37	-122

¹Region: KLAM=Klamath R.–Trinity R., UPCR=Upper Columbia R. (above McNary Dam; excluding Snake R.).

²Basin (if different than region): MEOK=Methow R., Okanogan R. / WA; TRIN=Trinity R..

³Agency: FWS=U.S. Fish and Wildlife Service, HVT=Hoopa Valley Tribe (CA).

Table 5. Release and recovery information for CWT salmon (*Oncorhynchus spp.*) captured in US trawl research in the Gulf of Alaska in 2008. Species: 2 = Coho salmon; run: 3 = Fall; rearing type: H = hatchery; release state: AK = Alaska, BC = British Columbia.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	¹ release_location_psc_region	² release_location_psc_basin	release_location_name	release_location_state	³ release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)
2008092016	041395	2	HUGH SMITH LK 101-30		W	SEAK	SEAK	HUGH SMITH LK 101-30	AK	ADFG	2006	2008	57	138
2008092019	185309	2	S-ROBERTSON CR	3	H	WCVI	SWVI	R-ROBERTSON CR	BC	CDFO	2006	2008	57	137

¹Region: SEAK=Southeast Alaska; WCVI=Western Vancouver Island.

²Basin (if different than region): SWVI=SW Vancouver Island.

³Agency: ADFG=Alaska Department of Fish & Game, CDFO=Canadian Department of Fisheries and Oceans.

Appendix Fig 1. U.S. National Marine Fisheries Service (NMFS) statistical areas in the Bering Sea and Aleutian Islands (left panel) and Gulf of Alaska right panel).

