NPAFC
Doc. 1111
Rev.____

HIGH SEAS SALMONID CODED-WIRE TAG RECOVERY DATA, 2008

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submitted to the

NORTH PACIFIC ANADROMOUS FISH COMMISSION

by the

UNITED STATES OF AMERICA

October 2008

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:
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 pp. (Available at http://www.npafc.org).

HIGH SEAS SALMONID
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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.rmpc.org) maintained by the Regional Mark Processing Center (RMPC) of the Pacific States Marine Fisheries Commission (PSMFC). This document lists recovery data for 89 CWT salmonids that will be reported to PSMFC/RMPC for the first time. These 89 CWTs were recovered from the 2006-2008 U.S. groundfish trawl fisheries in the Gulf of Alaska (21 Chinook salmon, *Oncorhynchus tshawytscha)* and eastern Bering Sea-Aleutian Islands (7 Chinook salmon), from the 2007 Pacific hake (*Merluccius productus*) trawl fishery in the Northern Pacific Ocean off Washington/Oregon/California (WA/OR/CA, 52 Chinook salmon*)*, from the limited-entry non-hake groundfish trawl off WA/OR/CA (7 Chinook salmon), and from 2005 and 2008 Japanese research vessel operations in the central North Pacific Ocean (2 steelhead, *Oncorhynchus mykiss*).

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. 2006-07). Data from these CWT recoveries have also been reported into the coastwide on-line CWT recovery database (http://www.rmpc.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 eastern Bering Sea-Aleutian Islands and Gulf of Alaska, 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 Japanese salmon research vessel operations in the central North Pacific Ocean. 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 89 CWT salmonids that will be reported to PSMFC/RMPC database for the first time. Of these 89 new CWT recoveries, 21 CWT Chinook salmon were recovered from the Gulf of Alaska trawl fishery in 2006, 2007, and 2008 (Table 1), 7 CWT Chinook salmon were recovered from the Bering Sea-Aleutian Islands trawl fishery in 2006 and 2007 (Table 2), 52 CWT Chinook salmon were recovered from the Pacific hake trawl fishery in the North Pacific Ocean off WA/OR/CA in 2007 (Table 3), 7 CWT Chinook salmon were recovered from the limited-entry non-hake groundfish trawl fishery in the North Pacific Ocean off WA/OR/CA in 2007 (Table 4), and 2 CWT steelhead were also recovered from Japanese gillnet research in the central North Pacific Ocean (Table 5).

The geographic locations of new recoveries of CWT Chinook salmon and steelhead are compared to previous recoveries and are summarized by province or state of origin (Figures 1-8). Unlike past years, there are no significant new range extensions of ocean distribution of particular stocks of salmonids to report.

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.

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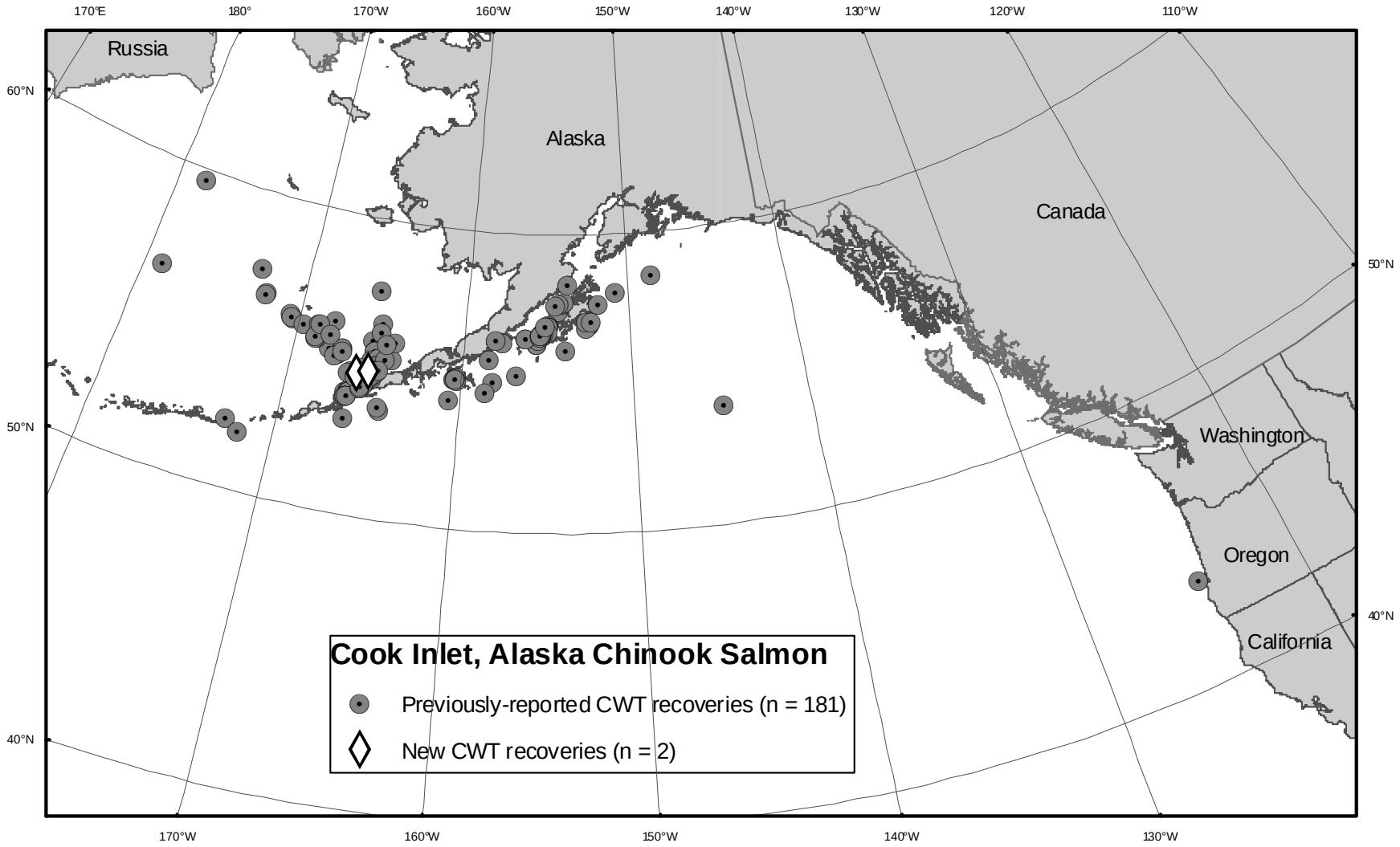


Figure 1. Ocean distribution of Cook Inlet, Alaska Chinook salmon from CWT recoveries, 1981-2008.

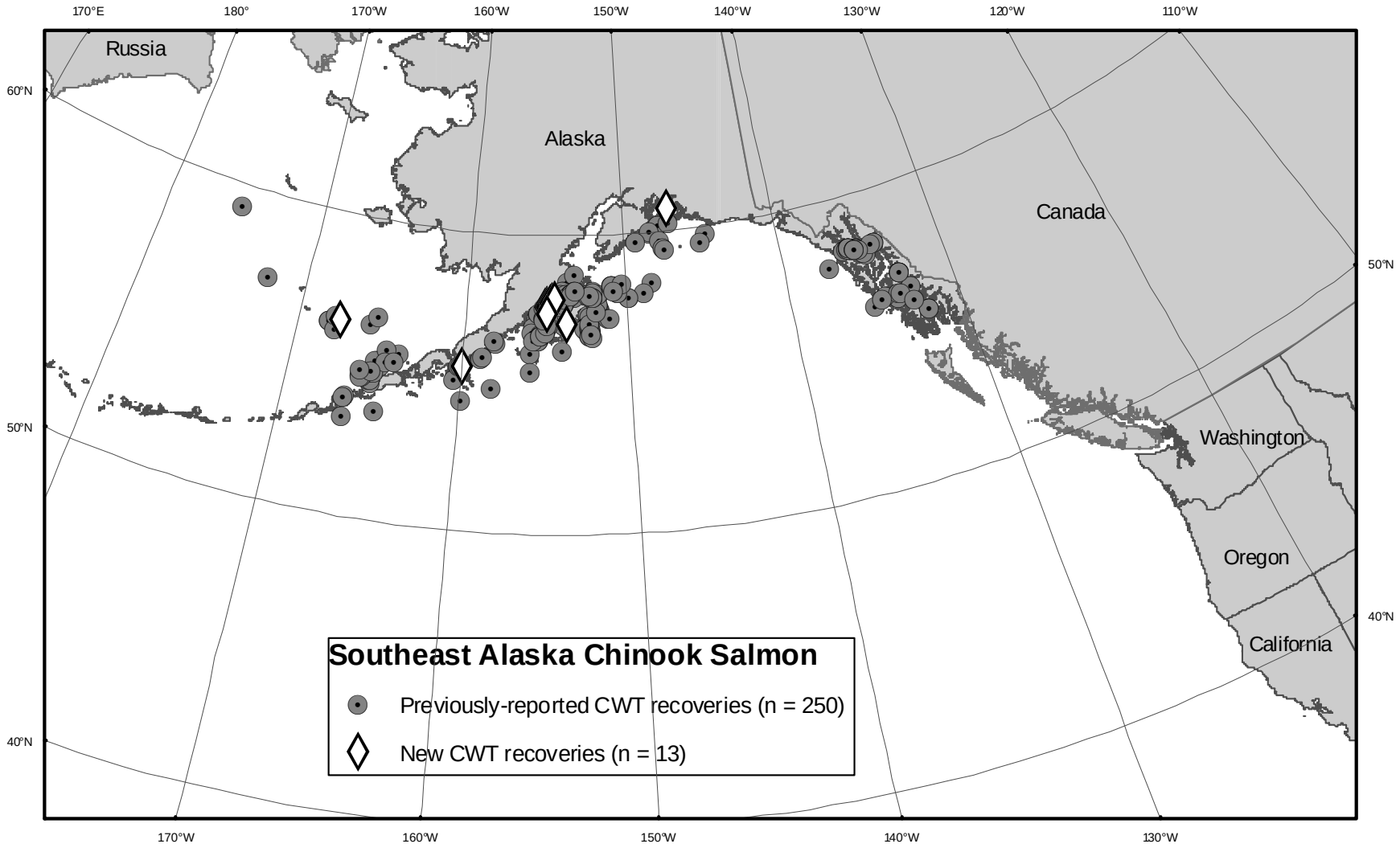


Figure 2. Ocean distribution of Southeast Alaska Chinook salmon from CWT recoveries, 1981-2008.

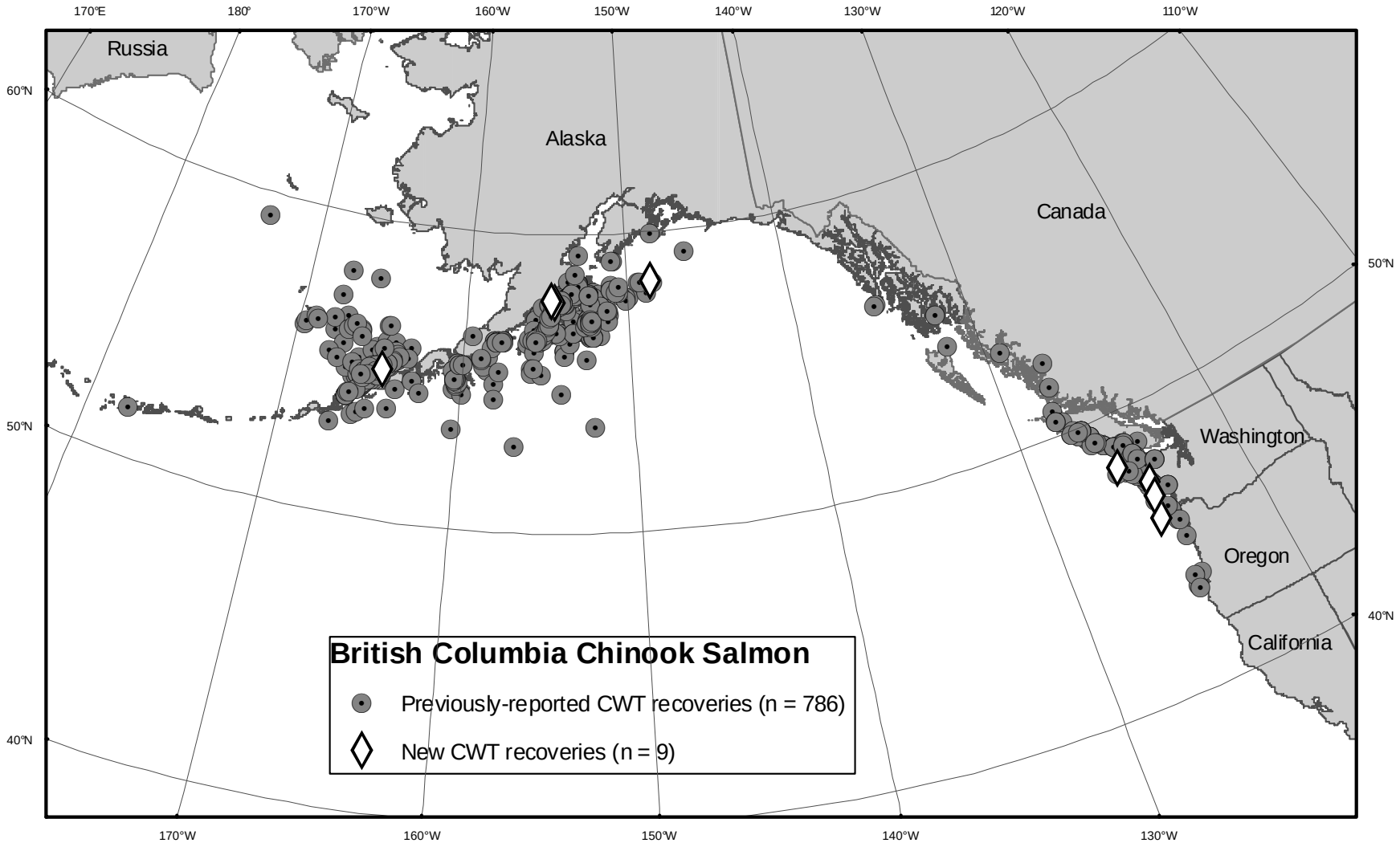


Figure 3. Ocean distribution of British Columbia Chinook salmon from CWT recoveries, 1981-2008.

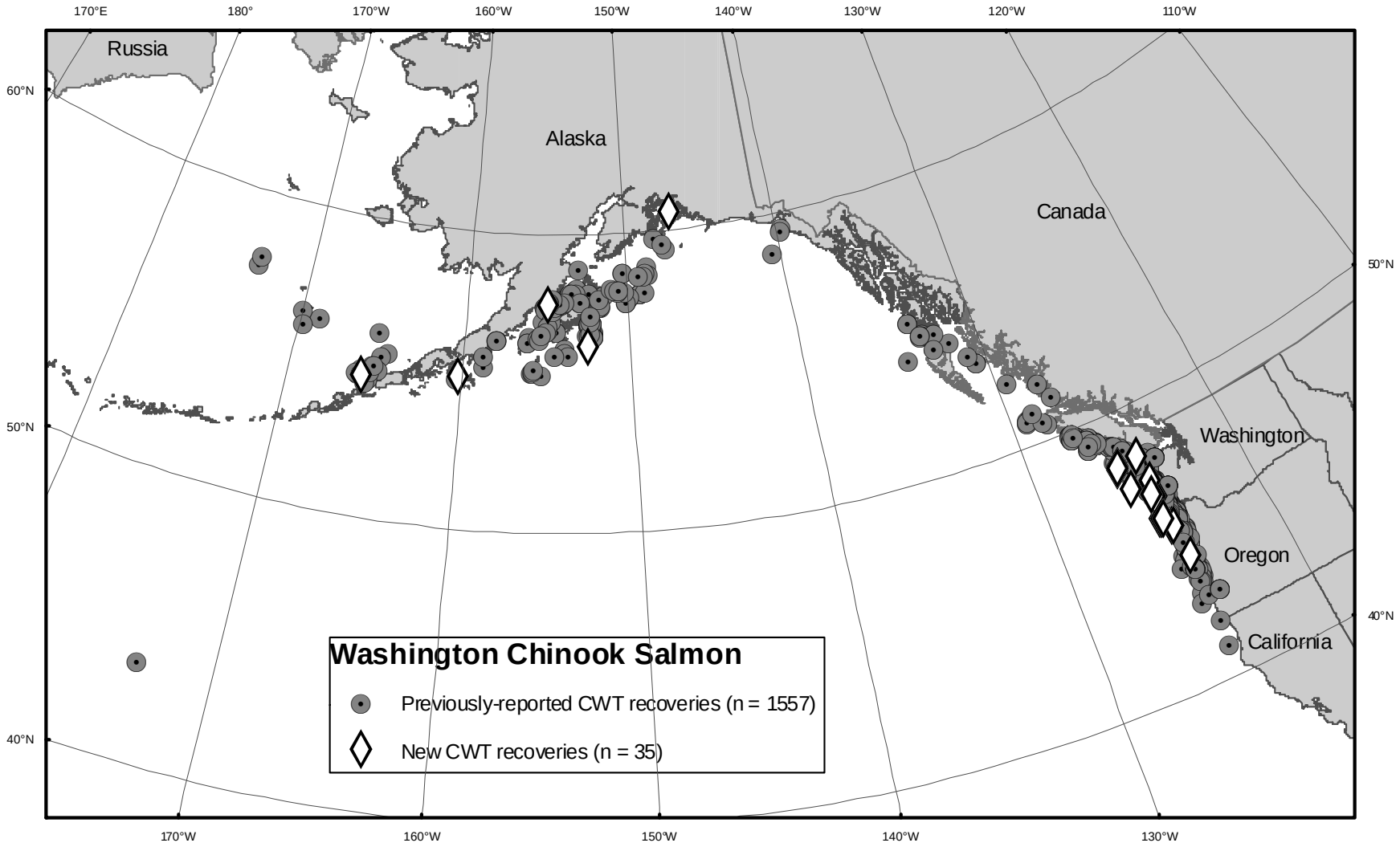


Figure 4. Ocean distribution of Washington Chinook salmon from CWT recoveries, 1981-2008.

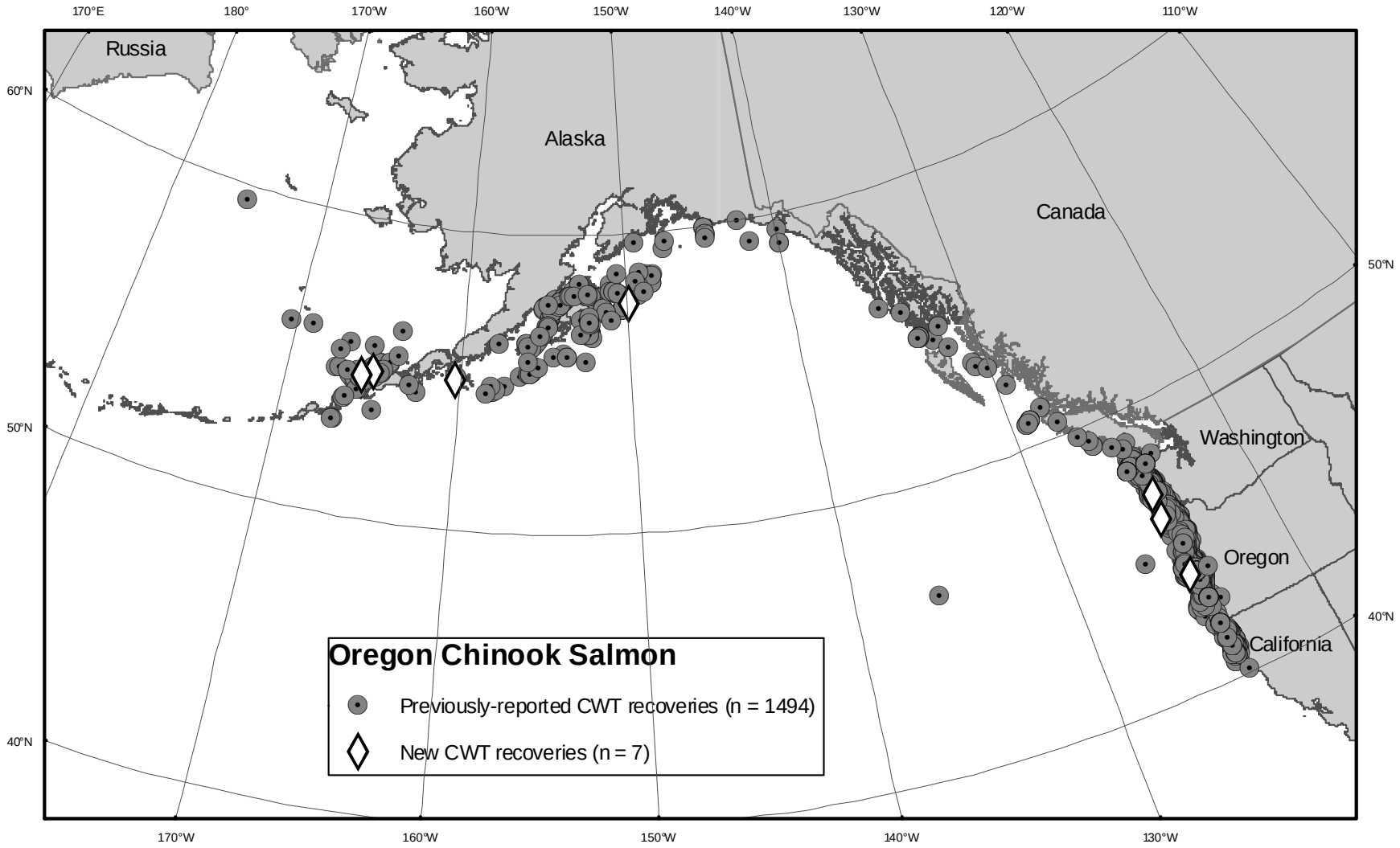


Figure 5. Ocean distribution of Oregon Chinook salmon from CWT recoveries, 1981-2008.

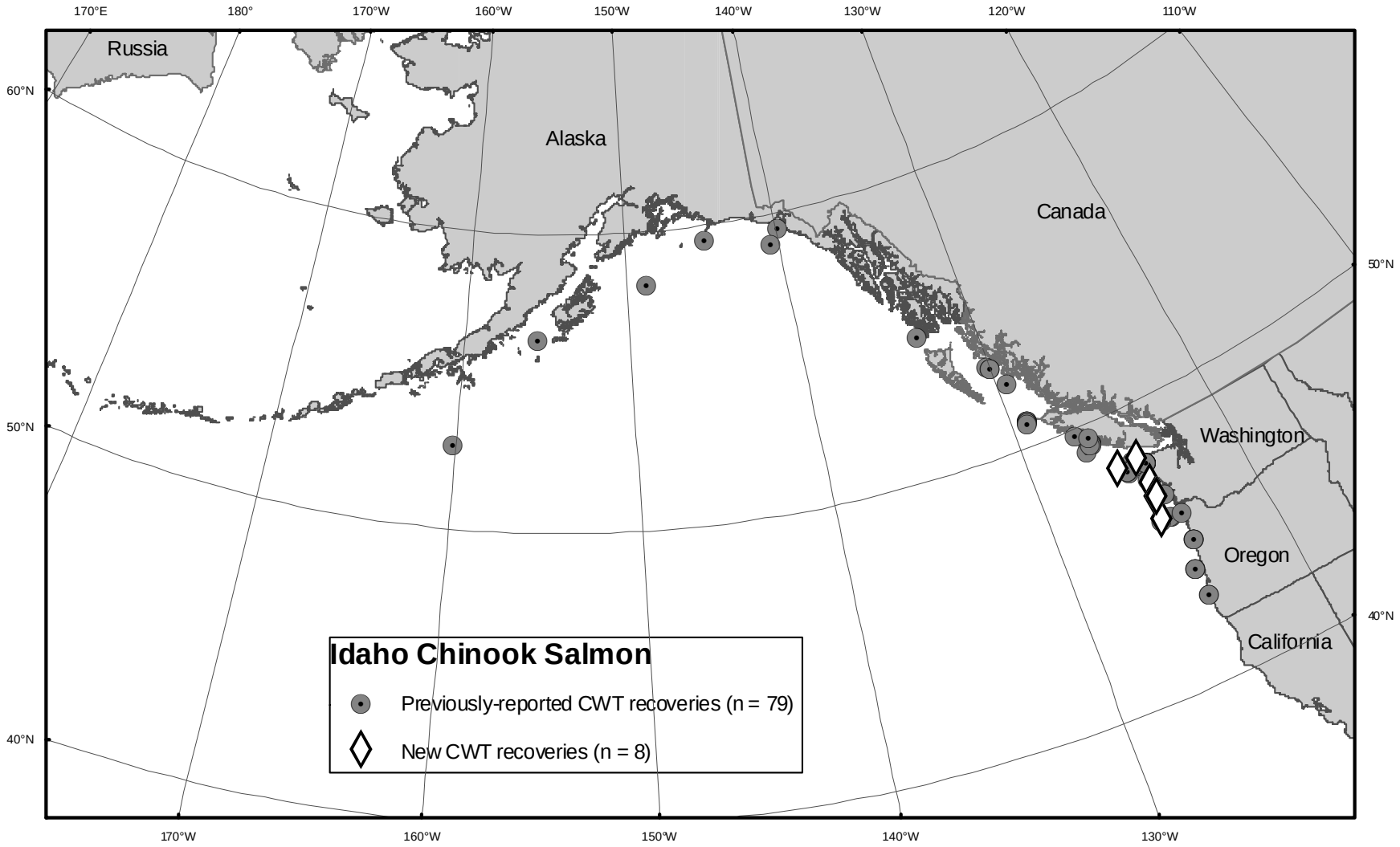


Figure 6. Ocean distribution of Idaho Chinook salmon from CWT recoveries, 1981-2008.

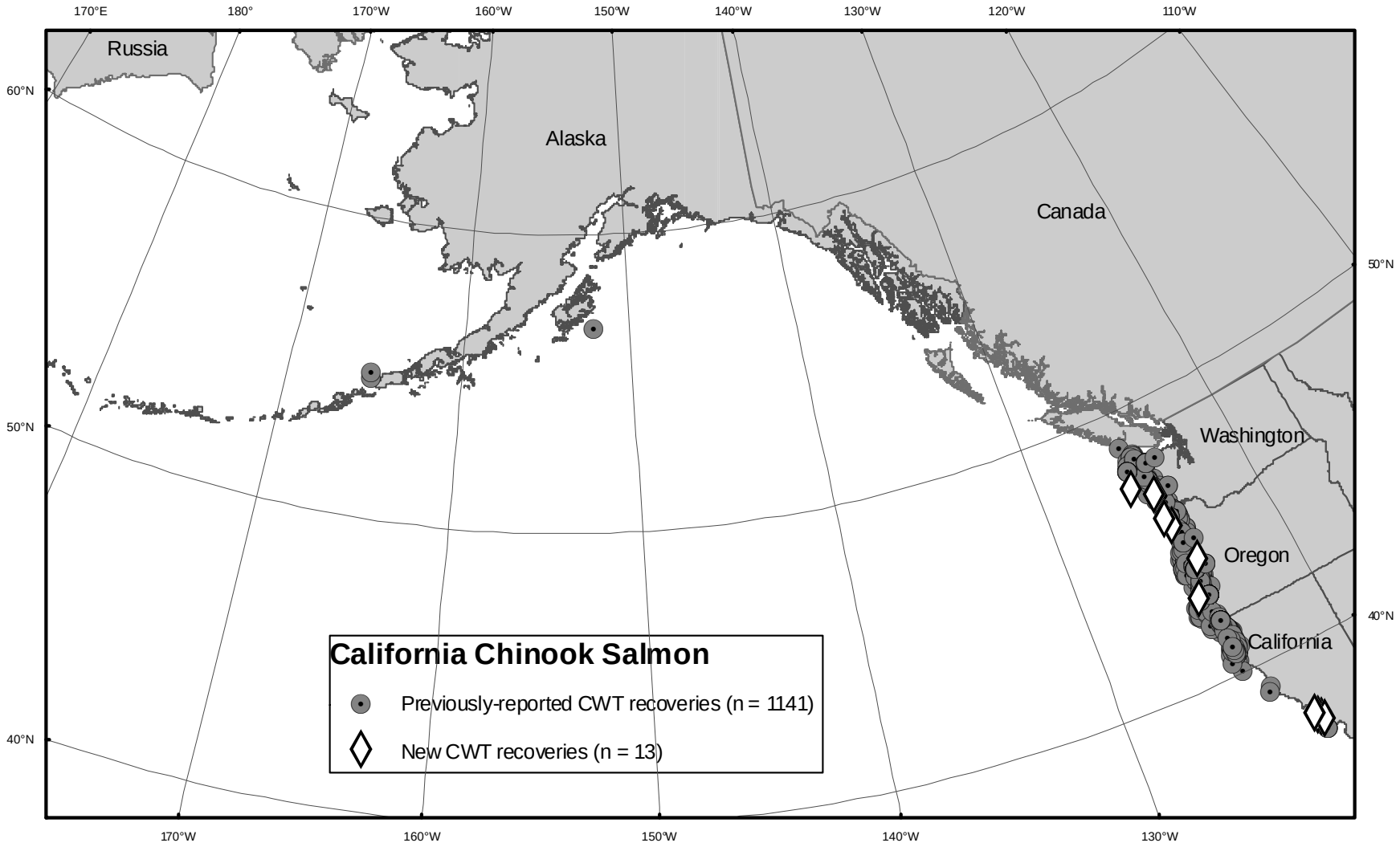


Figure 7. Ocean distribution of California Chinook salmon from CWT recoveries, 1981-2008.

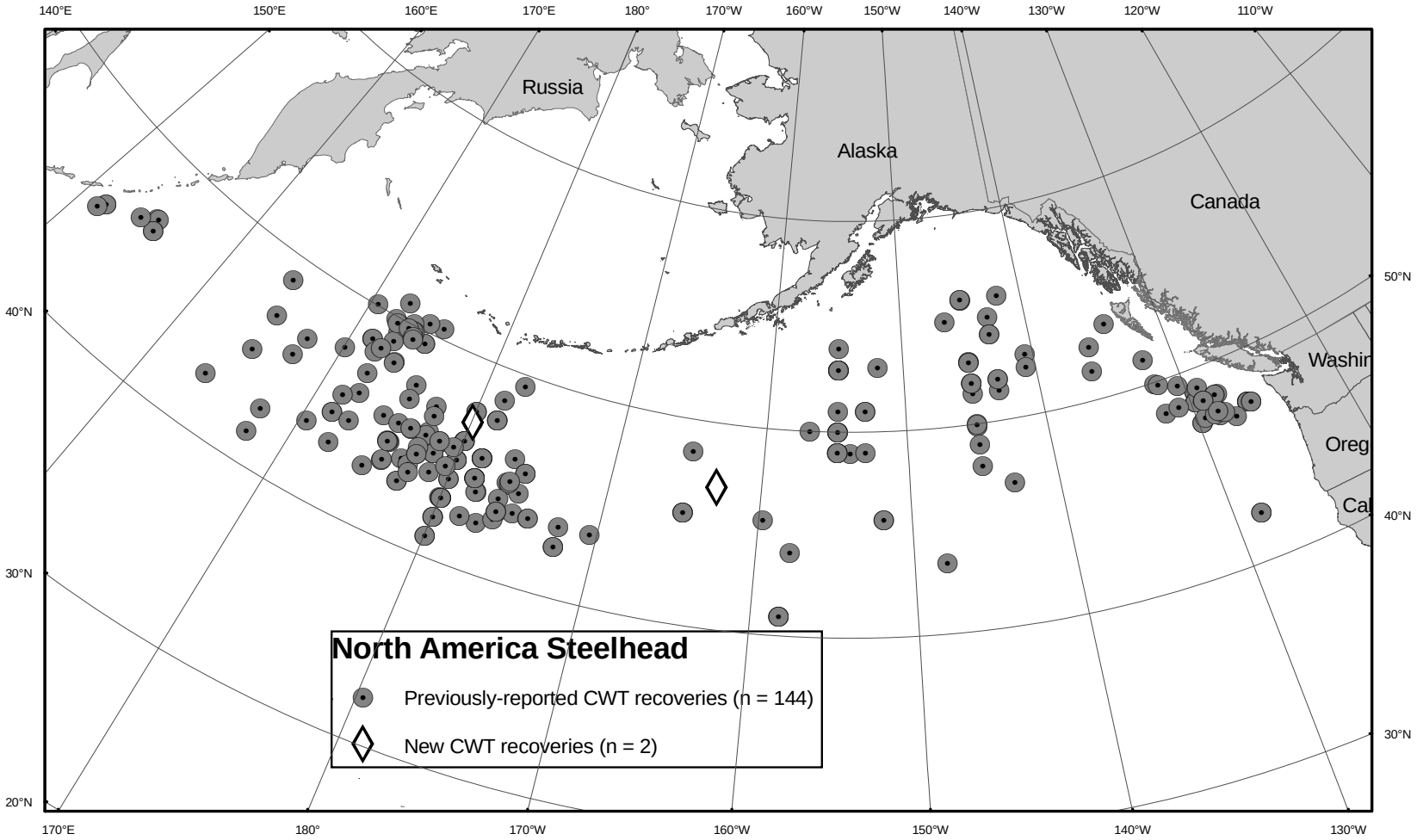


Figure 8. Ocean distribution of North America Steelhead from CWT recoveries, 1981-2008.

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; rearing type: H = hatchery, M = mixed hatchery and wild; release state: AK = Alaska, BC = British Columbia, WA = Washington. NMFS_areas are shown in Appendix Table 1.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	release_location_psc_region	release_location_psc_basin	release_location_name	release_location_state	release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)	NMFS_area
2006091100	040748	1	CRYSTAL CR		H	SEAK	SEAK	ANITA BAY 107-30	AK	SSRA	2001	2006	57	-154	
2006091101	041038	1	MEDVEJIE		H	SEAK	SEAK	BEAR COVE 113-41	AK	NSRA	2003	2006	57	-155	
2006091102	184939	1	S-ATNARKO R UP	2	H	COBC	CCST	R-ATNARKO R UP	BC	CDFO	2002	2006	57	-154	
2007091013	210501	1	QUINAULT LK (21)	3	H	NWC	QEQU	QUINAULT LK (21)	WA	QDNR	2003	2007	60	-146	
2007091014	184447	1	S-ROBERTSON CR	3	H	WCVI	SWVI	R-ROBERTSON CR	BC	CDFO	2004	2007	57	-154	
2007091016	036399	1	UNUK R 101-75		H	SEAK	SEAK	L PORT WALTER 109-10	AK	NMFS	2003	2007	57	-154	
2007091018	632577	1	WELLS HATCHERY	2	M	CRGN	CRGNG	COLUMBIA R - GENERAL	WA	WDFW	2003	2007	57	-155	
2007091019	030155	1	CHICKAMIN R 101-71		H	SEAK	SEAK	L PORT WALTER 109-10	AK	NMFS	2003	2007	57	-155	
2007091020	040691	1	HIDDEN FALLS		H	SEAK	SEAK	KASNYKU BAY 112-11	AK	NSRA	2003	2007	60	-147	
2007091022	185057	1	S-KITSUM BEL CANYON	2	H	NASK	SKNA	R-KITSUM BEL CANYON	BC	CDFO	2002	2007	58	-148	
2007091036	632577	1	WELLS HATCHERY	2	M	CRGN	CRGNG	COLUMBIA R - GENERAL	WA	WDFW	2003	2007	56	-152	
2007091039	070939	1	SALMON R	3	H	NOOR	SIYA	SALMON R	OR	ODFW	2004	2007	57	-149	
2007091040	041039	1	MEDVEJIE		H	SEAK	SEAK	BEAR COVE 113-41	AK	NSRA	2003	2007			610
2007091041	040895	1	CRYSTAL CR		H	SEAK	SEAK	ANITA BAY 107-30	AK	SSRA	2002	2007			610
2007091042	040899	1	CHICKAMIN R 101-71		H	SEAK	SEAK	NEETS BAY 101-90	AK	SSRA	2002	2007	55	-160	
2007091044	041077	1	CRYSTAL CR		H	SEAK	SEAK	CRYSTAL CR 106-44	AK	SSRA	2003	2007	57	-155	
2007091045	032271	1	UNUK R 101-75		H	SEAK	SEAK	L PORT WALTER 109-10	AK	NMFS	2003	2007	57	-154	
2007091047	032267	1	UNUK R 101-75		H	SEAK	SEAK	L PORT WALTER 109-10	AK	NMFS	2003	2007	57	-154	
2007091049	041071	1	CRYSTAL CR		H	SEAK	SEAK	ANITA BAY 107-30	AK	SSRA	2003	2007	57	-155	
2007091050	041039	1	MEDVEJIE		H	SEAK	SEAK	BEAR COVE 113-41	AK	NSRA	2003	2007	57	-155	
2007091051	041053	1	KETCHIKAN CR		H	SEAK	SEAK	KETCHIKAN CR 101-47	AK	KTHC	2003	2007	57	-153	
2007091054	210680	1	QUINAULT R 21.0398	3	H	NWC	QEQU	QUINAULT LK (21)	WA	QDNR	2005	2007	57	-151	
2007091055	030159	1	UNUK R 101-75		H	SEAK	SEAK	L PORT WALTER 109-10	AK	NMFS	2004	2007	57	-151	
2007091063	094258	1	WILLAMETTE R MID FK	1	H	LOCR	YOCL	BLIND SL (LWR COL R)	OR	ODFW	2004	2007	55	-160	
2008091001	210679	1	QUEETS R 21.0016	3	H	NWC	QEQU	SALMON R -MF 21.0139	WA	QDNR	2005	2008	55	-160	

Table 1 cont.

[1]Region: COBC=Coastal British Columbia, CRGN=Columbia River, general, LOCR=Lower Columbia R. (mouth to Bonneville Dam), NASK=Nass R. - Skeena R, NOOR=North Coastal Oregon, NWC=North Washington Coast, SEAK=Southeast Alaska, WCVI=Western Vancouver Island.

[2]Basin (if different than region): CCST=Central Coastal BC, CRGNG=Columbia R; general, combined, unknown, or undefined; QEQU=Queets R.-Quinault R., SIYA=Siletz R.–Yaquina R., SKNA=Skeena R., SWVI=SW Vancouver Island, YOCL=Youngs Bay-Clatskanie R /OR.

[3]Agency: CDFO=Canadian Department of Fisheries and Oceans, KTHC=Ketchikan Tribal Hatchery Corporation (AK), NMFS=National Marine Fisheries Service (AK), NSRA=Northern Southeast Regional Aquaculture Assn. (AK), ODFW=Oregon Department of Fish & Wildlife, QDNR=Quinault Department of Natural Resources, SSRA=Southern Southeast Regional Aquaculture Assn. (AK), 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, WA = Washington, OR = Oregon, ID = Idaho, CA = California. NMFS_areas are shown in Appendix Table 1.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	release_location_psc_region	release_location_psc_basin	release_location_name	release_location_state	release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)	NMFS_area
2006091112	632399	1	SATSOP R 22.0360	3	H	GRAY	GRAY	SATSOP SPRINGS PONDS	WA	WDFW	2003	2006	54	-165	
2006091113	310277	1	DECEPTION CR 247-41		H	CNAK	COOK	FORT RICHARDSON	AK	ADFG	2002	2006	54	-166	
2006091114	184936	1	S-ATNARKO R LOW	2	H	COBC	CCST	H-SNOOTLI CR	BC	CDFO	2002	2006	55	-164	
2007091035	093841	1	TRASK R (TRASK HT)	3	H	NOOR	NECA	NEHALEM HATCHERY	OR	ODFW	2002	2007	54	-165	
2007091037	310275	1	DECEPTION CR 247-41		H	CNAK	COOK	ELMENDORF	AK	ADFG	2003	2007	54	-165	
2007091038	070939	1	SALMON R	3	H	NOOR	SIYA	SALMON R HATCHERY	OR	ODFW	2004	2007	54	-165	
2007091058	040889	1	CRYSTAL CR		H	SEAK	SEAK	CRYSTAL LAKE	AK	SSRA	2002	2007	56	-167	

[1]Region: CNAK=Alaska Central, COBC=Coastal British Columbia, GRAY=Grays Harbor, NOOR=North Coastal Oregon, SEAK=Southeast Alaska.

[2]Basin (if different than region): CCST=Central Coastal BC, COOK=Cook Inlet, NECA=Necanicum R., SIYA=Siletz R.–Yaquina R.

[3]Agency: ADFG=Alaska Department of Fish & Game, CDFO=Canadian Department of Fisheries and Oceans, ODFW=Oregon Department of Fish & Wildlife, SSRA=Southern Southeast Regional Aquaculture Assn. (AK), WDFW=Washington 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, 2 = coho salmon; run: 1 = Spring, 2 = Summer, 3 = Fall; rearing type: H = hatchery, M = mixed hatchery and wild, W = Wild; release state: AK = Alaska, BC = British Columbia, WA = Washington, OR = Oregon, ID = Idaho, 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)
1106	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	46	-124
1108	052871	1	SPRING CR 29.0159	3	H	CECR	WIND	SPRING CR 29.0159	WA	FWS	2005	2007	46	-124
1111	633284	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2004	2007	46	-124
1113	633268	2	LEWIS R +WASHOUGAL R	7	H	CECR	KLIC	KLICKITAT HATCHERY (YKFP)	WA	YAKA	2004	2007	46	-124
1204	631894	1	CHIWAWA R 45.0759	1	M	UPCR	WECH	CHIWAWA R 45.0759	WA	WDFW	2003	2007	44	-124
1244	632799	1	WELLS HATCHERY	2	M	CRGN	CRGNG	COLUMBIA R - GENERAL	WA	WDFW	2004	2007	45	-124
1317	633283	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2004	2007	46	-124
1325	633064	1	COWLITZ R 26.0002	1	H	LOCR	COWL	COWLITZ R 26.0002	WA	WDFW	2004	2007	46	-124
1344	633283	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2004	2007	46	-124
1361	185240	1	S-CHILLIWACK R	3	H	FRTH	LWFR	R-CHILLIWACK R	BC	CDFO	2005	2007	46	-124
1382	632967	1	BIG SOOS CR 09.0072	3	H	MPS	DUWA	BIG SOOS CR 09.0072	WA	WDFW	2004	2007	46	-124
1397	210570	1	SKYKOMISH R 07.0012	2	H	STIL	SNOH	TULALIP CR 07.0001	WA	TULA	2004	2007	46	-124
1398	632998	1	COWLITZ R 26.0002	1	H	LOCR	COWL	COWLITZ R 26.0002	WA	WDFW	2004	2007	46	-124
1727	093948	1	COLE RIVERS HATCHERY	3	H	LOCR	YOCL	YOUNGS R & BAY	OR	ODFW	2004	2007	43	-124
1728	632876	1	SKYKOMISH R 07.0012	2	H	STIL	SNOH	WALLACE R 07.0940	WA	WDFW	2004	2007	46	-124
1729	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	46	-124
1731	094329	1	COLE RIVERS HATCHERY	3	H	LOCR	YOCL	YOUNGS R & BAY	OR	ODFW	2005	2007	46	-124
1732	633393	1	PRIEST RAPIDS (36)	8	H	CECR	KLIC	KLICKITAT HATCHERY (YKFP)	WA	YAKA	2005	2007	46	-124
1733	610155	1	LYONS FERRY HATCHERY	8	H	SNAK	SNAKG	CAPTAIN JOHNS PD	WA	NEZP	2004	2007	46	-124

Table 3 cont.

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)
2112	052872	1	SPRING CR 29.0159	3	H	CECR	WIND	SPRING CR 29.0159	WA	FWS	2005	2007	47	-124
2114	632977	1	METHOW & OKANOGAN	2	M	UPCR	MEOK	BONAPARTE CR 49.0246	WA	WDFW	2004	2007	47	-124
2115	185161	1	S-CHILLIWACK R	3	H	FRTH	LWFR	R-CHILLIWACK R	BC	CDFO	2003	2007	47	-124
2117	633283	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2004	2007	47	-124
2134	633168	1	METHOW & OKANOGAN	2	M	UPCR	MEOK	SIMILKAMEEN R 490325	WA	WDFW	2004	2007	47	-124
246	632885	1	KALAMA R 27.0002	3	H	LOCR	LEWI	FALLERT CR 27.0017	WA	WDFW	2005	2007	46	-124
247	052871	1	SPRING CR 29.0159	3	H	CECR	WIND	SPRING CR 29.0159	WA	FWS	2005	2007	46	-124
2602	065320	1	TRINITY RIVER	1	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	47	-125
2607	633164	1	METHOW & OKANOGAN	2	H	UPCR	MEOK	METHOW R 48.0002	WA	WDFW	2004	2007	46	-124
2608	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	46	-124
2610	065319	1	TRINITY RIVER	1	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	45	-124
2678	052575	1	LEAVENWORTH HATCHERY	1	H	UPCR	WECH	ICICLE CR 45.0474	WA	FWS	2004	2007	45	-124
2679	633283	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2004	2007	46	-124
297	633065	1	COWLITZ R 26.0002	1	H	LOCR	COWL	COWLITZ R 26.0002	WA	WDFW	2004	2007	46	-124
3	633087	2	LEWIS R 27.0168	7	H	LOCR	LEWI	LEWIS R -NF 27.0168	WA	WDFW	2004	2007	45	-124
303	052771	2	QUILCENE NFH STOCK	3	H	HOOD	TPDB	QUILCENE BAY SEA PENS	WA	SKOK	2004	2007	46	-124
316	632999	1	COWLITZ R 26.0002	1	H	LOCR	COWL	COWLITZ R 26.0002	WA	WDFW	2004	2007	46	-124
318	185030	1	S-CHILLIWACK R	3	H	FRTH	LWFR	R-CHILLIWACK R	BC	CDFO	2005	2007	46	-124
325	052970	1	SPRING CR 29.0159	3	H	CECR	WIND	SPRING CR 29.0159	WA	FWS	2005	2007	46	-124
5029	633375	1	VOIGHT CR 10.0414	3	H	MPS	PUYA	VOIGHT CR 10.0414	WA	WDFW	2005	2007	48	-125
5030	633582	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2005	2007	48	-124
5035	185218	2	S-INCH CR	3	H	FRTH	LWFR	R-INCH CR	BC	CDFO	2004	2007	48	-125
5037	633375	1	VOIGHT CR 10.0414	3	H	MPS	PUYA	VOIGHT CR 10.0414	WA	WDFW	2005	2007	48	-125
5039	632965	1	MINTER CR 15.0048	3	H	SPS	EKPS	MINTER CR 15.0048	WA	WDFW	2004	2007	48	-125
5040	633366	1	GEORGE ADAMS (PURDY)	3	H	HOOD	SKDO	PURDY CR 16.0005	WA	WDFW	2005	2007	48	-125

Table 3 cont.

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)
5041	185812	1	S-COWICHAN R	3	H	GST	GSVI	R-COWICHAN R UP	BC	CDFO	2005	2007	48	-125
5042	633583	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2005	2007	48	-125
5043	633285	1	GROVERS CR 15.0299	3	H	MPS	EKPN	GROVERS CR 15.0299	WA	SUQ	2005	2007	48	-124
5044	633371	1	BIG SOOS CR 09.0072	3	M	MPS	DUWA	BIG SOOS CR 09.0072	WA	WDFW	2005	2007	48	-125
5045	632871	1	CHAMBERS CR 12.0007	3	H	SPS	CHAM	CHAMBERS CR 12.0007	WA	WDFW	2004	2007	48	-124
5046	632886	1	KALAMA R 27.0002	3	H	LOCR	LEWI	KALAMA R 27.0002	WA	WDFW	2005	2007	48	-124
7	051075	2	COOK CR 21.0429		H	NWC	QEQU	COOK CR 21.0429	WA	FWS	2004	2007	46	-124
704	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	43	-124
708	065327	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	43	-124
731	185028	1	S-CHILLIWACK R	3	H	FRTH	LWFR	R-CHILLIWACK R	BC	CDFO	2004	2007	48	-125
736	065326	1	TRINITY RIVER	1	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	45	-124
745	094132	1	ELK R (ELK R HT)	3	H	SOOR	SIXE	ELK R	OR	ODFW	2004	2007	46	-124
810	633372	1	BIG SOOS CR 09.0072	3	M	MPS	DUWA	BIG SOOS CR 09.0072	WA	WDFW	2005	2007	47	-125

[1]Region: CECR=Central Columbia R. (Bonneville Dam to McNary Dam), CRGN=Columbia River, general, FRTH=Fraser R.-Thompson R., GST=Georgia Strait, HOOD=Hood Canal, KLAM=Klamath R.–Trinity R., LOCR=Lower Columbia R. (mouth to Bonneville Dam), MPS=Puget Sound Mid, NWC=North Washington Coast, SNAK=Snake R. (ID), SOOR=South Coastal Oregon, SPS=Puget Sound South, STIL=Stillaguamish R.–Snohomish R., UPCR=Upper Columbia R. (above McNary Dam; excluding Snake R.).

[2]Basin (if different than region): CHAM=Chambers Cr, DUWA=Duwamish R.-Green R., EKPN=East Kitsap North of Narrows, EKPS=East Kitsap South of Narrows, GSVI=Georgia Strait-Vancouver Island, KLIC=Klickitat R /WA, LEWI=Lewis R /WA, LWFR=Lower Fraser R. (below Hope + tributaries), MEOK=Methow R.-Okanogan R./WA, PUYA=Puyallup R., QEQU=Queets R-Quinault R, SIXE=Sixes R.-Elk R.-Floras Cr., SKDO=Skokomish R.-Dosewallips R.-Great Bend, SNAKG=Snake R., general, SNOH=Snohomish R., TPDB=Tala Point to Dabob Bay, TRIN=Trinty R., WECH=Wenatchee R.-Entiat R.-Lk. Chelan/WA, WIND=Wind R.-White Salmon R./WA, YOCL=Youngs Bay-Clatskanie R./OR.

Table 3 cont.

[3]Agency: CDFO=Canadian Department of Fisheries and Oceans, FWS=U.S. Fish and Wildlife Service, HVT=Hoopa Valley Tribe (CA), NEZP=Nez Perce Tribe (ID), ODFW=Oregon Department of Fish & Wildlife, SKOK=Skokomish Tribe (WA), SUQ=Suquamish Tribe (WA), TULA=Tulalip Tribe (WA), WDFW=Washington Department of Fish & Wildlife, YAKA=Yakama Tribe (WA).

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; run: 1 = Spring, 3 = Fall, 7 = Late Fall; rearing type: H = hatchery; release state: WA = Washington, ID = Idaho, CA = California.

recovery_id	tag_code	species	stock_location_name	run	rearing_type	release_location_psc_region	release_location_psc_basin	release_location_name	release_location_state	release_agency	brood_year	run_year	latitude (degrees)	longitude (degrees)
100305470	065324	1	TRINITY RIVER	3	H	KLAM	TRIN	TRINITY R HATCHERY	CA	HVT	2004	2007	44	-124
100311002	053381	1	COLEMAN NFH	7	H	SACR	SACR	COLEMAN NFH	CA	FWS	2006	2007	37	-122
100314590	052780	1	COLEMAN NFH	7	H	SACR	SACR	COLEMAN NFH	CA	FWS	2005	2007	37	-122
100314601	052783	1	COLEMAN NFH	7	H	SACR	SACR	COLEMAN NFH	CA	FWS	2005	2007	37	-122
100314605	062444	1	FEATHER RIVER	1	H	SACR	SFBA	WICKLAND OIL NET PEN	CA	CDWR	2004	2007	37	-122
100315064	633598	1	SNAKE R-LOWR 33.0002	3	H	SNAK	SNAKG	SNK BLW GRANDE RHOND	ID	WDFW	2005	2007	46	-124
100315893	632998	1	COWLITZ R 26.0002	1	H	LOCR	COWL	COWLITZ R 26.0002	WA	WDFW	2004	2007	46	-124

[1]Region: KLAM=Klamath R.–Trinity R., LOCR=Lower Columbia R. (mouth to Bonneville Dam), SACR=Sacramento R., SNAK=Snake R. (ID).

[2]Basin (if different than region): COWL=Cowlitz R./WA, SFBA=San Francisco-San Pablo-Grizzly-Susin Bays, SNAKG=Snake R., general.

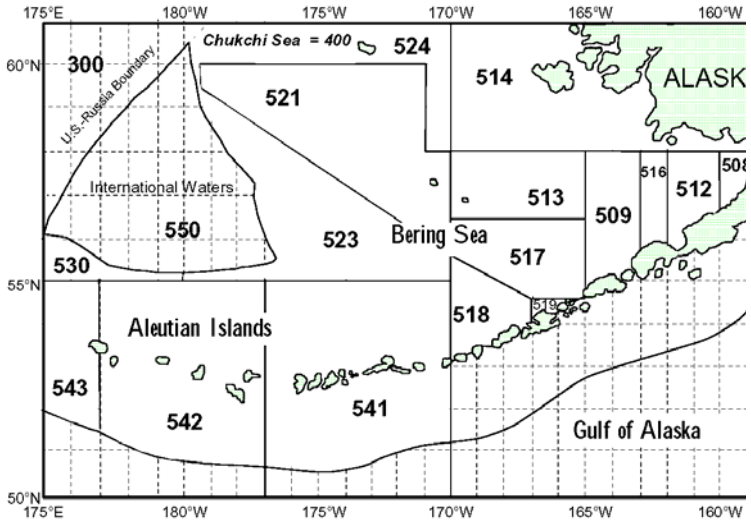
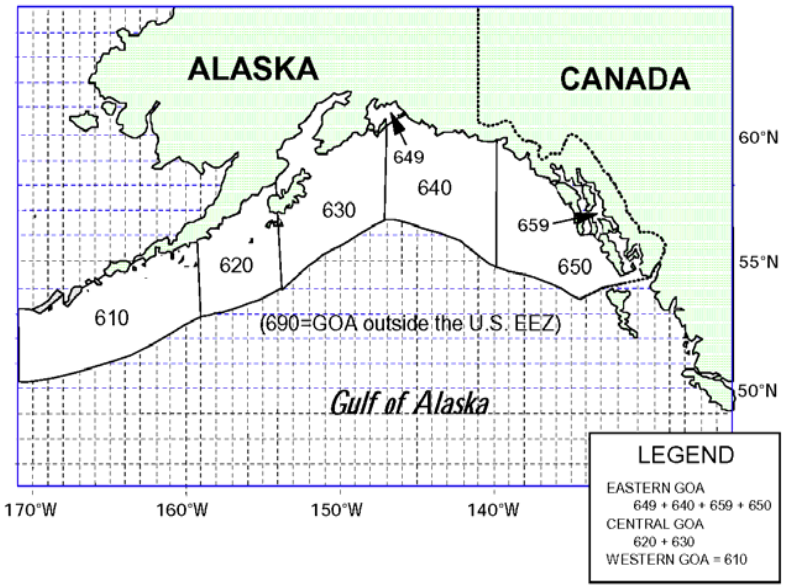
[3]Agency: CDWR=California Department of Water Resources, FWS=U.S. Fish and Wildlife Service, HVT=Hoopa Valley Tribe (CA), WDFW=Washington Department of Fish & Wildlife.

Table 5. Release and recovery information for CWT salmon (*Oncorhynchus spp.*) captured in Japanese research cruises in the North Pacific Ocean in 2005 and 2007. Species: 3 = Steelhead; run: 2 = Summer, 4 = Winter; rearing type: H = hatchery; release state: WA = Washington, ID = Idaho.

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)
2005092008	108570	3	SAWTOOTH A	2	H	SNAK	SALM	SAWTOOTH HATCHERY	ID	FWS	2003	2005	46	-164
2008092008	050979	3	Not available	2	H	SNAK	CLEA	DWORSHAK NAT. HATCH	ID	FWS	2006	2008	47	-180

[1]Region: SNAK=Snake R.

[2]Basin (if different than region): CLEA=Clearwater R/ ID .,SALM=Salmon R/ ID.

[3]Agency: FWS=U.S. Fish and Wildlife Service

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).