

Special Publication No. 10-10

**Wild and Hatchery Coded-Wire Tagged Coho Salmon
Recovered as Strays in Natural Spawning
Escapements in Southeast Alaska, 1976–2007**

by

Leon D. Shaul

April 2010

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid-eye-to-fork	MEF
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	mid-eye-to-tail-fork	METF
hectare	ha	at	@	standard length	SL
kilogram	kg	compass directions:		total length	TL
kilometer	km	east	E		
liter	L	north	N	Mathematics, statistics	
meter	m	south	S	<i>all standard mathematical signs, symbols and abbreviations</i>	
milliliter	mL	west	W	alternate hypothesis	H _A
millimeter	mm	copyright	©	base of natural logarithm	e
		corporate suffixes:		catch per unit effort	CPUE
Weights and measures (English)		Company	Co.	coefficient of variation	CV
cubic feet per second	ft ³ /s	Corporation	Corp.	common test statistics	(F, t, χ^2 , etc.)
foot	ft	Incorporated	Inc.	confidence interval	CI
gallon	gal	Limited	Ltd.	correlation coefficient (multiple)	R
inch	in	District of Columbia	D.C.	correlation coefficient (simple)	r
mile	mi	et alii (and others)	et al.	covariance	cov
nautical mile	nmi	et cetera (and so forth)	etc.	degree (angular)	°
ounce	oz	exempli gratia (for example)	e.g.	degrees of freedom	df
pound	lb	Federal Information Code	FIC	expected value	E
quart	qt	id est (that is)	i.e.	greater than	>
yard	yd	latitude or longitude	lat. or long.	greater than or equal to	≥
		monetary symbols (U.S.)	\$, ¢	harvest per unit effort	HPUE
Time and temperature		months (tables and figures): first three letters	Jan, ..., Dec	less than	<
day	d	registered trademark	®	less than or equal to	≤
degrees Celsius	°C	trademark	™	logarithm (natural)	ln
degrees Fahrenheit	°F	United States (adjective)	U.S.	logarithm (base 10)	log
degrees kelvin	K	United States of America (noun)	USA	logarithm (specify base)	log ₂ , etc.
hour	h	U.S.C.	United States Code	minute (angular)	'
hour	h	U.S. state	use two-letter abbreviations (e.g., AK, WA)	not significant	NS
minute	min			null hypothesis	H ₀
second	s			percent	%
				probability	P
Physics and chemistry				probability of a type I error (rejection of the null hypothesis when true)	α
all atomic symbols				probability of a type II error (acceptance of the null hypothesis when false)	β
alternating current	AC			second (angular)	"
ampere	A			standard deviation	SD
calorie	cal			standard error	SE
direct current	DC			variance	
hertz	Hz			population	Var
horsepower	hp			sample	var
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

SPECIAL PUBLICATION NO. 10-10

**WILD AND HATCHERY CODED-WIRE TAGGED COHO SALMON
RECOVERED AS STRAYS IN NATURAL SPAWNING ESCAPEMENTS
IN SOUTHEAST ALASKA, 1976–2007**

By
Leon D. Shaul,
Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1599

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*Leon D. Shaul,
Alaska Department of Fish and Game, Commercial Fisheries Division, Region 1
802 Third Street, Douglas AK 99824, USA*

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ABSTRACT

The number of documented wild and hatchery strays, identified by coded-wire tags, was summarized for natural coho salmon producing systems in Southeast Alaska in 1976–2007. A total of 4,558 tags were recovered from spawners sampled in 34 systems of which 4,484 tags (98.4%) had been implanted in the same system and 74 tags (1.6%) had been implanted in fish released outside the system where the tag was recovered. Of the total number of identified strays, 21 were wild fish and 53 were fish of hatchery origin. Thirty-six (36) fish had strayed fewer than 10 km from their tagging location, 28 had strayed between 10-50 km, and 10 had strayed more than 50 km. Examples were found of straying over 200 km by both wild and hatchery fish. The data were insufficient to estimate straying rates or to evaluate factors affecting straying.

Key words: coho salmon, *Oncorhynchus kisutch*, Southeast Alaska, straying, hatchery, escapement, coded-wire tag.

INTRODUCTION

Hatchery releases of coho salmon, *Oncorhynchus kisutch*, in Southeast Alaska have increased since the early 1980s to a recent (2002–2006) average of 15.8 million fish (Figure 1). Despite the upward trend in releases, the estimated commercial harvest of hatchery coho salmon peaked at 739,200 fish in 1992 and has trended downward since the 1990s to only 266,200 fish in 2006 and 391,800 fish in 2007 (Figure 2). The proportionate contribution by hatchery fish to the commercial catch has followed a relatively level trend since 1991 around an average of 19.0%.

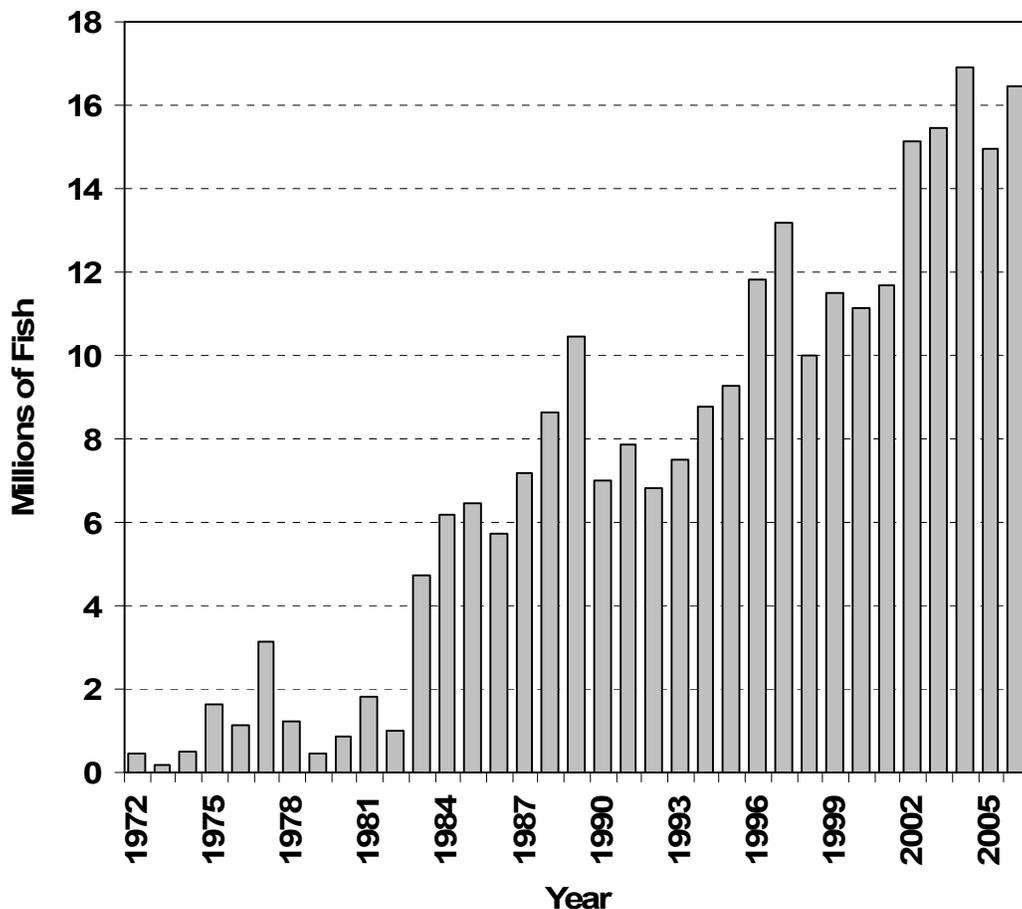


Figure 1.—Number of coho salmon released from hatcheries in Southeast Alaska, 1972–2006.

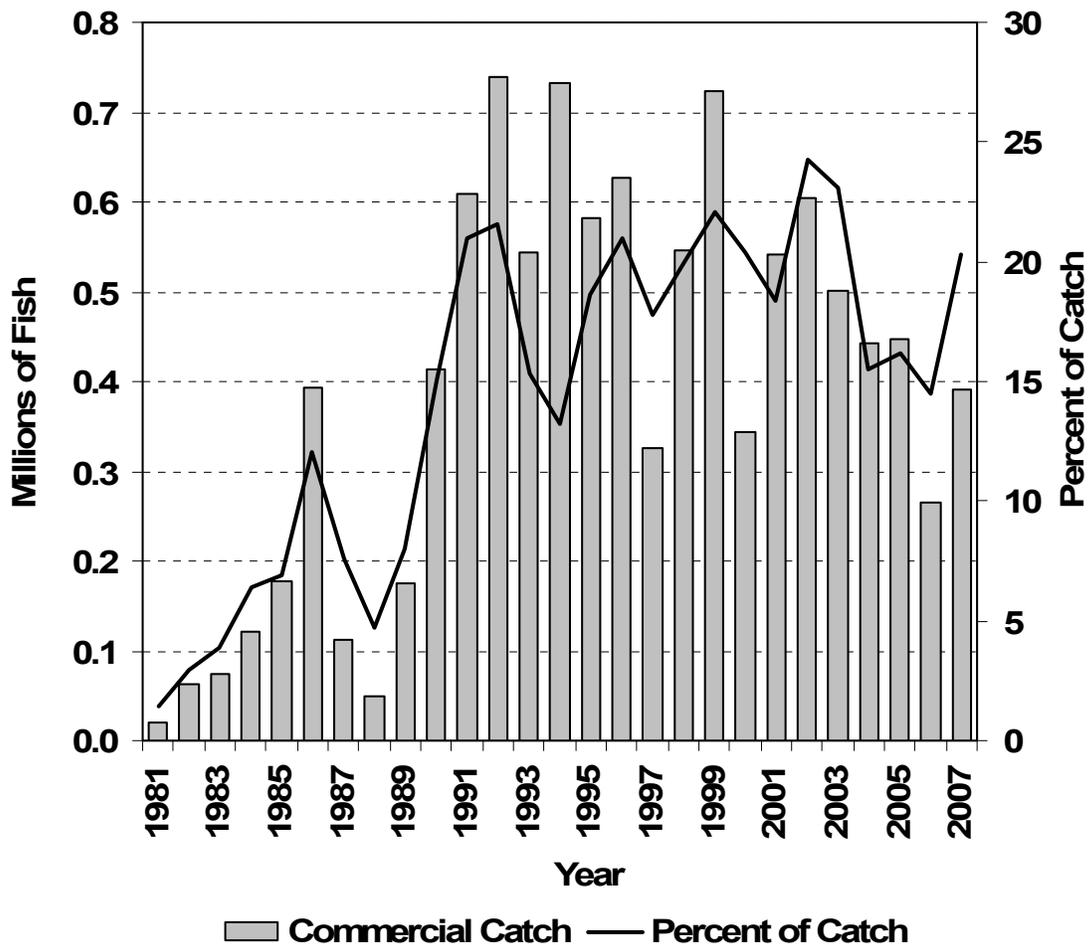


Figure 2.—Estimated hatchery contribution to the commercial coho salmon harvest by common property fisheries in Southeast Alaska, 1981–2007.

Although recent and proposed increases in hatchery releases have led to concern about straying rates and potential detrimental effects of genetic introgression with wild stocks, there is currently no formal limit on straying in Alaska Department of Fish and Game (ADF&G) genetic policy.

Rearing and release strategies can have a substantial effect on the straying rate. The majority (81.1%) of the hatchery coho salmon released in Southeast Alaska in 2004–2006 was released from central incubation and rearing facilities, while 14.2% were outplanted into freshwater systems and 4.7% were outplanted into marine areas (Figure 3). Results of a study on Vancouver Island (Labelle 1992) suggest that straying rates from central incubation and rearing facilities are likely low (<2%). However, outplanting projects may result in higher straying rates because of incomplete imprinting (particularly in for marine outplanting), less complete accounting for terminal area returns, and an absence of a continuous hereditary loop.

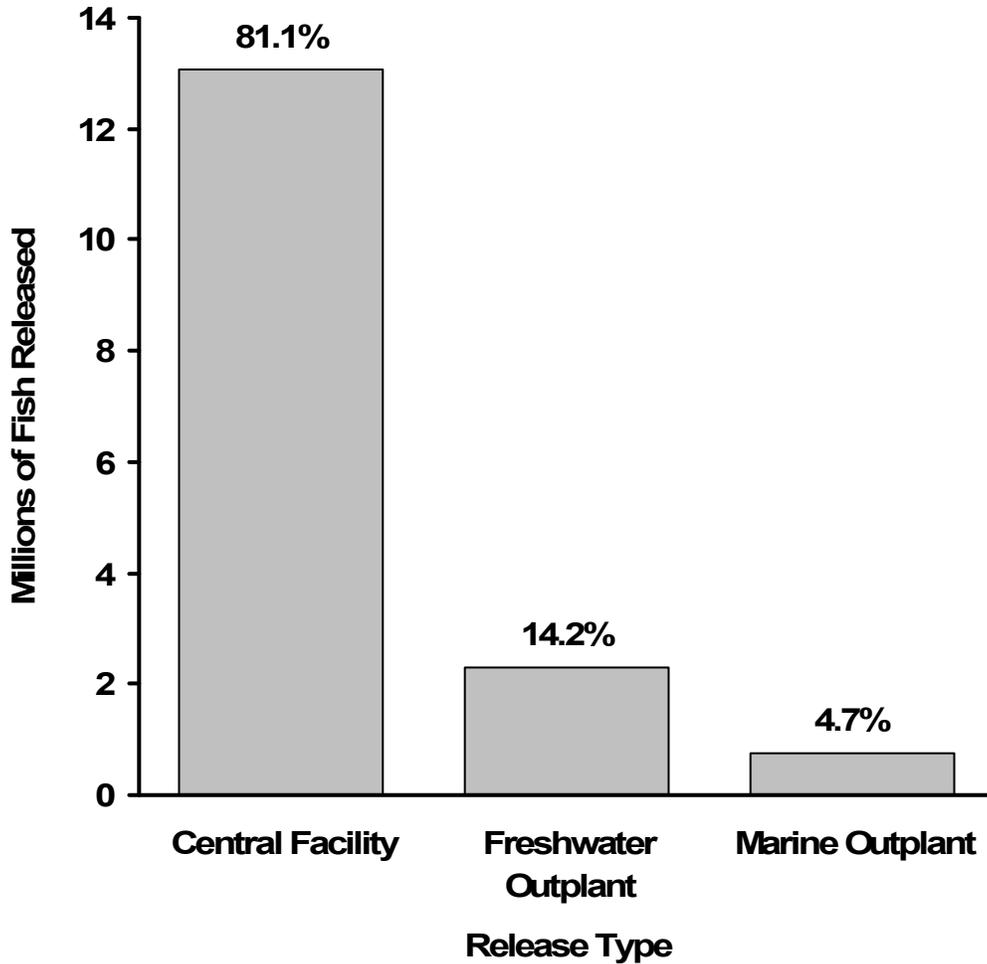


Figure 3.—Average number of hatchery coho salmon released in Southeast Alaska in 2004–2006 by release type.

The purpose of this report is to summarize observations of straying into natural coho salmon producing systems based on coded-wire tag recoveries over a 32-year period from 1976 to 2007. To date, there have been no systematic studies to measure straying rates and, therefore, the scope of the report is limited to documenting observed strays.

METHODS

I downloaded all escapement coded-wire tag recovery information available online from the ADF&G Mark, Tag and Age Laboratory from the years 1976 to 2007 and identified all escapement recoveries from natural coho salmon systems. Included were all systems that had naturally sustained runs (Figure 4), including one system (Margaret Lake) where a self-sustaining run had been recently established using a fish pass to access habitat above a barrier falls. I sorted all recoveries by release location and identified recoveries of tagged fish from locations outside the system drained by the primary stream. Wild fish tagged in tributaries and recovered elsewhere within a river system were not considered strays. However, adults entering Speel Lake from hatchery stocking in barriered First Lake, both of which are in the Speel River drainage, were included.

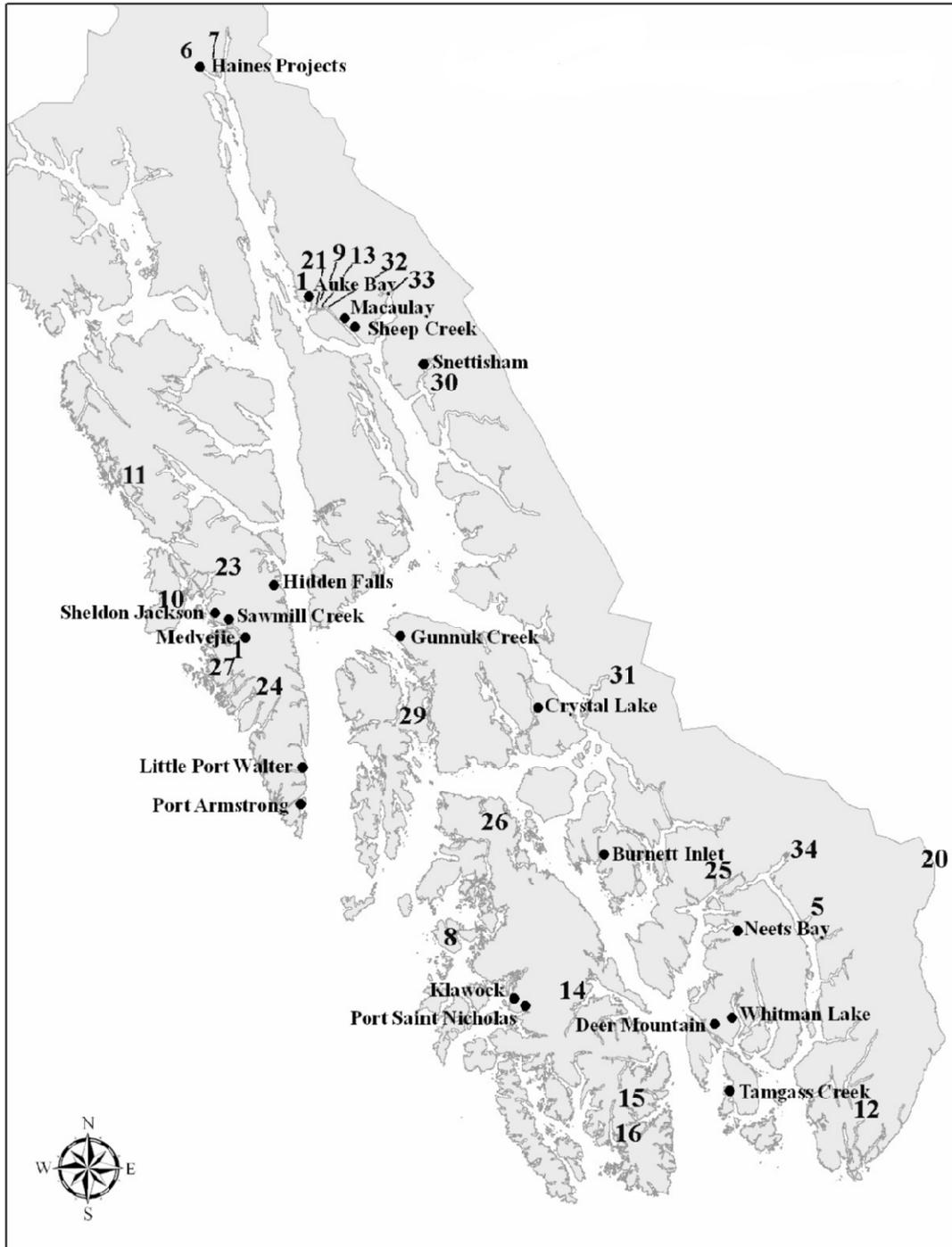


Figure 4.—Locations of salmon hatcheries in Southeast Alaska, 2007, and naturally producing coho salmon systems where escapements have been sampled for coded-wire tags (1976–2007). Wild stocks associated with the numbered locations (except Yakutat systems) are shown in Table 1.

A listing of all recoveries from spawners in natural systems was compiled by release location. Most tags were recovered from pre-spawning fish captured in weirs, fishwheels or nets and, therefore, do not confirm that spawning and genetic introgression occurred within the system.

RESULTS

A total of 4,558 coded-wire tagged fish were recovered in 34 systems. Of those, 74 (1.6%) fish were indicated to be strays based on their tag code, of which 21 were wild fish and 53 were hatchery fish (Table 1). Detailed information on recoveries of tagged stray adults is compiled in Appendix A.

Table 1.—Coded-wire tag recoveries from natural coho salmon escapements in Southeast Alaska, 1976–2007.

System Sampled	Natal Recoveries	Strays		Total	Total Recoveries	Stray Release Locations
		Wild	Hatchery			
1. Ahrnklin River	38	1	—	1	39	1 Situk R. (W)
2. Auke Creek	4	—	—	0	4	—
3. Badger & Bakewell Lakes	16	—	—	0	16	—
4. Berners River	141	—	—	0	141	—
5. Chickamin River	52	1	—	1	53	1 Hugh Smith L. (W)
6. Chilkat River	372	3	—	3	375	2 Berners R. (W), 1 Jordan Cr. (W)
7. Chilkoot River	24	—	—	0	24	—
8. Chuck Creek	445	—	1	1	446	1 Deer Mtn.(H)
9. Duck Creek	0	1	—	1	1	1 Jordan Cr. (W)
10. Eagle River	3	—	—	0	3	—
11. Ford Arm Lake	91	—	—	0	91	—
12. Hugh Smith Lake	175	—	2	2	177	1 Whitman Lk. (H); 1 Babine R. (H)
13. Jordan Creek	141	2	17	19	160	9 Gastineau (H); 8 Sheep Cr. (H); 1 Duck Cr. (W); 1 Switzer Cr. (W)
14. Karta River	0	—	1	1	1	1 Deer Mtn.(H)
15. Kegan Lake	10	—	—	0	10	—
16. Klakas Lake	15	—	—	0	15	—
17. Lost River	254	—	—	0	254	—
18. Margaret Lake	18	—	9	9	27	9 Neets Bay
19. Marten River	0	1	—	1	1	1 Hugh Smith L. (W)
20. Marx Creek	1	—	—	0	1	—
21. Mendenhall River	19	8	0	8	28	6 Duck Cr. (W); 2 Auke Cr. (W)
22. Naha River	49	—	—	0	49	—
23. Nakwasina River	1,254	—	—	0	1,254	—
24. Politofski Lake	39	—	—	0	39	—
25. Reflection Lake	67	—	—	0	67	—
26. Salmon Bay Lake	38	—	—	0	38	—
27. Salmon Lake	160	—	2	2	162	1 Bear Cove (H); 1 Deep Inlet (H)
28. Situk River	66	2	—	2	68	1 Ahrnklin R. (W); 1 Lost R. (W)
29. Slippery Creek	10	—	—	0	10	—
30. Speel Lake	273	—	11	11	284	9 First L. (H); 2 Speel Arm (H)
31. Stikine River	24	—	2	2	27	2 Earl West Cove (H)
32. Switzer Creek	2	—	7	7	9	5 Sheep Cr. (H); 2 Gastineau (H); 1 Salmon Cr. (H)
33. Taku River	441	2	—	2	443	1 Stikine R. (W); 1 Switzer (W)
34. Unuk River	242	—	—	0	242	—
Total	4,484	21	53	74	4,558	

^a (W) indicates a wild release, (H) indicates a hatchery release.

Thirty-six strays had moved fewer than 10 km from their tagging location, 28 had strayed 10–50 km, and 10 had strayed more than 50 km. Both hatchery and wild fish were found to stray considerable distances. For example, one tagged wild fish strayed approximately 240 km from the Stikine River to the Taku River. Two other wild fish strayed approximately 120 km from Hugh Smith Lake to the Chickamin River and from Jordan Creek to the Chilkat River. One hatchery fish strayed even farther, from the Fort Babine Hatchery in the upper Skeena River drainage to Hugh Smith Lake. Another hatchery fish strayed approximately 245 km from the Deer Mountain Hatchery in Ketchikan to Chuck Creek on Hecata Island on the southern outside coast.

Some of the strays represented relatively unremarkable movement among adjacent systems, including wild strays among the Ahrnklin, Lost, and Situk Rivers that enter a common lagoon near Yakutat, Alaska.

Movement of tagged fish was also evident among closely situated streams near the Juneau Airport (Switzer, Jordan, and Duck Creeks) as well as straying into some of those streams by hatchery fish from the nearby Macaulay (Gastineau) and Sheep Creek Hatcheries. Eight of the 17 tagged hatchery fish recovered in Jordan Creek were hybrids from an outbreeding depression study based at Sheep Creek Hatchery, while 9 were from normal production at the nearby Macaulay Hatchery. Hybrids from the same genetic study also accounted for 5 out of the 7 strays recovered from Switzer Creek.

Of 441 tags recovered at the fishwheels on the Taku River south of Juneau, only two were strays. Both were wild fish including one from the Stikine River and one from Switzer Creek. Eight documented strays in Montana Creek in the Mendenhall River system were all from nearby wild populations, including 6 fish from Duck Creek and 2 fish from Auke Creek.

Eleven strays were recorded at the Speel Lake Weir, including 9 from fry stocking in barriered First Lake within the Speel River system and two from the Snettisham Hatchery located near the mouth of the Speel River. Releases at both of these locations utilized broodstock from Speel Lake.

Two tagged hatchery fish have been recovered in the lower Stikine River, both of which were released in Earl West Cove near the mouth of the Stikine River.

Two tagged fish recovered in Salmon Lake near Sitka in 2007 were strays from the nearby Medvejie Hatchery. One was a stray from a central facility release in Bear Cove and one had been out-planted in Deep Inlet. Releases of summer run coho salmon in Deep Inlet are scheduled to increase incrementally to 1.7 million smolts contingent on a monitored straying rate of no more than 2% in nearby Salmon Lake and Sawmill Creek.

A single tagged fish from Deer Mountain Hatchery near Ketchikan was recovered in the Karta River system on eastern Prince of Wales Island while another was recovered in Chuck Creek on Hecata Island off the outer coast of Prince of Wales Island. A tagged fish from another Ketchikan area hatchery, Whitman Lake, was recovered at Hugh Smith Lake 72 km southeast of Ketchikan. A total of 9 tagged fish from production releases at Neets Bay Hatchery were recovered in the fish pass at Margaret Lake in neighboring Traitors Cove, including 1 fish in 1992, 2 fish in 1994, 1 fish in 1996, and 5 fish in 2001.

One of the more remarkable recoveries was a fish released as a smolt from the Fort Babine Hatchery in the upper Skeena River watershed and recovered at Hugh Smith Lake in 1987.

Some wild stocks strayed over substantial distances. Smolts tagged in Jordan Creek and the Berners River were captured as adults in the Chilkat River fishwheels, and a smolt tagged at Hugh Smith Lake was recovered as an adult in the Chickamin River. Another note-worthy stray was a fish tagged in the Stikine River that was recovered in the Canyon Island fishwheels on the Taku River.

DISCUSSION

Few conclusions about the level of straying can be drawn from coded-wire tag recovery data because of the very limited sample size and because recovery sampling was not conducted in a systematic way. Many returning adults have been sampled annually in wild stock research projects but most were sampled for the presence of a tag with a magnetic field detector and few have been sacrificed for tag recovery. In those studies, fish registering a positive signal with the field detector were assumed to contain a locally implanted tag.

Some of the wild stock recoveries reported here are suggestive of straying by adult coho salmon over substantial distances. However, recently acquired tags from juvenile fish indicate that juvenile coho salmon also engage in substantial inter-system migrations (Kent Crabtree, Division of Commercial Fisheries Biologist, ADF&G, Douglas; personal communication). For example, although three adults have been recovered in the Chilkat River from smolts tagged in the Berners River (2 fish) and Jordan Creek (1 fish), there has been an equal number of smolts or presmolts tagged in the Chilkat River that have been recovered as smolts migrating from the Berners River (2 fish) and Jordan Creek (1 fish) the following year. Therefore, it is unclear whether wild adults recovered in systems other than those in which they were tagged were actually strays in the genetic sense, or had simply reared in marine waters and distant freshwater habitats where they were captured and tagged before returning to their natal system.

Regarding straying of hatchery fish, the data suggest that straying occurs but are insufficient to estimate rates associated with different hatcheries and rearing and release strategies. In general, the pattern of strays is not inconsistent with the findings of Labelle (1992) who found relatively low straying rates by fish from central incubation facilities and higher rates for fish exposed to non-natal water sources and selective breeding. The marked rate of coho salmon returning to Auke Creek, where 100% of wild smolts are tagged, has apparently not increased since inception of releases of up to 1 million smolts annually from the nearby Macaulay and Sheep Creek hatcheries (Jerry Taylor, National Marine Fisheries Service Auke Bay Laboratory, personal communication), suggesting that releases from those central facilities have produced relatively few strays. On the other hand, nine tagged smolts released from the Neets Bay Hatchery were recovered from the fishway at Margaret Lake in neighboring Traitors Cove during the period 1992–2001, suggesting that significant straying may occur into small producing systems situated very close to major central incubation and rearing facilities. In general, however, factors related to homing and straying (including freshwater imprinting, genetic heritage and terminal run management) suggest that fish outplanted to locations away from a central incubation and rearing facility are more likely to stray than those with some hereditary adaptation to a release location with a consistent water source.

REFERENCE CITED

Labelle, M. 1992. Straying patterns of coho salmon (*Oncorhynchus kisutch*) stocks from southeast Vancouver Island, British Columbia. *Canadian Journal of Fisheries and Aquatic Sciences* 49:1843–1855.

**APPENDIX: LIST OF RECOVERIES OF STRAY ADULT COHO
SALMON**

Appendix A.—Coded-wire tagged stray adult coho salmon recovered in natural coho salmon producing systems in Southeast Alaska, 1976–2007.

Recovery Year	Survey Site	Stream Name	Tag Code	Rearing Type	Location (Facility or Wild Stock)	Last Date Released	Release Site	Tag Ratio
2005	AHRNKLIN R	AHRNKLIN R 182-70	40475	Wild	(W) SITUK R	6/18/2004	SITUK R	1.05
2006	CHICKAMIN R	KING CR 101-71	41045	Wild	(W) HUGH SMITH	5/18/2005	HUGH SMITH L	1.00
1998	CHILKAT R	CHILKAT R 115-32	44647	Wild	(W) BERNERS R	6/8/1997	BERNERS R	1.00
2007	CHILKAT R	CHILKAT R 115-32	41216	Wild	(W) BERNERS R	6/5/2006	BERNERS R	1.00
2003	CHILKAT R	CHILKAT R 115-32	35605	Wild	(W) JORDAN CR	6/18/2002	JORDAN CR	1.00
1983	CHUCK CREEK	CHUCK CR 103-80	42148	Hatchery	DEER MOUNTAIN	11/1/1981	WARD LK	2.16
2005	DUCK CREEK	DUCK CR 111-50	40799	Wild	(W) JORDAN CR	5/24/2004	JORDAN CR	1.04
1987	HUGH SMITH LK	HUGH SMITH 101-30	23431	Hatchery	H-FORT BABINE	4/30/1986	R-BABINE R	1.01
1984	HUGH SMITH LK	HUGH SMITH 101-30	42213	Hatchery	WHITMAN LAKE	5/26/1983	HERRING C	6.85
2006	JORDAN CREEK	JORDAN CR 111-50	40795	Wild	(W) DUCK CR	5/26/2005	DUCK CR	1.00
2003	JORDAN CREEK	JORDAN CR 111-50	35607	Wild	(W) SWITZER CR	6/17/2002	SWITZER CR	1.00
2001	JORDAN CREEK	JORDAN CR 111-50	503116	Hatchery	MACAULAY	6/12/2000	GASTINEAU CH	10.21
2001	JORDAN CREEK	JORDAN CR 111-50	503119	Hatchery	MACAULAY	6/12/2000	GASTINEAU CH	10.26
2001	JORDAN CREEK	JORDAN CR 111-50	503120	Hatchery	MACAULAY	6/12/2000	GASTINEAU CH	10.66
2003	JORDAN CREEK	JORDAN CR 111-50	40556	Hatchery	MACAULAY	6/18/2002	GASTINEAU CH	9.26
2003	JORDAN CREEK	JORDAN CR 111-50	40558	Hatchery	MACAULAY	6/17/2002	GASTINEAU CH	10.13
2003	JORDAN CREEK	JORDAN CR 111-50	40559	Hatchery	MACAULAY	6/17/2002	GASTINEAU CH	10.06
2004	JORDAN CREEK	JORDAN CR 111-50	40726	Hatchery	MACAULAY	6/12/2003	GASTINEAU CH	17.95
2004	JORDAN CREEK	JORDAN CR 111-50	40727	Hatchery	MACAULAY	6/12/2003	GASTINEAU CH	18.26
2004	JORDAN CREEK	JORDAN CR 111-50	40728	Hatchery	MACAULAY	6/12/2003	GASTINEAU CH	16.14
2001	JORDAN CREEK	JORDAN CR 111-50	503106	Hatchery	MACAULAY	6/7/2000	SHEEP CR	1.06
2001	JORDAN CREEK	JORDAN CR 111-50	503106	Hatchery	MACAULAY	6/7/2000	SHEEP CR	1.06
2001	JORDAN CREEK	JORDAN CR 111-50	503108	Hatchery	MACAULAY	6/7/2000	SHEEP CR	1.06

—continued—

Recovery Year	Survey Site	Stream Name	Tag Code	Rearing Type	Location (Facility or Wild Stock)	Last Date Released	Release Site	Tag Ratio
2001	JORDAN CREEK	JORDAN CR 111-50	503110	Hatchery	MACAULAY	6/7/2000	SHEEP CR	1.06
2001	JORDAN CREEK	JORDAN CR 111-50	503111	Hatchery	MACAULAY	6/7/2000	SHEEP CR	1.06
2003	JORDAN CREEK	JORDAN CR 111-50	40568	Hatchery	MACAULAY	5/21/2002	SHEEP CR	1.06
2003	JORDAN CREEK	JORDAN CR 111-50	40568	Hatchery	MACAULAY	5/21/2002	SHEEP CR	1.06
2003	JORDAN CREEK	JORDAN CR 111-50	40571	Hatchery	MACAULAY	5/21/2002	SHEEP CR	1.06
1994	KARTA RIVER	MCGILVERY C 102-60	43855	Hatchery	DEER MOUNTAIN	5/14/1993	KETCHIKAN CR	4.20
1992	MARGARET L	MARGARET LK 101-90	43451	Hatchery	NEETS BAY	6/1/1991	NEETS BAY	70.35
1994	MARGARET L	MARGARET LK 101-90	43931	Hatchery	NEETS BAY	6/1/1993	NEETS BAY	98.00
1994	MARGARET L	MARGARET LK 101-90	43931	Hatchery	NEETS BAY	6/1/1993	NEETS BAY	98.00
1996	MARGARET L	MARGARET LK 101-90	44156	Hatchery	NEETS BAY	6/1/1995	NEETS BAY	55.88
2001	MARGARET L	MARGARET LK 101-90	40442	Hatchery	NEETS BAY	6/1/2000	NEETS BAY	18.76
2001	MARGARET L	MARGARET LK 101-90	40443	Hatchery	NEETS BAY	6/1/2000	NEETS BAY	18.44
2001	MARGARET L	MARGARET LK 101-90	40444	Hatchery	NEETS BAY	6/1/2000	NEETS BAY	42.77
2001	MARGARET L	MARGARET LK 101-90	40444	Hatchery	NEETS BAY	6/1/2000	NEETS BAY	42.77
2001	MARGARET L	MARGARET LK 101-90	40448	Hatchery	NEETS BAY	6/1/2000	NEETS BAY	20.76
1985	MARTEN RIVER	MARTEN R 101-30	42306	Wild	(W) HUGH SMITH	5/20/1984	HUGH SMITH L	1.03
1997	MENDENHALL R	MONTANA CR 111-50	40717	Wild	(W) AUKE CR	6/25/1996	AUKE CR	1.00
1997	MENDENHALL R	MONTANA CR 111-50	40717	Wild	(W) AUKE CR	6/25/1996	AUKE CR	1.00
1997	MENDENHALL R	MONTANA CR 111-50	44660	Wild	(W) DUCK CR	7/9/1996	DUCK CR	1.00
1997	MENDENHALL R	MONTANA CR 111-50	44660	Wild	(W) DUCK CR	7/9/1996	DUCK CR	1.00
1997	MENDENHALL R	MONTANA CR 111-50	44660	Wild	(W) DUCK CR	7/9/1996	DUCK CR	1.00
1997	MENDENHALL R	MONTANA CR 111-50	44660	Wild	(W) DUCK CR	7/9/1996	DUCK CR	1.00
1997	MENDENHALL R	MONTANA CR 111-50	44660	Wild	(W) DUCK CR	7/9/1996	DUCK CR	1.00

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Recovery Year	Survey Site	Stream Name	Tag Code	Rearing Type	Location (Facility or Wild Stock)	Last Date Released	Release Site	Tag Ratio
1997	MENDENHALL R	MONTANA CR 111-50	44660	Wild	(W) DUCK CR	7/9/1996	DUCK CR	1.00
2007	SALMON LAKE	SALMON CR 113-41	41177	Hatchery	MEDVEJIE	5/23/2006	BEAR COVE	1.00
2007	SALMON LAKE	SALMON CR 113-41	41185	Hatchery	MEDVEJIE	5/18/2006	DEEP INLET	5.94
2006	SITUK RIVER	SITUK R 182-70	41050	Wild	(W) AHRNKLIN R	6/5/2005	AHRNKLIN R	1.00
2005	SITUK RIVER	SITUK R 182-70	40487	Wild	(W) TAWAH CR	5/20/2004	TAWAH CR	1.00
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	H40400	Hatchery	SNETTISHAM	7/1/1979	FIRST LK	1.03
1982	SPEEL LAKE	SPEEL LK 111-33	41919	Hatchery	SNETTISHAM	5/1/1981	SPEEL ARM	5.45
1982	SPEEL LAKE	SPEEL LK 111-33	41919	Hatchery	SNETTISHAM	5/1/1981	SPEEL ARM	5.45
2001	STIKINE R	STIKINE R 108-40	40438	Hatchery	EARL WEST C	5/26/2000	EARL WEST C	11.73
2001	STIKINE R	STIKINE R 108-40	40438	Hatchery	EARL WEST C	5/26/2000	EARL WEST C	11.73
1984	SWITZER CR	SWITZER CR 111-40	35602	Hatchery	AUKE CREEK	6/15/1983	SALMON CR	2.34
2000	SWITZER CR	SWITZER CR 111-40	500462	Hatchery	MACAULAY	6/7/1999	GASTINEAU CH	9.94
2000	SWITZER CR	SWITZER CR 111-40	500445	Hatchery	MACAULAY	6/9/1999	SHEEP CR	1.12
2000	SWITZER CR	SWITZER CR 111-40	500445	Hatchery	MACAULAY	6/9/1999	SHEEP CR	1.12
2000	SWITZER CR	SWITZER CR 111-40	500446	Hatchery	MACAULAY	6/9/1999	SHEEP CR	1.12