

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

*Division of Commercial Fisheries
Division of Sport Fish*

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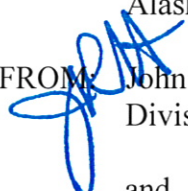
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MEMORANDUM


TO: Members
Alaska Board of Fisheries

DATE: September 30, 2010

FROM:  John Hilsinger, Director
Division of Commercial Fisheries

SUBJECT: Kodiak and Chignik
Stock of Concern
Recommendations

and

Charles Swanton, Director 
Division of Sport Fish

The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the department to report to the Alaska Board of Fisheries (board) on the status of salmon stocks and identify any stocks that present a concern related to yield, management, or conservation during regular board meetings. An interdivisional review team consisting of staff from the divisions of Commercial Fisheries and Sport Fish reviewed escapement goals in the Kodiak Management Area (Area K) and the Chignik Management Area (Area L) as part of the current board meeting cycle. In conjunction with the escapement goal review, the team examined potential stocks of yield, management, or conservation concern, as defined in the SSFP. This memorandum summarizes the results of the stock of concern evaluation for Kodiak (Area K) and Chignik (Area L) salmon stocks for the 2010-2011 board regulatory cycle.

All Chinook, sockeye, pink, coho, and chum salmon stocks in the Kodiak and Chignik management areas were examined for potential stock of concern status. Only the Karluk River Chinook salmon stock was identified as a potential candidate for stock of concern status.

Karluk River Chinook salmon

Background

Karluk River is located in the southwest portion of Kodiak Island and supports commercial, sport, and subsistence fisheries (Figure 1). A biological escapement goal (BEG) of 4,500-8,000 fish was established for Karluk River Chinook salmon in 1978. During the 2001-2002 board meeting cycle the escapement goal was changed to a BEG of 3,600-7,300 fish (Hasbrouck and

Clark, Escapement goal review of Chinook salmon in the Ayakulik, Chignik, and Karluk Rivers, ADF&G *Unpublished*). This BEG was corroborated with an updated Ricker analysis of spawner-recruit data in 2004 (Nelson *et al.* 2005) and reviewed again in 2006 with no changes recommended (Honnold *et al.* 2007).

The divisions of Commercial Fisheries and Sport Fish have operated a weir upstream of the Karluk Lagoon to assess the escapement since 1976 (Figure 1). Escapement of Karluk River Chinook salmon since 1976 ranged from 752 to 13,742 fish (Table 1). During the 10-year period before a decline in productivity (1997-2006) escapements averaged 7,278 Chinook salmon. From 2007 through 2010 escapements decreased to an average of 1,668 fish. For each of the last 4 years, Karluk River Chinook salmon escapement has failed to meet the BEG (Figure 2). During this period of time, escapements ranged from a low of 752 in 2008 to a high of 2,916 fish in 2010 (Table 1).

Karluk River Chinook salmon are harvested by a commercial fishery in salt water and by subsistence and sport fisheries in fresh water. Estimated mean annual sport harvest of Chinook salmon from 1997 to 2006 was 1,141 fish. In 2007, 205 Chinook salmon were harvested in the sport fishery and no Chinook salmon were harvested by the sport fishery from 2008-2010. Complete sport fishery closures were in effect during 2009-2010.

The commercial fishery located in the Inner Karluk and Outer Karluk sections targets sockeye salmon returning to Karluk Lake, but Karluk River Chinook salmon are also harvested. The annual commercial harvest of Chinook salmon has declined significantly since 2004 (Table 1). From 1997 to 2006, the mean annual commercial harvest was 1,214 fish. From 2007 to 2010, the annual mean harvest decreased to 82 fish. No commercial harvest has occurred in these sections during times that Karluk River Chinook salmon would normally be present since 2008 because of restrictions enacted due to low sockeye salmon runs.

The dual-managed state/federal subsistence fishery on Karluk River Chinook salmon occurs in Karluk Lagoon and Karluk River. Estimated mean annual subsistence harvest from 1997 to 2006 was 28 fish and ranged from a low of 0 fish in several years to 165 fish in 2002 (Table 1). Restrictions on subsistence users to conserve Chinook salmon escapements have included a prohibition on retention of all Chinook caught inriver during 2008, and complete closure of Karluk River drainage to subsistence harvest of Chinook salmon in 2009 and 2010 (Figure 3).

For the 13 most recent complete brood-years (1990-2002) only 3 (1992, 1994, and 1998) have replaced themselves with subsequent returns (i.e., average return per spawner ≥ 1.0 ; Table 2). For brood-years 1976-2002, the age composition of the returns was approximately 2% age-3, 11% age-4, 29 % age-5, 52% age-6, and 6% age-7 fish. It is unlikely brood-years 2003 and 2004 will produce returns that replace themselves (return per spawner ≥ 1.0).

Management Measures

The department began taking inseason management actions to conserve Karluk River Chinook salmon in 2001. The Division of Sport Fish implemented bag limit restrictions, nonretention regulations, and/or total fishery closures during 2001 through 2010 (Figure 4). In 2005, a commercial fishery regulation was adopted that mandated nonretention of Chinook salmon over 28 inches in the commercial fishery within the Inner and Outer Karluk sections if Chinook

salmon runs were weak (5 AAC 18.395). While the department does not specifically manage the commercial harvest of Chinook salmon, this regulation was put into effect during the 2005-2008 seasons, and the Inner and Outer Karluk sections were closed to commercial salmon fishing during the Chinook salmon run in 2009 and 2010 (Figure 3) because of restrictions enacted due to low sockeye salmon runs. The subsistence fishery was closed during 2008 inriver above Karluk River weir and within the entire drainage during 2009 and 2010 (Figure 3).

Stock of Concern Recommendation

Despite specific management measures by the department to reduce harvest in the sport, commercial, and subsistence fisheries, the Karluk River Chinook salmon stock has continued to decline during 2001-2010 and failed to make the escapement goal each of the last four years.

The SSFP states that “management concern means a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds of the SEG, BEG, OEG, or other specific management objectives for the fishery...”. For these reasons, the department’s recommendation to the board is that Karluk River Chinook salmon be declared a stock of management concern.

Literature Cited

- Honnold, S. G., M. J. Witteveen, M. B. Foster, I. Vining, and J. J. Hasbrouck. 2007. Review of escapement goals for salmon stocks in the Kodiak Management Area, Alaska. Alaska Department of Fish and Game, Fishery Manuscript No. 07-10, Anchorage.
- Nelson, P.A., M.J. Witteveen, S.G. Honnold, I.Vining, and J.J Hasbrouck. 2005. Review of salmon escapement goals in the Kodiak management area. Alaska Department of Fish and Game, Fisheries Manuscript Series No 05-05, Anchorage.

Table 1.—Karluk River Chinook salmon harvest, run, and escapement, 1976-2010.

Run Year	Commercial Harvest ^a	Subsistence Harvest ^b	Sport Harvest ^c	Weir Count ^d	Escapement ^e
1976	2	0	461	6,897	6,436
1977	0	0	461	8,434	7,973
1978	35	0	461	9,795	9,334
1979	0	0	461	9,555	9,094
1980	0	0	461	4,810	4,349
1981	0	0	461	7,575	7,114
1982	0	0	796	7,489	6,693
1983	0	0	304	11,746	11,442
1984	2	0	175	7,747	7,572
1985	5	0	472	5,362	4,890
1986	542	0	122	4,429	4,307
1987	313	0	199	7,930	7,731
1988	3	0	819	13,337	12,518
1989	0	0	559	10,484	9,925
1990	0	0	700	14,442	13,742
1991	0	0	1,599	14,022	12,423
1992	264	0	856	9,601	8,745
1993	3,082	5	1,634	13,944	12,310
1994	5,114	13	1,483	12,049	10,566
1995	1,794	31	1,284	12,657	11,373
1996	1,662	4	1,695	10,051	8,356
1997	1,445	17	1,574	13,443	11,869
1998	252	4	1,173	10,239	9,066
1999	1,067	7	1,766	13,063	11,297
2000	693	22	2,581	10,460	7,879
2001	2,588	24	1,304	4,453	3,149
2002	1,262	165	716	7,175	6,944
2003	1,336	6	563	7,256	6,986
2004	2,249	16	690	7,525	7,228
2005	349	5	368	4,798	4,684
2006	900	17	670	4,112	3,673
2007	313	1	205	1,765	1,697
2008	13	5	0	752	752
2009	0	0	0	1,306	1,306
2010	0	0 ^f	0	2,916	2,916
1997-2006 AVG	1,214	28	1,141	8,252	7,278
2007-2010 AVG	82	2	51	1,685	1,668

^a Source: ADF&G, Division of Commercial Fisheries Statewide Harvest Receipt (fish ticket) database. Commercial harvest is the harvest of Chinook salmon from Inner and Outer Karluk statistical areas (255-10 and 255-20) through July 15.

^b Based on subsistence harvest records maintained by the Westward Region of ADF&G's Division of Commercial Fisheries; includes all reported harvest in Karluk Section.

^c Sport harvest (above and below the weir) is from the Statewide Harvest Survey.

^d Source ADF&G, Division of Commercial Fisheries Kodiak weir count database.

^e Escapement is weir count minus the recreational harvest that occurs above the weir.

^f subsistence fishery closed; no reported harvest to date.

Table 2.—Karluk River Chinook salmon brood table data, 1976-2010 (R/S is return per spawner).

Brood Year	Escapement	Return by age					Total Return	R/S
		3	4	5	6	7		
1976	6,436	159	489	2,129	3,879	919	7,575	1.18
1977	7,973	80	771	2,105	6,085	606	9,646	1.21
1978	9,334	126	762	3,301	4,014	420	8,623	0.92
1979	9,094	125	1,195	2,178	2,780	389	6,667	0.73
1980	4,349	196	788	1,508	2,575	645	5,712	1.31
1981	7,114	129	546	1,397	4,270	1,043	7,385	1.04
1982	6,693	89	506	2,317	6,910	820	10,642	1.59
1983	11,442	83	839	3,749	5,431	1,129	11,231	0.98
1984	7,572	137	1,357	2,946	7,481	1,097	13,019	1.72
1985	4,890	222	1,067	4,059	7,264	771	13,383	2.74
1986	4,307	175	1,469	3,941	5,110	77	10,772	2.50
1987	7,731	241	1,427	2,772	10,360	1,098	15,897	2.06
1988	12,518	234	1,004	5,165	10,317	1,484	18,204	1.45
1989	9,925	164	1,352	3,417	8,642	913	14,488	1.46
1990	13,742	77	1,692	2,021	5,950	882	10,621	0.77
1991	12,423	653	1,891	2,751	6,922	0	12,218	0.98
1992	8,745	444	1,921	5,271	7,866	848	16,351	1.87
1993	12,310	115	1,237	1,210	5,938	112	8,612	0.70
1994	10,566	592	1,343	5,938	6,817	707	15,396	1.46
1995	11,373	77	1,272	3,576	4,804	363	10,093	0.89
1996	8,356	141	447	1,554	3,271	89	5,503	0.66
1997	11,869	224	0	2,908	1,778	575	5,485	0.46
1998	9,066	0	2,272	5,246	5,577	178	13,273	1.46
1999	11,297	273	1,689	3,443	2,096	1,203	8,704	0.77
2000	7,879	89	435	2,246	2,840	554	6,264	0.80
2001	3,149	154	680	964	1,109	121	3,028	0.96
2002	6,944	205	263	302	647	119	1,536	0.23
2003	6,986	0	101	81	356			
2004	7,228	0	0	514				
2005	4,684	0	277					
2006	3,673	40						
2007	1,697							
2008	752							
2009	1,306							
2010	2,916							

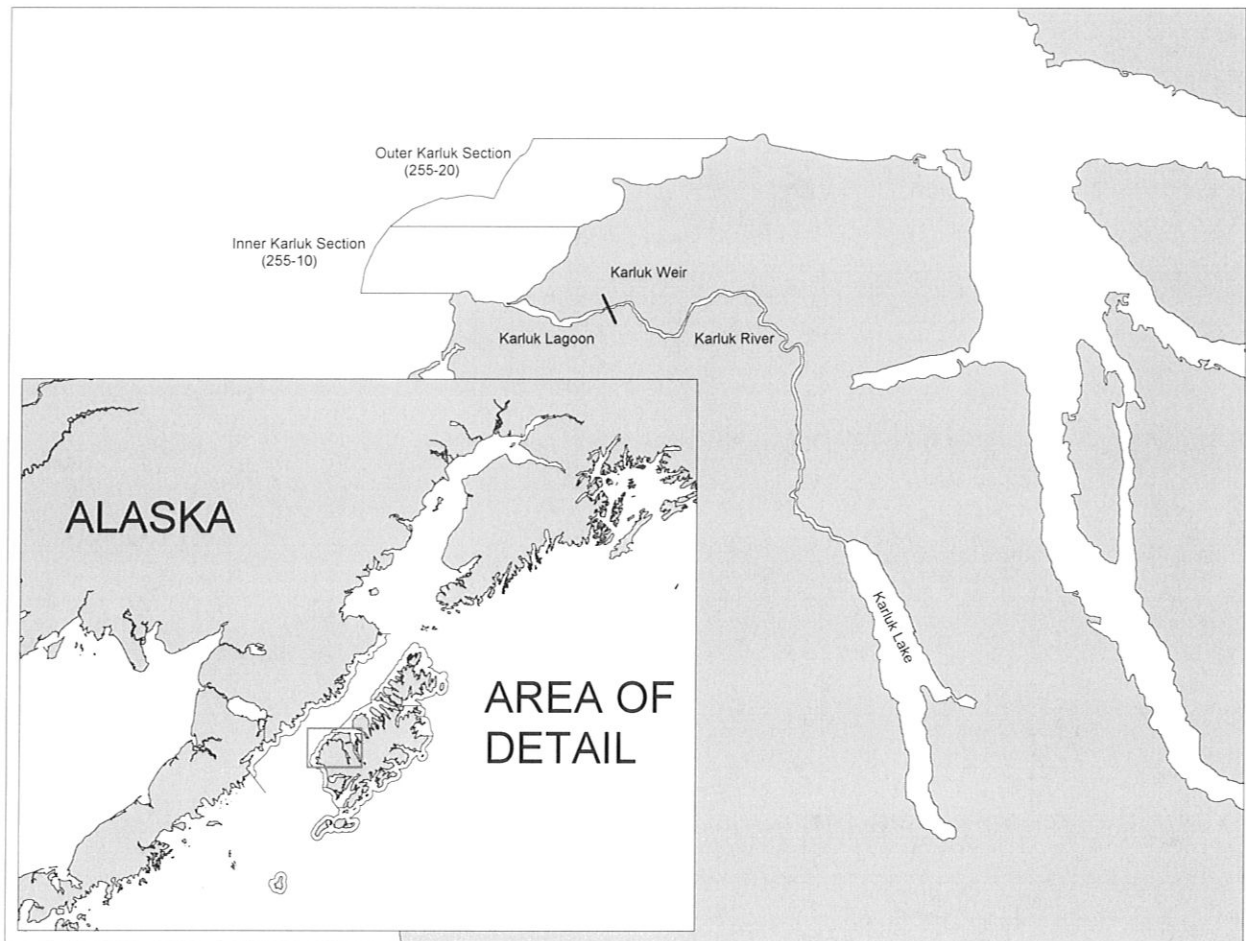


Figure 1.-Map of the Karluk River, Karluk Lake, and commercial fishery sections.

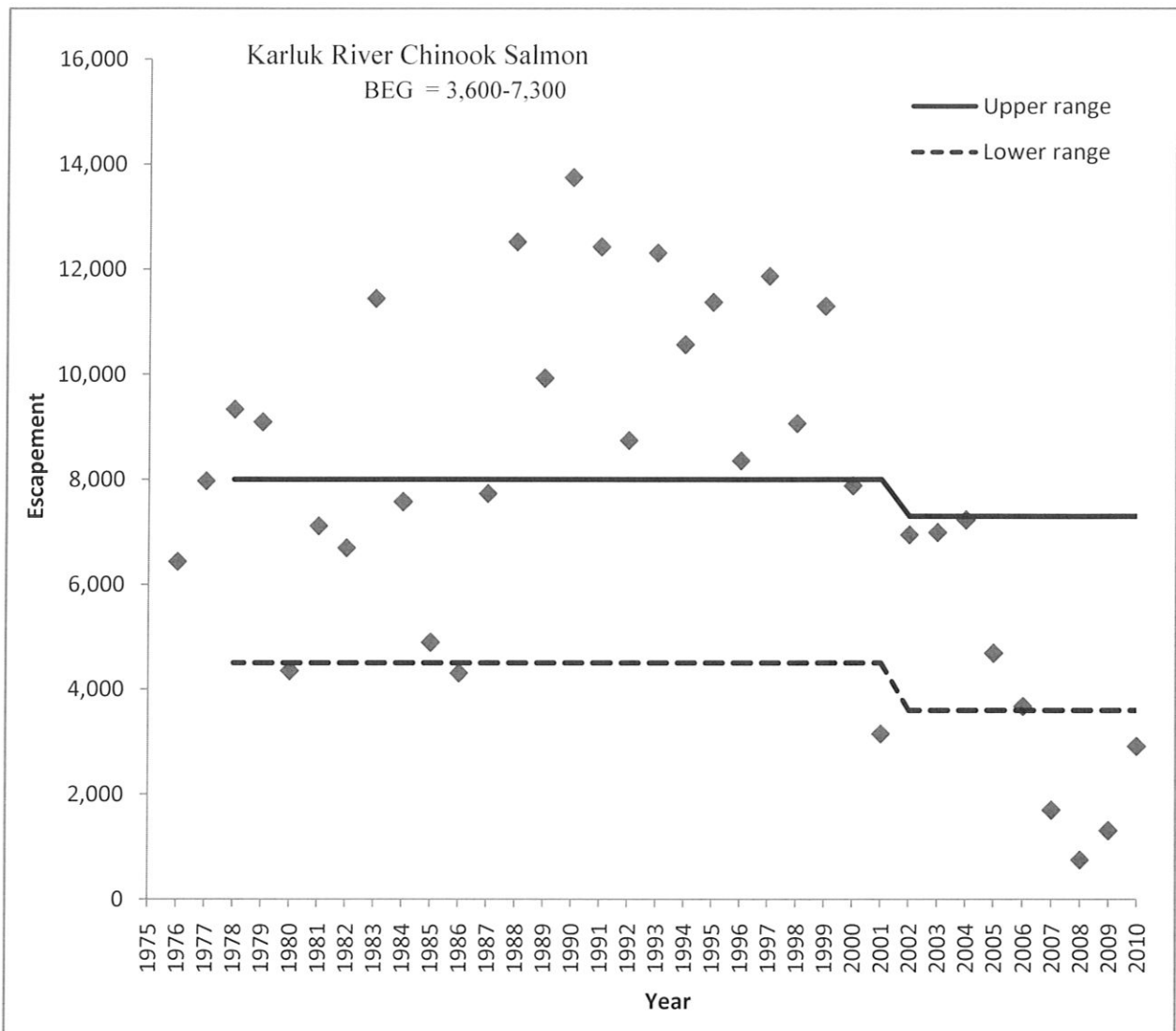


Figure 2.—Karluk River Chinook salmon escapement and escapement goal range, 1976-2010.

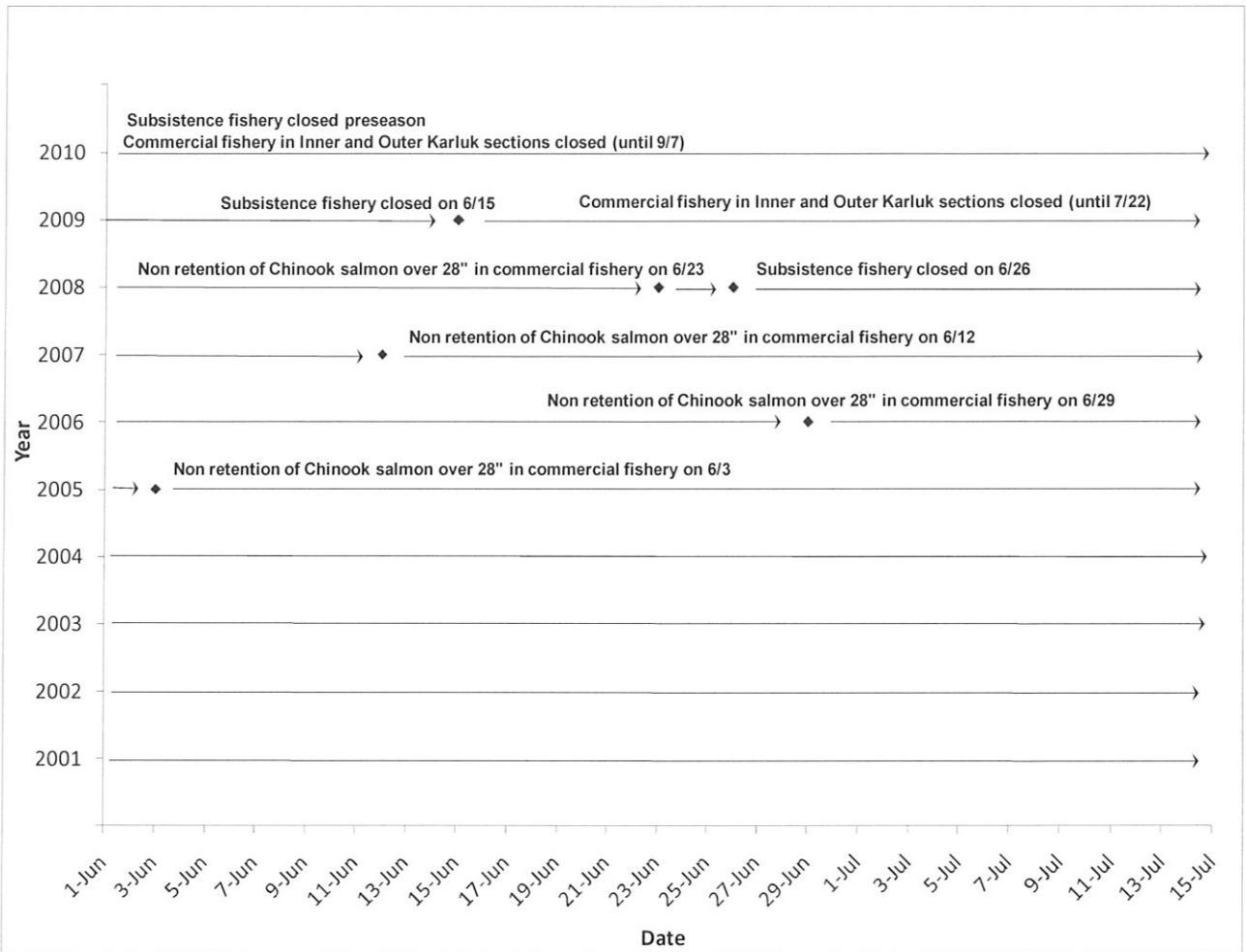


Figure 3.-Karluk River Chinook salmon commercial and subsistence fishery management actions, 2001-2010.

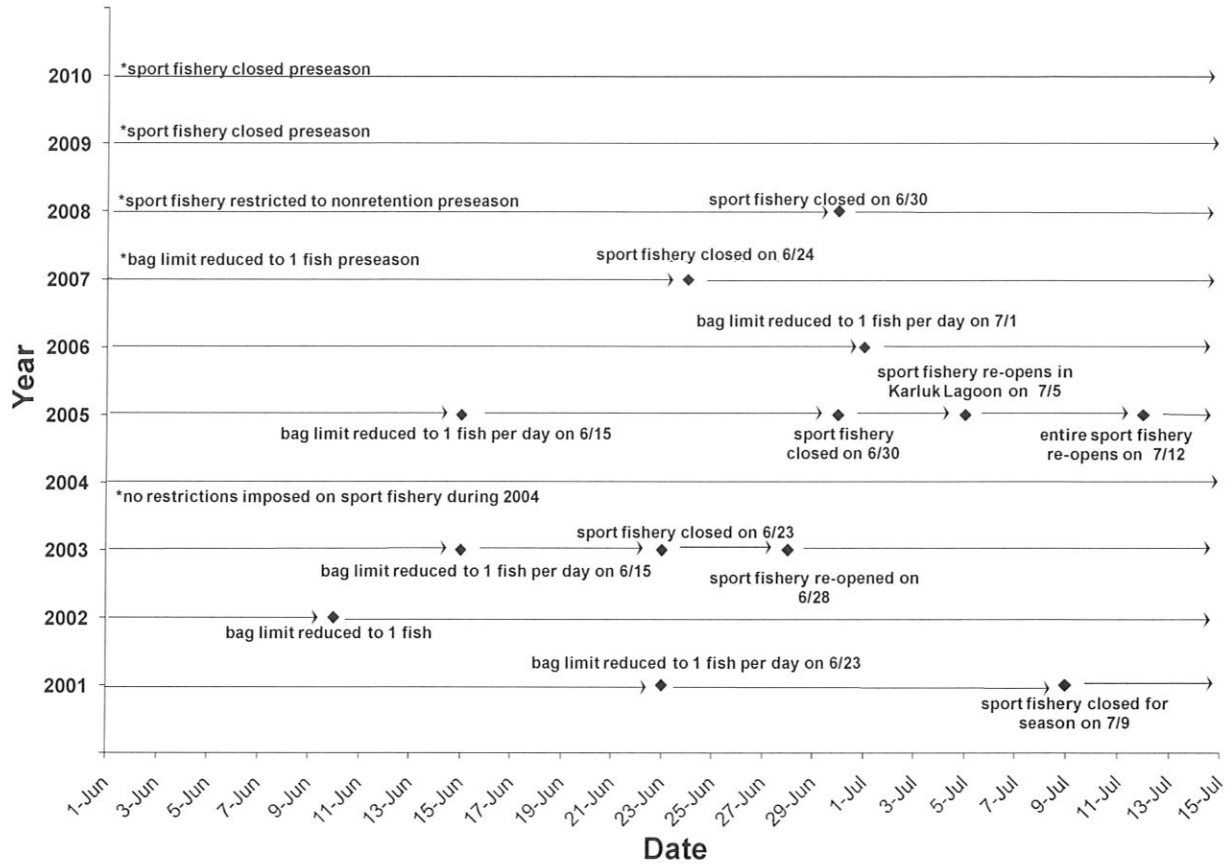


Figure 4.—Karluk River Chinook salmon sport fishery management actions, 2001-2010.