



THE STATE
of **ALASKA**
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MEMORANDUM

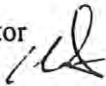
TO: Members
Alaska Board of Fisheries

DATE: September 29, 2014

FROM: Jeff Regnart, Director 
Division of Commercial Fisheries

SUBJECT: Southeast Region
Stock of Concern
Recommendations

and

Charles O. 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. This memorandum summarizes the results of the stock of concern evaluation for Southeast Alaska salmon stocks for the 2014/2015 board regulatory cycle. An interdivisional review team consisting of staff from the divisions of Commercial Fisheries and Sport Fish reviewed escapement goals in the Southeast Region and examined potential stocks of concern as defined in the SSFP. Formal escapement goals are established for 52 stocks of salmon in Southeast Alaska.

A management concern is defined in 5 AAC 39.222 as "a concern arising from a chronic inability, despite use of specific management measures, to maintain escapement for a stock within the bounds" of the established escapement goal, and "chronic inability" means "continuing or anticipated inability to meet escapement thresholds over a four to five year period, which is approximately equivalent to the generation time of most salmon species." No Southeast Alaska salmon stocks have failed to meet escapement goals for four to five consecutive years; therefore, we do not recommend any stocks of concern be established at this time. We note that Chilkat River and Unuk River king salmon runs have recently experienced poor recruitment, resulting in escapements below respective escapement goals for the past three consecutive years, 2012–2014 (Figures 1 and 2). Brief summaries on the status of Chilkat River and Unuk River king salmon are provided for the board's information.

CHILKAT RIVER KING SALMON

The current *biological* escapement goal range of 1,750–3,500 large king salmon (primarily age-1.3 fish and older) was established for the Chilkat River in 2003, based on a stock-recruit analysis by Erickson and McPherson (2004). Fisheries that harvest this stock in Chilkat Inlet are managed in accordance with the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* (5 AAC 33.384), established in 2003 to achieve an *inriver* goal of 1,850–3,600 large fish, which includes the biological escapement goal and the incidental harvest of king salmon in the Chilkat River subsistence sockeye salmon fishery. Escapements were below both the *inriver* and biological escapement goals for the past three consecutive years: 1,723 fish in 2012, 1,718 fish in 2013, and a preliminary estimate of 1,390 in 2014 (Figure 1).

Stock Assessment: The Chilkat River is a glacial system that empties into Chilkat Inlet and northern Lynn Canal, near Haines. The Chilkat River supports the fifth largest stock of king salmon in Southeast Alaska, and these fish rear primarily around Southeast Alaska (Pahlke 2008). Total escapement estimates of large spawners are based on mark-recapture studies, conducted annually since 1991, which are subsequently discounted by reported harvests in the *inriver* subsistence fishery. Escapement estimates are relatively precise (CVs of point estimates averaged 15%). Chilkat River king salmon are harvested directly in a small terminal marine sport fishery in Chilkat Inlet, but are otherwise harvested incidentally in mixed stock sport fisheries, commercial drift gillnet (Lynn Canal) and troll (primarily in northern Southeast Alaska) fisheries, and in sockeye salmon subsistence fisheries in Chilkat Inlet and the Chilkat River. Juvenile king salmon have been coded-wire tagged at relatively high rates (8–10%) since 1999; additional coded-wire tagging occurred in three prior years. Coded-wire tagging information suggests harvest rates on Chilkat River king salmon have historically been low, averaging about 21%, but have increased in recent years (2010–2013 average = 27%).

Management Measures: The *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* (5 AAC 33.384) provides guidelines for managing fisheries that harvest Chilkat River king salmon in Chilkat Inlet, either directly (sport fishery) or indirectly in sockeye salmon fisheries (subsistence and commercial drift gillnet). The plan outlines time and area closures for sport and subsistence fisheries in the Chilkat River and Chilkat Inlet (Figure 3), and determines the northern boundary of the commercial drift gillnet fishery in Chilkat Inlet under three different *inriver* run strength projections during the first five weeks of the season (Table 1; Figure 3). The board has made a positive customary and traditional use finding for salmon (all species combined) in all waters of the Chilkat River and Chilkat Inlet north of the latitude of Glacier Point, and in the Chilkoot River, Lutak Inlet, and Chilkoot Inlet north of the latitude of Battery Point, excluding waters of Taiya Inlet north of the latitude of the tip of Taiya Point (5 AAC 01.716 (a)(2)). The board has found that 7,174–10,414 salmon (all species combined) are reasonably necessary for subsistence in District 15 (5 AAC 01.716 (c)(5)). Sibling return rates are used to generate pre-season forecasts of Chilkat River king salmon abundance, and stock assessment programs on the Chilkat River are used to evaluate abundance inseason.

Management measures taken since 2009 to conserve Chilkat River king salmon are outlined in Table 2 (commercial drift gillnet fishery) and Table 3 (sport and subsistence fisheries). Pre-season forecasts of Chilkat River king salmon were within the goal range in 2009, 2011, 2012, 2013, and 2014, and above the range in 2010. In all years, area closures for commercial fishing stipulated in the management plan were followed, with more restrictive lines in place in some years to conserve sockeye salmon stocks and more restrictive lines in 2014 to conserve Chilkat River king salmon

(Table 2). In 2012 and 2013, area closures for sport and subsistence fisheries were extended beyond the time stipulated in the management plan when inseason projections indicated inriver runs would be below goal (Table 3).

Stock of Concern Recommendation: Based on the following considerations, we do not recommend Chilkat River king salmon as a stock of concern. Although the three recent escapements were below goal, escapements in 2012 (1,723 fish) and 2013 (1,718 fish) were within 2% of the lower bound of the *biological* escapement goal (1,750 fish). A conservative management approach will be taken at the start of the 2015 season, regardless of forecasts, and current management options provide sufficient latitude to reduce the harvest of Chilkat River king salmon.

UNUK RIVER CHINOOK SALMON

The current biological escapement goal range of 1,800–3,800 large king salmon (primarily age-1.3 fish and older) was established for the Unuk River in 2009, based on an updated stock-recruit analysis of the 1982–2001 brood years (Hendrich et al. 2008). After meeting the escapement goal for 35 consecutive years, escapements were below goal for the past three consecutive years: 956 fish in 2012, 1,135 fish in 2013, and 1,691 fish in 2014 (Figure 2).

Stock Assessment: The Unuk River is a glacial system that empties into the northeast corner of Behm Canal, 85 km north of Ketchikan. The Unuk River supports the third largest stock of king salmon in Southeast Alaska, and these fish rear primarily near Southeast Alaska (Pahlke 2008). Escapements of large spawners are based on mark-recapture estimates of total escapement (1997–2009 and 2011) and expanded peak survey counts from standardized helicopter index surveys of the drainage (1977–1996, 2010, and 2012–2014). Concurrent years of mark-recapture studies and index surveys allowed development of an expansion factor (4.83) to convert peak index surveys to an estimate of total escapement. Radio telemetry studies conducted in 1994 and 2009 further verified that index surveys took place where 80% of the spawning occurs. Escapement estimates are relatively precise (CVs of point estimates averaged 12%). Immature and mature Unuk River king salmon are harvested incidentally in mixed stock fisheries in marine waters in Southeast Alaska and northern British Columbia. Coded-wire tagging of this stock was conducted from 1982 to 1986 and from 1992 to present. For the 1992 to 2006 broods, the average harvest distribution by gear group was 56.8% troll, 27.7% sport, 9.7% drift gillnet, 1.6% purse seine, and 4.2% in other fisheries. Estimated annual harvest rates averaged 29% from 1989 to 2011, but preliminary estimates of harvest rates for 2012 and 2013 were higher, at 64% and 45%, respectively.

Management Measures: In 2014, management measures were implemented in both sport and commercial troll fisheries in an effort to reduce the harvest of Unuk River king salmon. Current sport fishing regulations protect Unuk River king salmon by closing salmon fishing year-round in northern Behm Canal and contiguous bays, and by limiting the salmon season to August 15–April 30 in southern Behm Canal (Figure 4). In 2014 the area of northern Behm Canal closed to sport salmon fishing was expanded in size May 27–June 30, the west Behm Canal king salmon bag and possession limit was reduced to one fish May 27–June 30, and liberalization of king salmon regulations in the Herring Bay Sport Terminal Harvest Area was postponed (Figure 4).

Management measures implemented in the commercial fisheries were focused on spring troll fisheries, based on coded-wire tag and run-timing data. Over the past five years, Unuk River king

salmon were harvested mainly during June and in some spring troll fishing areas more than others. Management actions included closing several areas that had been open during the previous spring (West Behm Canal, Point Alava, Clarence Strait, and a large portion of what had been the Ketchikan spring troll area) (Figure 5). The remainder of the Ketchikan spring troll area was divided into three sub-areas to increase the level of detail in stock composition data. What had been the Sumner Strait spring troll area during previous years was split into two sub-areas for the same reason. Finally, fishing time was reduced in several areas during June (Mountain Point, West Clarence Strait, Steamer Point, North Sumner Strait and South Sumner Strait). Preliminary results suggest that the harvest rate in 2014 was approximately 47%.

Stock of Concern Recommendation: Based on the following considerations, we do not recommend Unuk River king salmon as a stock of concern. Although the three recent escapements were below goal, the 2014 escapement (1,691 fish) was a substantial improvement over the previous two years, and was within 6% of the lower bound of the goal (1,800 fish). Preliminary results of management measures implemented in 2014 (which were not implemented in 2012 or 2013) suggest that the harvest rate was around 47%; still higher than the long-term average of 29% but much reduced from the estimated harvest rate in 2012 (64%) and similar to that observed in 2013 (45%). As in 2014, conservative management measures will be implemented in 2015 to reduce the harvest of Unuk River king salmon in an effort to achieve the escapement goal.

REFERENCES CITED

- Ericksen, R. P., and S. A. McPherson. 2004. Optimal production of Chinook salmon from the Chilkat River. Alaska Department of Fish and Game, Fishery Manuscript No. 04-01, Anchorage.
- Hendrich, C. F., J. L. Weller, S. A. McPherson, and D. R. Bernard. 2008. Optimal production of Chinook salmon from the Unuk River. Alaska Department of Fish and Game, Fishery Manuscript No. 08-03, Anchorage.
- Pahlke, K. A. 2008. Escapements of Chinook salmon in Southeast Alaska and transboundary rivers in 2006. Alaska Department of Fish and Game, Fishery Data Series No. 08-20, Anchorage.

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Table 1.—Northern boundary schedule for the commercial drift gillnet fishery in Chilkat Inlet under three king salmon abundance projections specified in the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* (5 AAC 33.384).

Run projection	1 st week	2 nd week	3 rd week	4 th week	5 th week
Below goal range	Seduction Pt	Seduction Pt	Glacier Pt	Glacier Pt	Cannery Pt
Within goal range	Seduction Pt	Seduction Pt	Glacier Pt	Cannery Pt	NS
Above goal range	Seduction Pt	Glacier Pt	Cannery Pt	NS	NS

Note: NS = not specified.

Table 2.—Pre-season forecasts of inriver abundance of large Chilkat River king salmon, and subsequent northern boundaries of the commercial drift gillnet area in Chilkat Inlet during the first five weeks of the season, 2009–2014.

Year	Pre-season forecast	Season start date	1 st week	2 nd week	3 rd week	4 th week	5 th week
2009	Within goal	June 21	Seduction Pt	Seduction Pt	Glacier Pt	Cannery Pt	Cannery Pt
2010	Above goal	June 20	Seduction Pt	Glacier Pt	Glacier Pt	Glacier Pt	North Kochu
2011	Within goal	June 19	Seduction Pt	Seduction Pt	Glacier Pt	Glacier Pt	North Kochu
2012	Within goal	June 17	Seduction Pt	Seduction Pt	Seduction Pt	Seduction Pt	Seduction Pt
2013	Within goal	June 16	Seduction Pt	Seduction Pt	Glacier Pt	Glacier Pt	North Kochu
2014	Within goal	June 15	Seduction Pt	Seduction Pt	Glacier Pt	Glacier Pt	Glacier Pt

Table 3.—Management measures taken to conserve Chilkat River king salmon in sport and subsistence fisheries, 2009–2014.

Year	Fishery	Management measures
2009	Sport	• Did not allow retention of sub-legal (<28 inch TL) king salmon in Taiya Inlet THA.
2010	Sport	• Did not allow retention of sub-legal (<28 inch TL) king salmon in Taiya Inlet THA.
2011	Sport	• Did not liberalize bag limits or allow retention of sub-legal (<28 inch TL) king salmon in Taiya Inlet THA.
2012	Sport	• Did not liberalize bag limits or allow retention of sub-legal (<28 inch TL) king salmon in Taiya Inlet THA. • Extended dates of king salmon sport fishing area closure in northern Chilkat Inlet.
2012	Subsistence	• Extended dates of subsistence fishing area closure in northern Chilkat Inlet and Chilkat River.
2013	Sport	• Did not liberalize bag limits or allow retention of sub-legal (<28 inch TL) king salmon in Taiya Inlet THA. • Extended dates of king salmon sport fishing area closure in northern Chilkat Inlet.
2013	Subsistence	• Extended dates of subsistence fishing area closure in northern Chilkat Inlet and Chilkat River.
2014	Sport	• Did not liberalize bag limits or allow retention of sub-legal (<28 inch TL) king salmon in Taiya Inlet THA.

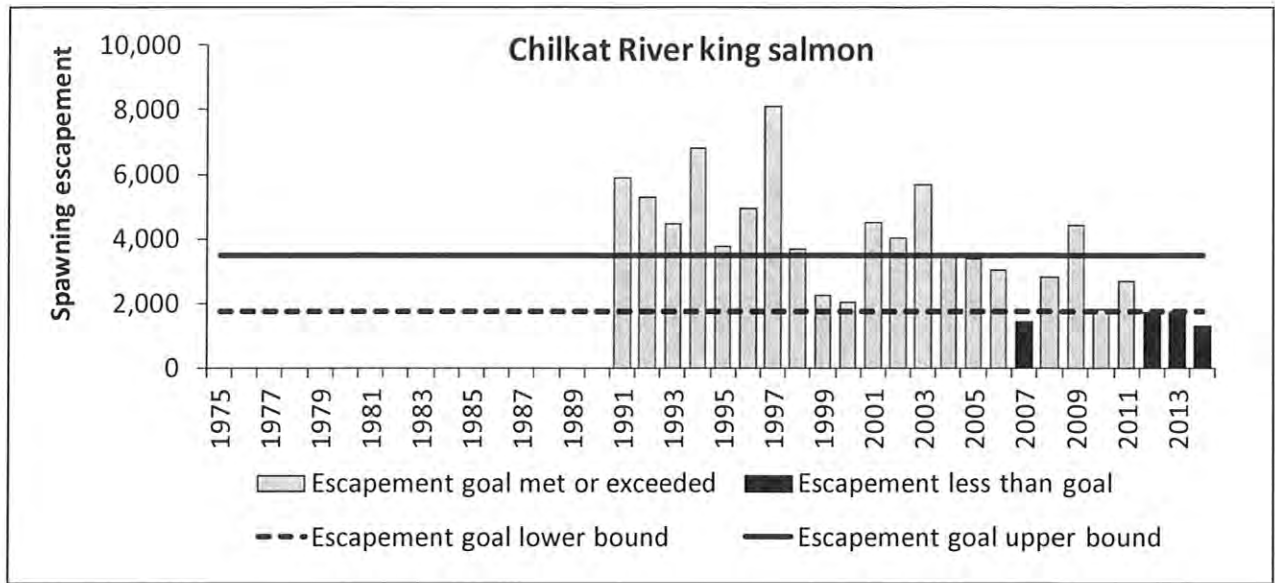


Figure 1.—Chilkat River king salmon escapements, 1991–2014, and the *biological* escapement goal range of 1,750–3,500 large spawners.

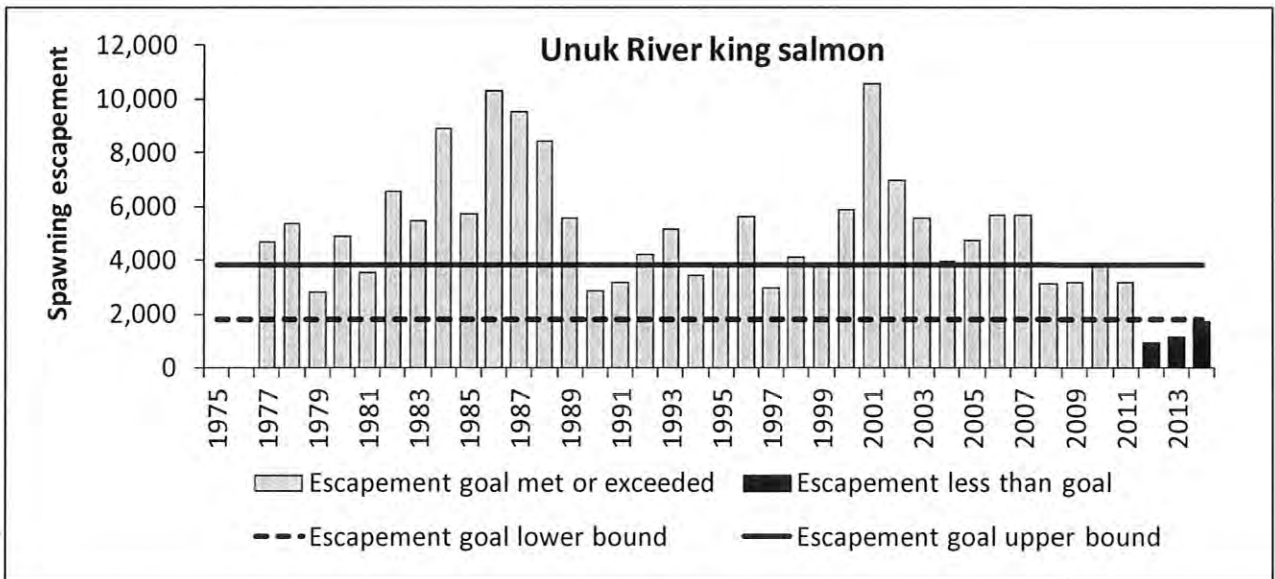


Figure 2.—Unuk River king salmon escapements, 1977–2014, and the *biological* escapement goal of 1,800–3,800 large spawners.

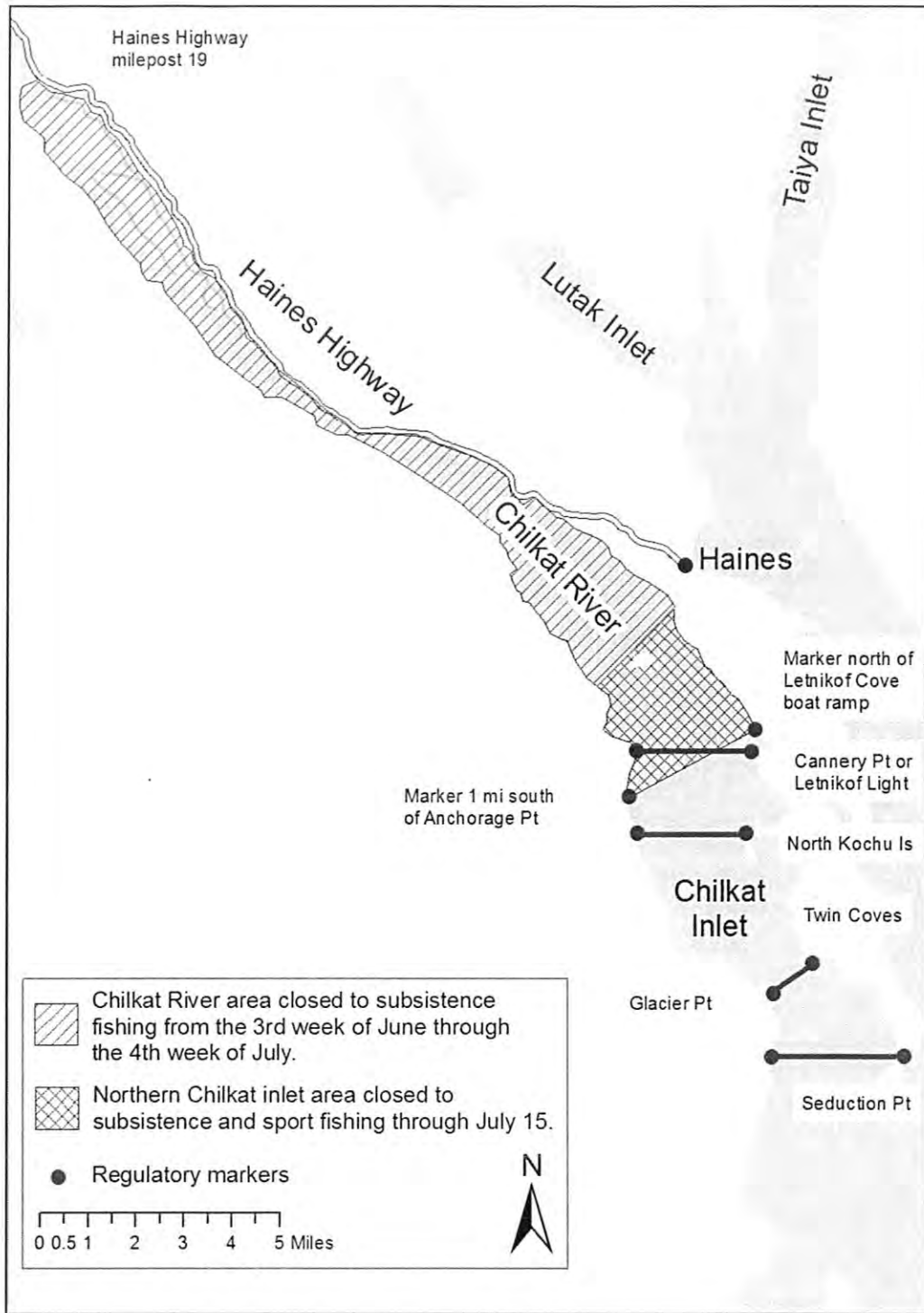


Figure 3.—Map of the Chilkat River and Chilkat Inlet showing management restrictions outlined in the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* (5 AAC 33.384), including time and area closures for subsistence and sport fisheries, and northern boundaries of the commercial drift gillnet fishery (black lines) under the different abundance scenarios outlined in Table 1.

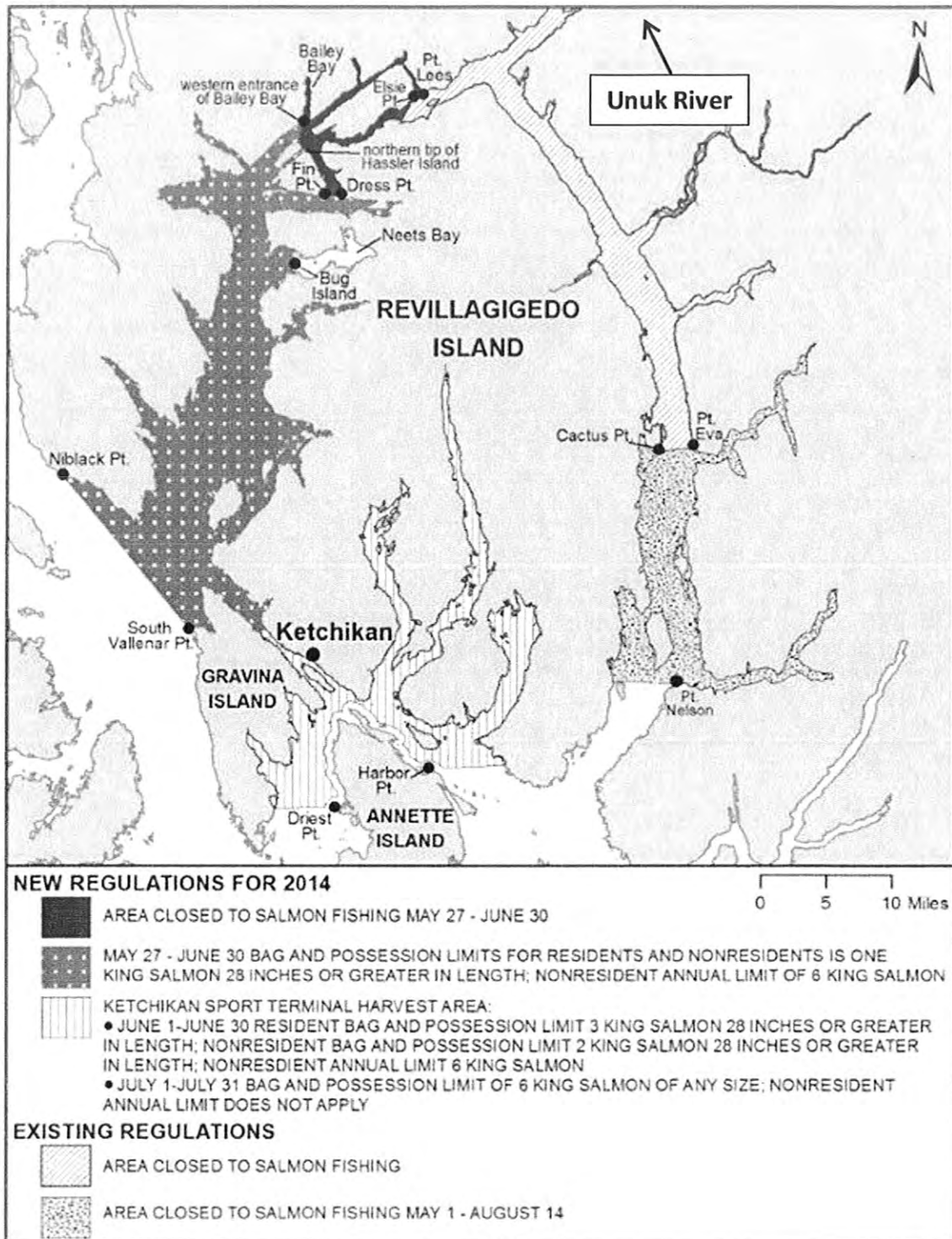


Figure 4.—Map of the Ketchikan area showing existing king salmon sport fish regulations and sport fish management measures implemented in 2014 to reduce harvest of Unuk River king salmon.

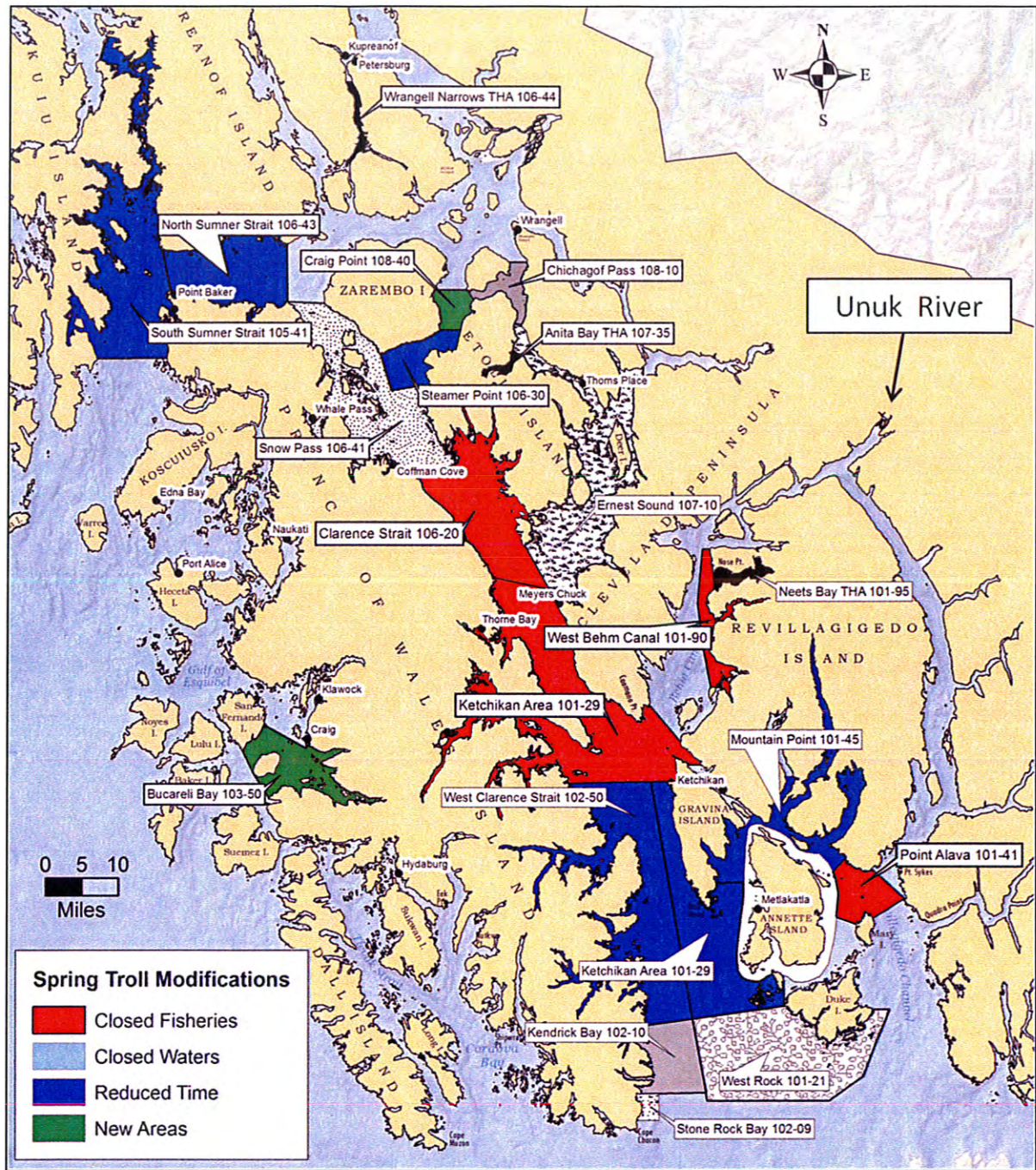


Figure 5.—Map of southern Southeast Alaska showing management measures implemented in the commercial spring troll fisheries in 2014 to reduce harvest of Unuk River king salmon.