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**Department of
Fish and Game**

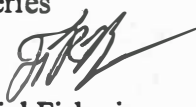
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MEMORANDUM


TO: Members
Alaska Board of Fisheries

DATE: September 29, 2017

FROM: Scott Kelley, Director 
Division of Commercial Fisheries

SUBJECT: Southeast Region Stock
of Concern
Recommendations

and

Tom Brookover, 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 2017/2018 board regulatory cycle. An interdivisional escapement goal review committee consisting of regional staff from the divisions of Commercial Fisheries and Sport Fish, as well as statewide representatives, reviewed 52 escapement goals for stocks of salmon in the Southeast Region and examined potential stocks of concern as defined in the SSFP. A management concern is defined (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."

The department recommends that four salmon stocks be designated as stocks of concern. Escapements for the Chilkat, King Salmon, and Unuk river king salmon stocks and the McDonald Lake sockeye salmon stock have failed to meet escapement goals in four out of five consecutive years from 2013 to 2017, and the department recommends these stocks be designated as stocks of management concern. Management measures implemented to reduce harvest of these stocks in commercial, sport, and subsistence fisheries have been incrementally broadened in scope as escapements underperformed. We note that very poor marine survival has been the primary factor behind the recent period of poor production of Southeast Alaska king salmon stocks. Although

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Lost River sockeye salmon escapement indices have recently been below goal, the committee did not recommend it for stock of concern status. In this memorandum, brief summaries on the status of each of these stocks are provided for the board's information; more detailed accounting of management prescriptions applied over the last 5 years including additional tables and maps outlining time and area restrictions are available upon request.

CHILKAT RIVER KING SALMON

The biological escapement goal range of 1,750 to 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 (Ericksen 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 run goal of 1,850 to 3,600 large fish. The inriver run goal includes the biological escapement goal and an assumed incidental harvest of 100 fish in the Chilkat River subsistence fishery. Escapements have been below goal in five out of six consecutive years, and escapements in 2016 and 2017 were the smallest recorded since stock assessment projects were initiated in 1991 (Figure 1).

Stock Assessment: The Chilkat River is a large 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, after accounting for reported inriver subsistence harvest. 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. Harvest rates on Chilkat River king salmon have been low and averaged 25% during the most recent 10-year period. Preliminary results suggest the harvest rate in 2017 was approximately 12%. Over the past 10 years, an average 46% of the annual harvest occurred in net fisheries, 28% in troll fisheries, and 26% in sport fisheries.

Management Measures: The *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* 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 these fisheries in the Chilkat River and Chilkat Inlet under three different inriver run strength projections during the first five weeks of the season. Sibling return rates are used to generate pre-season forecasts, and stock assessment programs on the Chilkat River are used inseason to evaluate abundance. The management plan has been closely followed in all years, and more restrictive measures were taken when inseason projections indicated inriver runs would be below goal. Most notably, in 2017 Chilkat Inlet was closed to king salmon sport fishing and retention was prohibited in Subdistrict 15-A between April 15–December 31.

In 2017, management measures were also implemented in the spring, summer, and winter commercial troll fisheries based on evaluation of historical coded-wire tag data. Most of these measures were focused on restrictions during June (when most Chilkat River king salmon are harvested); however, troll fisheries in sections 11-B, 11-C, 11-D, 12-B, and 15-C were closed April 15–30 prior to regulatory closures in the spring troll fishery (May–June). Fishing time in

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spring troll fisheries that target king salmon in Cross Sound, Icy Strait, and northern Chatham Strait was reduced, and spring chum salmon troll fisheries in those areas were delayed until June 15. Openings in several spring troll fishing areas in Chatham Strait were initially delayed, and openings were restricted during peak transit times of Chilkat River king salmon.

Stock of Concern Recommendation: Escapements of Chilkat River king salmon were below the biological escapement goal range in five out of six consecutive years from 2012 to 2017, and escapements in 2016 and 2017 were the smallest on record. As a result, the department recommends the Chilkat River run be designated as a stock of management concern.

KING SALMON RIVER KING SALMON

The biological escapement goal range of 120 to 240 large king salmon (primarily age-1.3 fish and older) was established for the King Salmon River in 1997 based on a stock-recruit analysis (McPherson and Clark 2001). This stock does not support any directed fisheries, and harvests occur incidentally in marine waters in sport and commercial fisheries in Southeast Alaska. Escapements have been below goal in four out of five consecutive years (Figure 2).

Stock Assessment: The King Salmon River is a clearwater system located on Admiralty Island (and thus the only monitored island king salmon stock) about 30 km south of Juneau. The river supports a small stock of king salmon that rear primarily around Southeast Alaska (Pahlke 2008). Escapements of large king salmon are based on weir counts from 1983 to 1992 and expanded aerial survey index counts from 1975 to 1982 and 1993 to 2017. Ten years of concurrent weir and index count data were used to estimate an expansion factor of 1.52.

Management Measures: Management measures implemented in the sport and commercial troll fisheries to reduce harvests of the Chilkat and Taku river king salmon runs (both of which are substantially larger than the King Salmon River run) likely reduced harvest of the King Salmon River stock, which is located in close proximity. Management measures were also implemented in the Juneau-area sport fishery. In 2015, bag and possession limits in District 11 were reduced to one fish and upper Taku Inlet was closed through June 30. In 2016, the reduced bag and possession limit was expanded to include District 15 south of Sherman Rock, and all of Taku Inlet and the southern portion of District 11 were closed to king salmon fishing through June 30 after inseason assessment projected poor escapement to the Taku River. In 2017, the king salmon sport fishery was closed in District 11, District 15 south of Sherman Rock, and District 12 north of the latitude of Pt. Couverden from April 15 to June 14.

Stock of Concern Recommendation: Escapements of King Salmon River king salmon were below the biological escapement goal range in four out of five consecutive years from 2013 to 2017. As a result, the department recommends the King Salmon River run be designated as a stock of management concern.

UNUK RIVER KING SALMON

The biological escapement goal range of 1,800 to 3,800 large king salmon (primarily age-1.3 fish and older) was established for the Unuk River in 2009 based on a stock-recruit analysis (Hendrich et al. 2008). After meeting the escapement goal for 35 consecutive years, escapements were below goal in five out of the past six consecutive years (Figure 3).

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 2012–2017). Concurrent years of mark-recapture studies and index surveys allowed development of an expansion factor (4.83) to convert peak index surveys to estimates 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. Juvenile king salmon have been coded-wire tagged at relatively high rates (9%) since 1992. Harvest rates on Unuk River king salmon are relatively high, and averaged 41% in the most recent 10-year period. Preliminary results suggest the harvest rate in 2017 was approximately 30%. Over the past 10 years, an average 67% of the annual domestic harvest occurred in troll fisheries, 21% in net fisheries, and 12% in sport fisheries.

Management Measures: Management measures have been implemented annually since 2014 in Ketchikan-area sport and commercial troll fisheries in an effort to reduce harvest of Unuk River king salmon. The location and timing of management measures have been based on coded-wire tag data, which show this stock is harvested mainly in June. In 2014, several commercial spring troll areas were closed, Ketchikan and Sumner Strait spring troll areas were divided into smaller areas to increase resolution of stock composition data, and fishing time was reduced. Fishing time was further reduced and opening dates were delayed in subsequent seasons. In 2017, nearly all spring troll areas in Districts 1–2 were closed May 29–June 30, a regionwide closure of non-terminal spring troll fisheries was implemented May 29–June 15, and the winter troll fishery in Section 1-C was closed April 1–30. Management measures implemented in the Ketchikan-area sport fishery in 2014 included expanding time and area closures of northern and eastern Behm Canal and contiguous bays that are already restricted by regulation, reducing the bag and possession limits to one fish May 27–June 30, and postponing liberalization of the Ketchikan Sport Terminal Harvest Area to July 1. In 2015 restrictions were extended to July 15. Management measures were relaxed slightly after the escapement goal was met in 2015, but time restrictions were substantially increased in scope in 2017.

Stock of Concern Recommendation: Although Unuk River king salmon escapements were within or above the biological escapement goal range for 35 consecutive years starting in 1977, escapements were below goal in five out of six consecutive years from 2012 to 2017 and harvest rates have averaged 50% since 2012. As a result, the department recommends the Unuk River run be designated as a stock of management concern.

MCDONALD LAKE SOCKEYE SALMON

McDonald Lake, located on the Southeast Alaska mainland, 65 km north of Ketchikan, has supported one of the largest sockeye salmon runs in southern Southeast Alaska. Escapements have been estimated from calibrated foot survey counts conducted since 1980, and the sustainable escapement goal range of 55,000 to 120,000 sockeye salmon was established in 2009 (Eggers et al. 2009). Estimated escapements averaged more than 100,000 fish in the 1980s and 1990s; however, the stock underwent a decline in recruitment starting in the late 1990s and escapements fell below the escapement goal range in four out of five consecutive years from 2004 to 2008

(Figure 4). As a result, the stock was designated a stock of management concern at the 2009 board meeting and an action plan was developed to reduce harvest on the run (Bergmann 2009). The escapement goal was met for three consecutive years 2010–2012, and the stock of concern designation was removed; however, recent escapements were below goal in four out of five consecutive years.

Management Measures: The McDonald Lake sockeye salmon stock is harvested incidentally in all of the commercial salmon net fisheries in southern Southeast Alaska (Districts 1–7) and migratory timing broadly overlaps with other sockeye, pink, and chum salmon runs (Bergmann et al. 2009). Management measures to date, therefore, have focused on time and area where the stock is most prevalent, as determined from U.S.–Canada tagging studies and ADF&G coded-wire tagging studies conducted in the 1980s, a genetic stock identification (GSI) project conducted from 2007 to 2009 (Gilk-Baumer et al. 2013), a “Sentinel Stock” otolith-marking project conducted from 2011 to 2014 (Brunette et al. 2015), and preliminary GSI data from 2014 to 2016. Estimated harvest rates have been quite variable, but averaged greater than 40%, and averaged 54% since 2014. Management measures taken during 2007–2008 included restrictions in the commercial net fisheries in Sumner and upper Clarence straits, in Districts 1, 2, 5, 6, and 7, during a four-week period from mid-July to early August (statistical weeks 29–32). Those measures were incorporated into the 2009 action plan (Bergmann et al. 2009) and carried out through 2011. In addition, bag limits in the Yes Bay (McDonald Lake) personal use fishery were gradually reduced from a limit of 50 fish per day per person in 2002 to an annual limit of 30 fish per household since 2012. Management measures were not enacted in 2012 or 2013, but were incrementally implemented again from 2014 to 2017, following poor escapement performance beginning in 2013. In addition to specific measures taken to conserve McDonald Lake sockeye salmon, overall fishing time in southern purse seine fisheries was reduced in some recent years due to below-average runs of pink salmon.

Stock of Concern Recommendation: The McDonald Lake sockeye salmon stock has undergone a reduction in recruitment, and escapements were below the sustainable escapement goal range in four out of five consecutive years from 2013 to 2017. As a result, the department recommends the McDonald Lake run be designated as a stock of management concern.

LOST RIVER SOCKEYE SALMON

The Lost River, located approximately 12 km southeast of Yakutat, supports a small sockeye salmon run that migrates into Tawah Creek, through Summit Lake, and into Ophir Creek where the fish spawn. In 1995, the department established a biological escapement goal range of 1,000 to 2,300 sockeye salmon counted on a peak survey based on a stock-recruit analysis (Clark et al. 1995). Changes to the coastal shoreline morphology during the winter of 1998–1999 caused the Lost River to discharge into the Situk-Ahrnklin Inlet, rather than directly into the Gulf of Alaska. Lost River sockeye salmon have since been harvested incidentally in the Situk-Ahrnklin commercial set gillnet fishery, and in 2009 the sockeye salmon escapement goal was revised to the current lower-bound sustainable escapement goal of 1,000 fish counted on a peak survey (Eggers et al. 2008). Escapement survey counts were below escapement goal in four out of six consecutive years (Figure 5).

Stock of Concern Recommendation: Lost River sockeye salmon stock assessment information was reviewed in preparation for the current board cycle. Information is limited primarily to escapement survey counts, which have been conducted nearly annually since the early 1970s. Survey methods, however, were not standardized, and the survey type (aerial, foot, boat), area

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surveyed (Tawah Creek, Ophir Creek, or Summit Lake, or combinations of multiple areas), and timing of surveys has varied considerably. As a result, the escapement goal is based on survey data that are not comparable over time. In addition, it was not possible to reconstruct a set of reasonably comparable escapement counts with which to revise the escapement goal. Survey effort was standardized beginning in 2015 as a result of this review and previous review of the Tawah Creek coho salmon escapement goal (Heinl et al. 2014). For these reasons, the department does not recommend designating the Lost River run a stock of concern, and further recommends eliminating the escapement goal until a longer series of standardized, comparable survey counts can be compiled.

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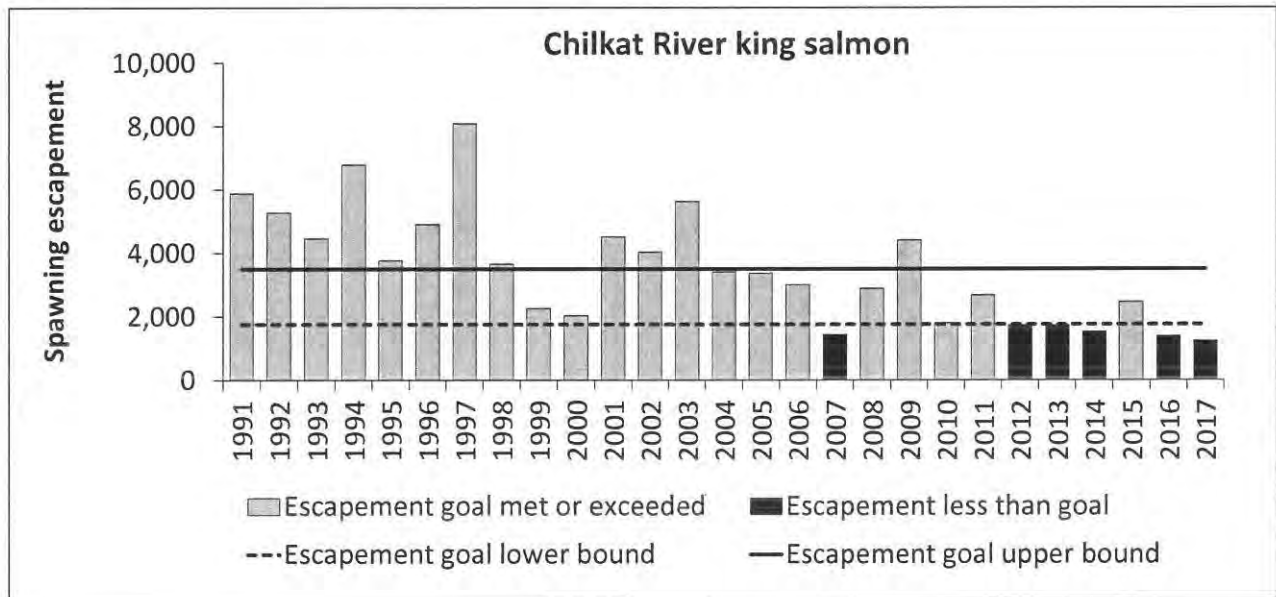


Figure 1.—Chilkat River king salmon escapements, 1991–2017, and the biological escapement goal range of 1,750 to 3,500 large spawners.

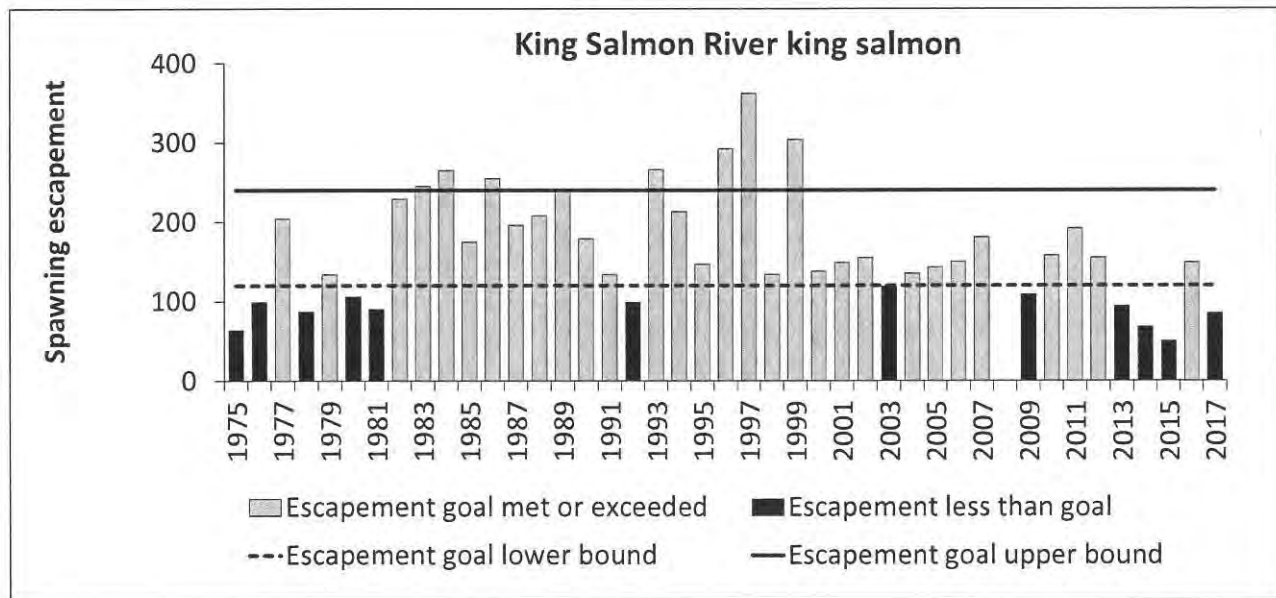


Figure 2.—King Salmon River king salmon escapements, 1975–2017, and the biological escapement goal range of 120 to 240 large spawners.

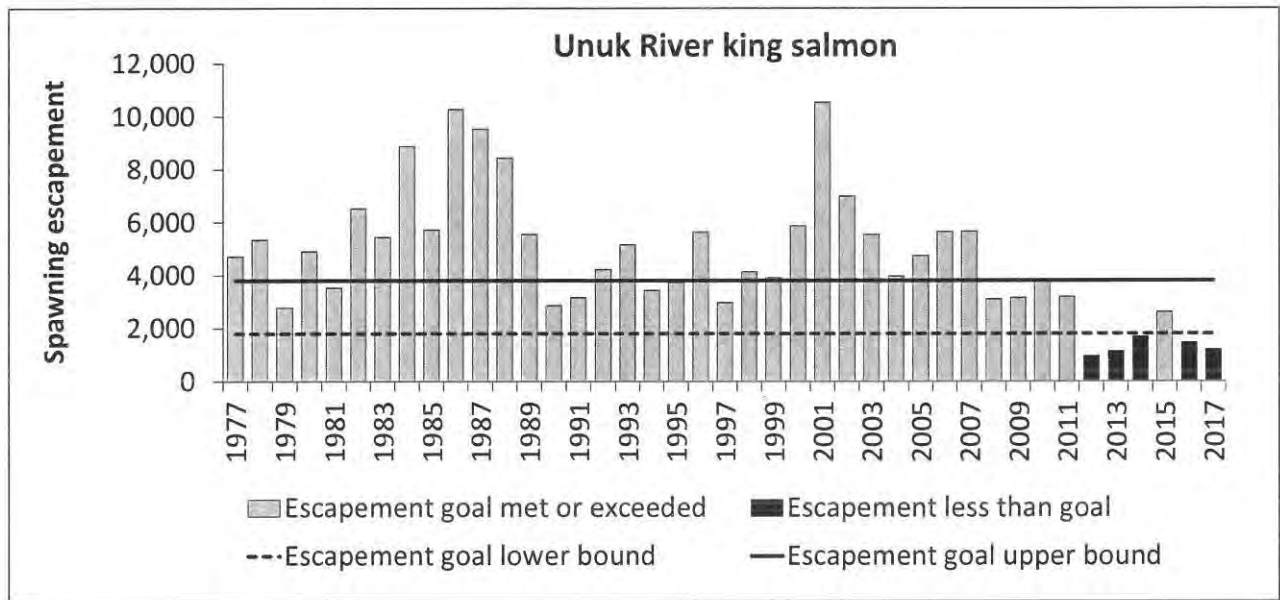


Figure 3.—Unuk River king salmon escapements, 1977–2017, and the biological escapement goal range of 1,800 to 3,800 large spawners.

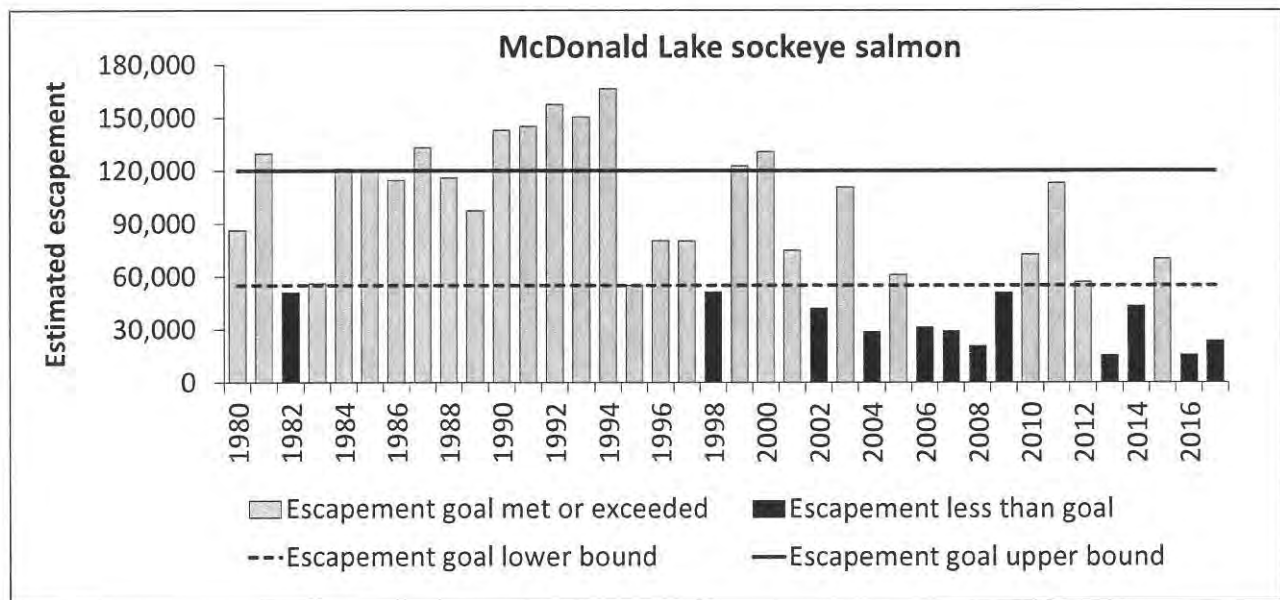


Figure 4.—McDonald Lake sockeye salmon escapements, 1980–2017, and sustainable escapement goal range of 55,000 to 120,000 spawners.

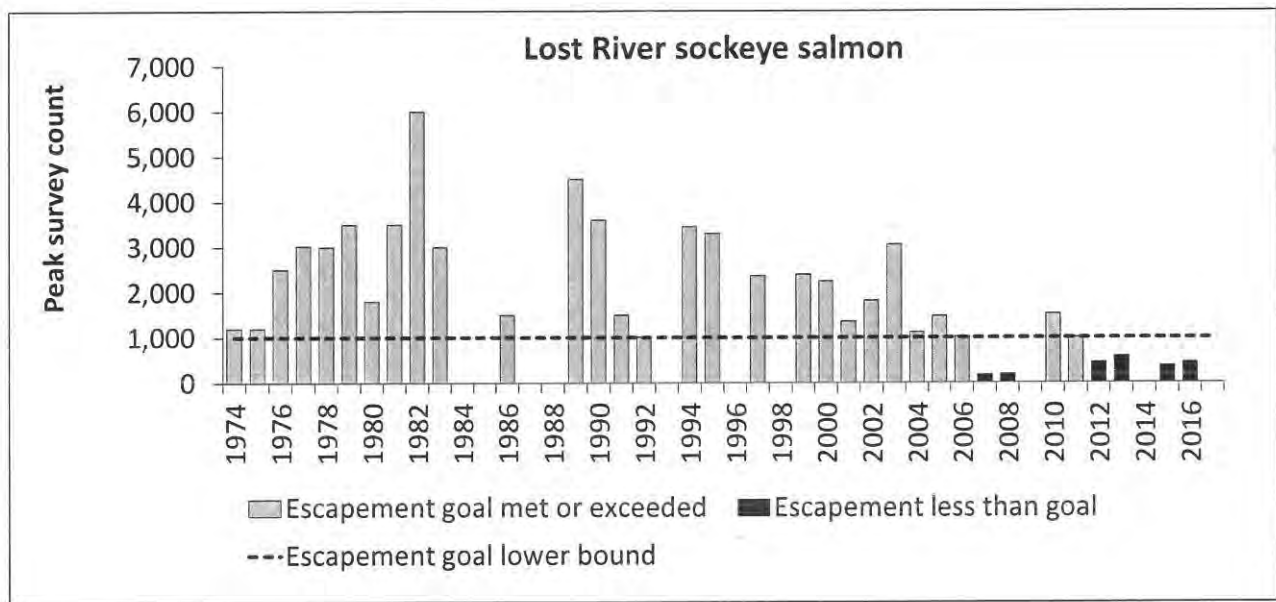


Figure 5.—Lost River sockeye salmon escapement index (peak survey counts), 1974–2017, and lower-bound sustainable escapement goal of 1,000 fish. *Note:* Peak survey counts were not obtained in 1984, 1985, 1987, 1988, 1993, 1996, 1998, 2009, 2014, and 2017. Survey methods were not standardized until 2015, and annual maximum counts shown here are not comparable across all years.