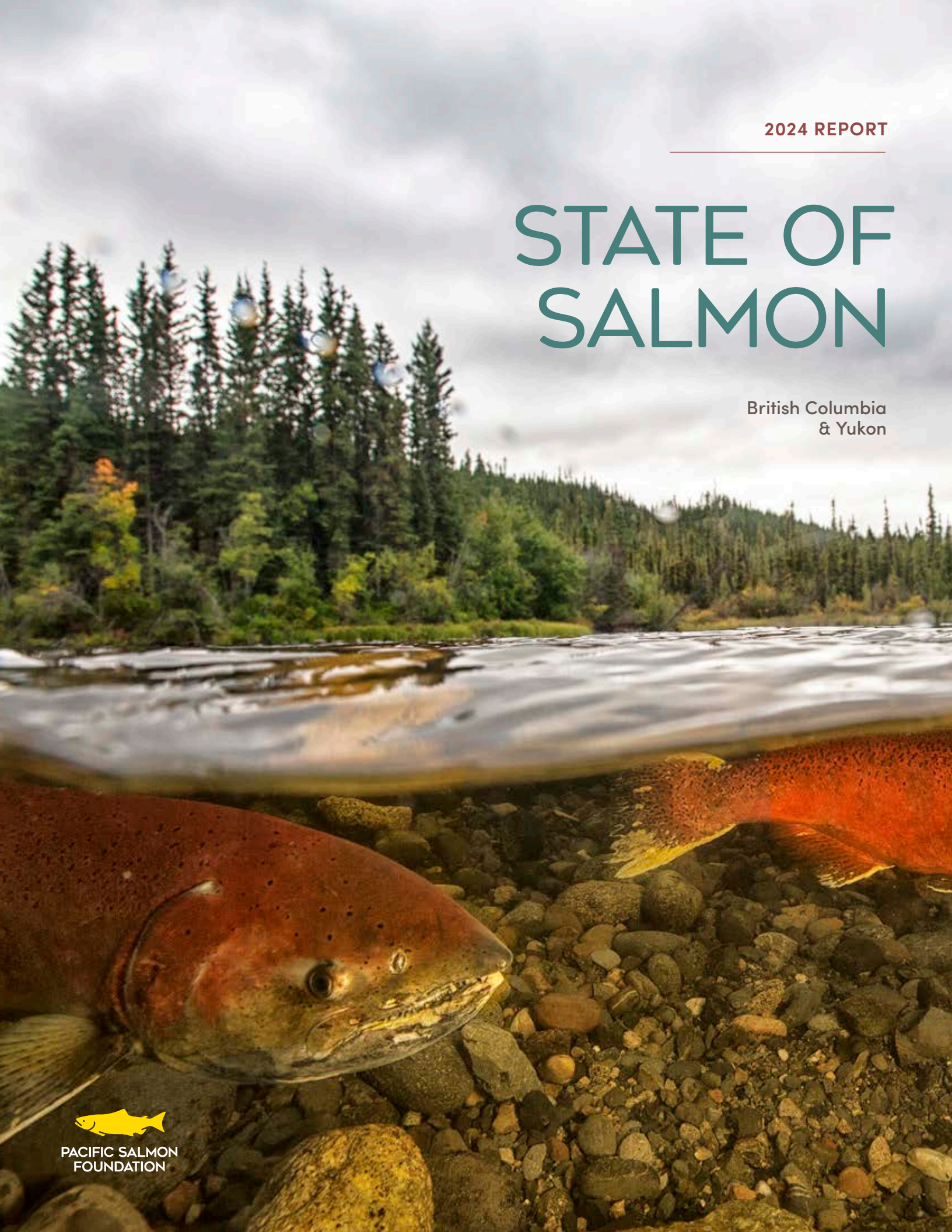

2024 REPORT

STATE OF SALMON

British Columbia
& Yukon

PACIFIC SALMON
FOUNDATION

Citation

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PACIFIC SALMON FOUNDATION

STATE OF

SALMON

2024 REPORT

British Columbia
& Yukon

Declines in Pacific salmon abundance are widespread, with abundance below the long-term average for most species in most regions of British Columbia and the Yukon. A few hopeful exceptions highlight the resilience of salmon and opportunities for recovery.

The State of Salmon 2024 Report provides a high-level overview of the state and trends for each species of Pacific salmon in Canada. This inaugural report highlights that Canadian Pacific salmon are declining across their range. Of the 41 region-species combinations assessed, more than 70 per cent are below their long-term average spawner abundance in recent years.

Of all salmon species, chum salmon and steelhead are doing the worst with abundances below the long-term average in all regions assessed. Historically, chum salmon were a mainstay of commercial fisheries, with the greatest annual catch by weight of any species. Their decline is reflected in a broader pattern of decline in chum across the North Pacific Rim which has contributed to dramatic reductions in commercial fisheries.

Similarly, many steelhead populations are depressed and face an imminent risk of extinction, including in the Fraser where two populations are listed as Endangered and, in the Columbia, where only a handful of wild spawners have been recorded in recent years. Data on steelhead abundance are notably sparse with no reliable abundance data for steelhead in the Northern Transboundary, Haida Gwaii, or Central Coast regions. This dearth of information raises concerns that many steelhead populations may be disappearing, unrecorded.

Northern regions including the Yukon, Northern Transboundary, Haida Gwaii, and Central Coast have experienced the most widespread salmon declines with most species below the long-term average spawner abundance in recent years. This finding is concerning given that northern regions are warming faster than the rest of the country. The combination of the poor state of salmon and the rapid and accelerating pace of climate change could further challenge salmon recovery in these regions.

However, recent signs of recovery in some regions provide hope for the future of salmon. For example, in the Fraser, coho abundance has increased to above the long-term average for the first time in decades. Coho populations crashed coastwide in the late 1990s, as poor ocean conditions led to low marine survival. However, by the early 2000s, some populations had recovered to average spawner abundance thanks, in part, to major and sustained investments in their recovery. Many Chinook populations on Vancouver Island & Mainland Inlets are seeing strong returns, with regional-scale spawner abundance well-above the long-term average. However, hatchery production of Chinook salmon on the east coast of Vancouver Island is largely driving this boom. Other populations, such as wild populations on the west coast of Vancouver Island, are struggling. Although these findings provide hope that declines can be stemmed and populations rebuilt if given the opportunity, they also highlight the need to remain focused on conserving self-sustaining, resilient, wild salmon populations.

TABLE OF CONTENTS

We are often asked the critical question: *How are Pacific salmon doing?*

After more than a decade of work gathering, analyzing, and visualizing the most robust datasets available on salmon populations and their habitats through the Pacific Salmon Explorer, the Pacific Salmon Foundation team has rolled this information into a high-level summary on the state of salmon.

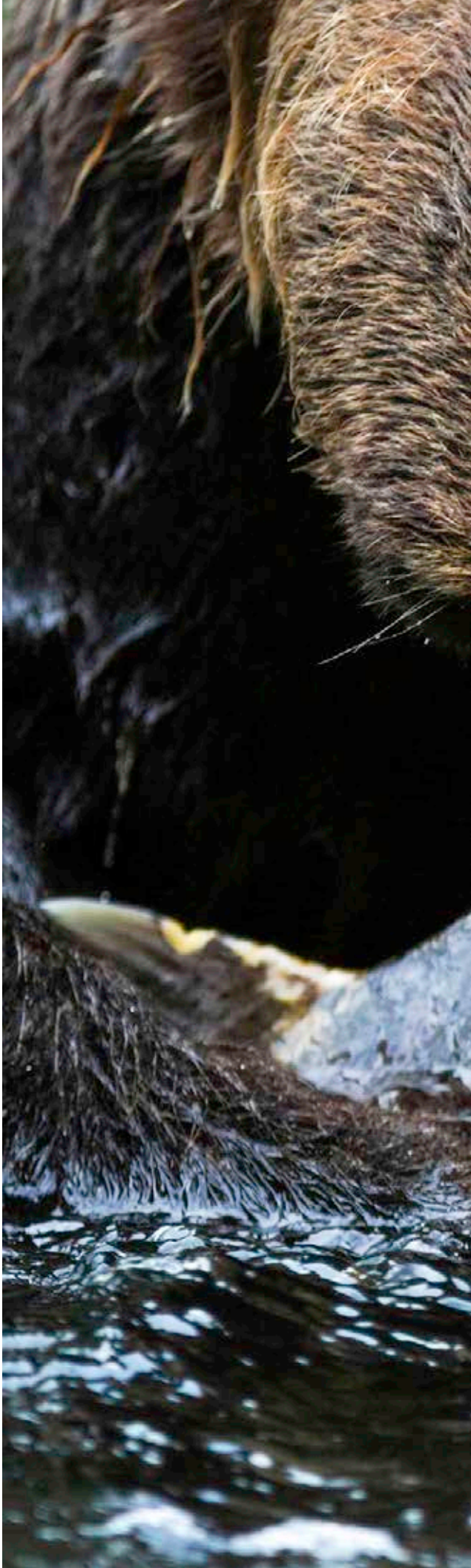
The State of Salmon Report helps cut through the noise, providing a clear view of where salmon are declining, recovering, and where they need our help.

This is the first comprehensive report to show the state of salmon across British Columbia and the Yukon. With access to these data-driven insights at our fingertips, we can take decisive action to protect salmon for generations to come.

With nearly 40 years of experience, the Pacific Salmon Foundation is at the forefront of leadership in salmon conservation. We are dedicated to making transformational change for the benefit of Pacific salmon at every scale – from the smallest streams to the open ocean.

The heart of our work lies at the nexus of science and action, and this is where the State of Salmon Report comes in. This resource is designed to raise public awareness and build political will, ensuring that evidence-based decisions are guiding our salmon conservation and recovery efforts.

Michael Meneer
President & CEO
Pacific Salmon Foundation



The Pacific Salmon Foundation's State of Salmon 2024 Report is a broad-scale evaluation of the state of all six species of Pacific salmon found in British Columbia and the Yukon.

This report takes a data-driven approach to summarizing the state and trends in abundance for each species of Pacific salmon in Canada.

This report also identifies key factors that are influencing salmon abundance and highlights the urgent need to support salmon recovery and resilience. The 2024 Report is the inaugural version. Future reports will be published annually to reflect the evolving state of salmon and to allow for a deeper dive into the factors affecting the state of salmon and solutions for supporting their recovery and resilience.

The State of Salmon 2024 Report aims to catalyze action, foster a common understanding of the state of salmon and the challenges they face, and accelerate transformational change. We hope this report and the information it contains inspires you to be part of that change.

INTRODUCTION

We report on the state of salmon in each of the nine regions that represent all major Pacific salmon-bearing watersheds in Canada: Yukon, Northern Transboundary, Haida Gwaii, Nass, Skeena, Central Coast, Fraser, Vancouver Island & Mainland Inlets, and Columbia. These regions are consistent with the regions visualized on the Pacific Salmon Explorer (salmonexplorer.ca), the Pacific Salmon Foundation's online tool for communicating the status and trends of Pacific salmon Conservation Units*.

*Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

YUKON - YU

NORTHERN TRANSBOUNDARY - TB

HAIDA GWAII - HG

NASS - NA

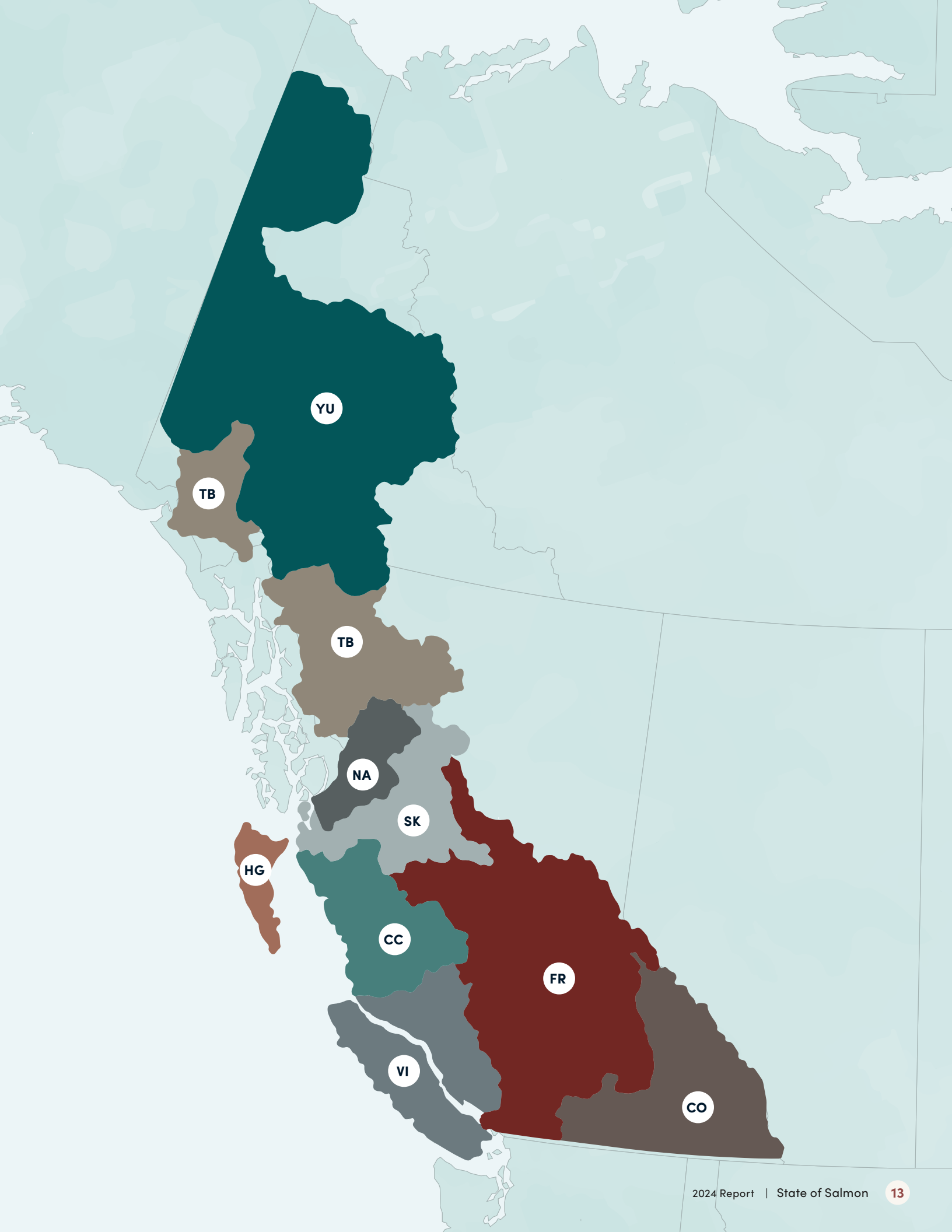
SKEENA - SK

CENTRAL COAST - CC

FRASER - FR

VANCOUVER ISLAND & MAINLAND INLETS - VI

COLUMBIA - CO


YU
TB
TB
NA
SK
HG
CC
FR
VI
CO

Our Approach

There are different ways to measure the state of salmon, and each approach tells us something unique about how salmon are doing.

CURRENT STATE is the spawner or total abundance over the most recent generation as a per cent anomaly from the long-term average and provides information on how abundant salmon are now relative to past years.

TRENDS measure the direction of change, either over the short-term (most recent three generations) or long-term (all available years). This is complementary information to the current state, and a species that has a declining trend may be a conservation concern even if the current status is above average.

Where possible, we report on these metrics using both **spawner abundance** and **total abundance**. Spawner abundance (also called "escapement") provides information on the number of salmon that "escape" fisheries and make it back to spawn. These salmon are available to meet ecological needs within watersheds and can reproduce and contribute to future generations. As such, understanding spawner abundance is important to salmon conservation.

Where data are available, we also report on total abundance, which is the sum of spawners and catch. In some years, a substantial proportion of salmon that survive to maturity are caught in commercial fisheries. Tracking total abundance provides information on the survival and productivity of salmon as well as their ability to provide economic opportunities through fisheries. Often, the state and trends for spawner abundance are more optimistic than for total abundance because of widespread declines in commercial catches of Pacific salmon in Canada since the mid 1990s.

Our approach to assessing the State of Salmon is based in Western science and offers a data-driven perspective on broad-scale state and trends. For many regions and species, the scientific record is relatively short and may not adequately represent changes in abundance that have undoubtedly occurred over centuries of colonization, settlement, and human development. However, these data represent a type of information that can be relatively easily compiled, analysed, and compared across broad spatial scales. We encourage readers to seek out additional sources of information about salmon in their area, in particular from local First Nations who often have deep intergenerational knowledge and relationships with salmon.

BC & YUKON OVERVIEW

1

Declines in Pacific salmon abundance are widespread across British Columbia and the Yukon.

Of the 41 region-species combinations we assessed, more than 70 per cent are below their long-term average spawner abundance.

2

Chum salmon and steelhead are doing the worst with abundances below the long-term average in all regions assessed.

Both species show concerning declines in recent years in all regions. For chum, this mirrors a broader pattern of decline that is occurring across the North Pacific Rim.

3

Northern regions have experienced widespread salmon declines.

Most species in these regions (the Yukon, Northern Transboundary, Haida Gwaii, and Central Coast) are below the long-term average in either spawner or total abundance (or both). This finding is concerning given that northern regions are warming faster than the rest of the country.

4

Recent signs of recovery in some regions provide hope for the future of salmon.

For example, coho abundance in the Fraser has increased to above the long-term average for the first time in decades and Chinook spawner abundance in the Fraser and Vancouver Island & Mainland Inlets was above average in recent years. These results provide hope that declines can be stemmed and populations rebuilt if given the opportunity.

SPECIES AT A GLANCE

Chinook

Chinook are below average in northern regions, while Fraser and Vancouver Island & Mainland Inlets have increased above average in recent years.

Pink

Pink salmon are doing better than most species with spawner abundance above the long-term average in four out of seven regions assessed.

Chum

Chum salmon have experienced the most precipitous declines of any species with spawner abundance below the long-term average in every region assessed.

Sockeye

Sockeye spawner abundance is above the long-term average in half of all regions assessed.

Coho

Coho are below the long-term average in many regions, but in the Nass and Fraser both spawner and total abundances are above average.

Steelhead

Steelhead have the lowest absolute abundance of all six species of Pacific salmon, and are below the long-term average for spawner abundance in all regions assessed.

REGIONS AT A GLANCE

Yukon (YU)
Chinook and chum salmon have experienced precipitous declines in recent years.

Northern Transboundary (TB)
Most species are below average but recent increases in sockeye spawners are encouraging.

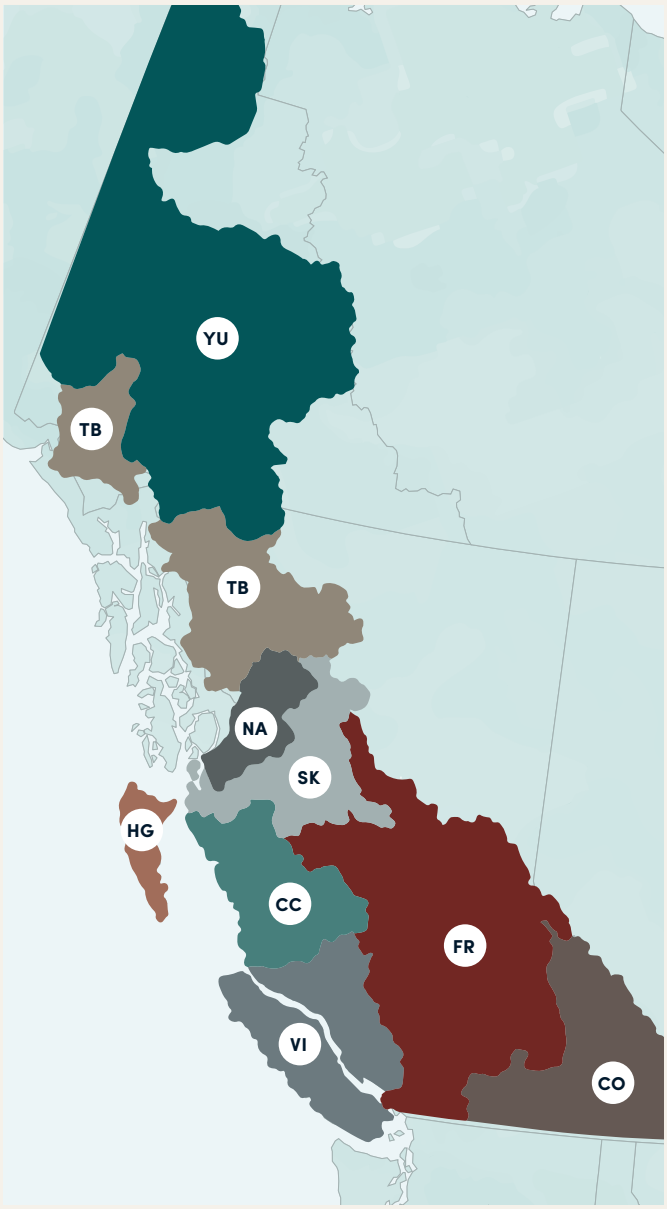
Haida Gwaii (HG)
All species are below average, with chum, coho, and pink salmon showing the most dramatic declines.

Nass (NA)
Chum salmon are the furthest below average, while coho and pink salmon are well-above average.

Skeena (SK)
Chum salmon have declined dramatically, while pink and sockeye spawners are above average.

Central Coast (CC)
All species are below average, with dramatic declines of Chinook and chum salmon.

Fraser (FR)
Chinook, coho, and pink salmon are above average, while other species are below average with concerning recent declines.



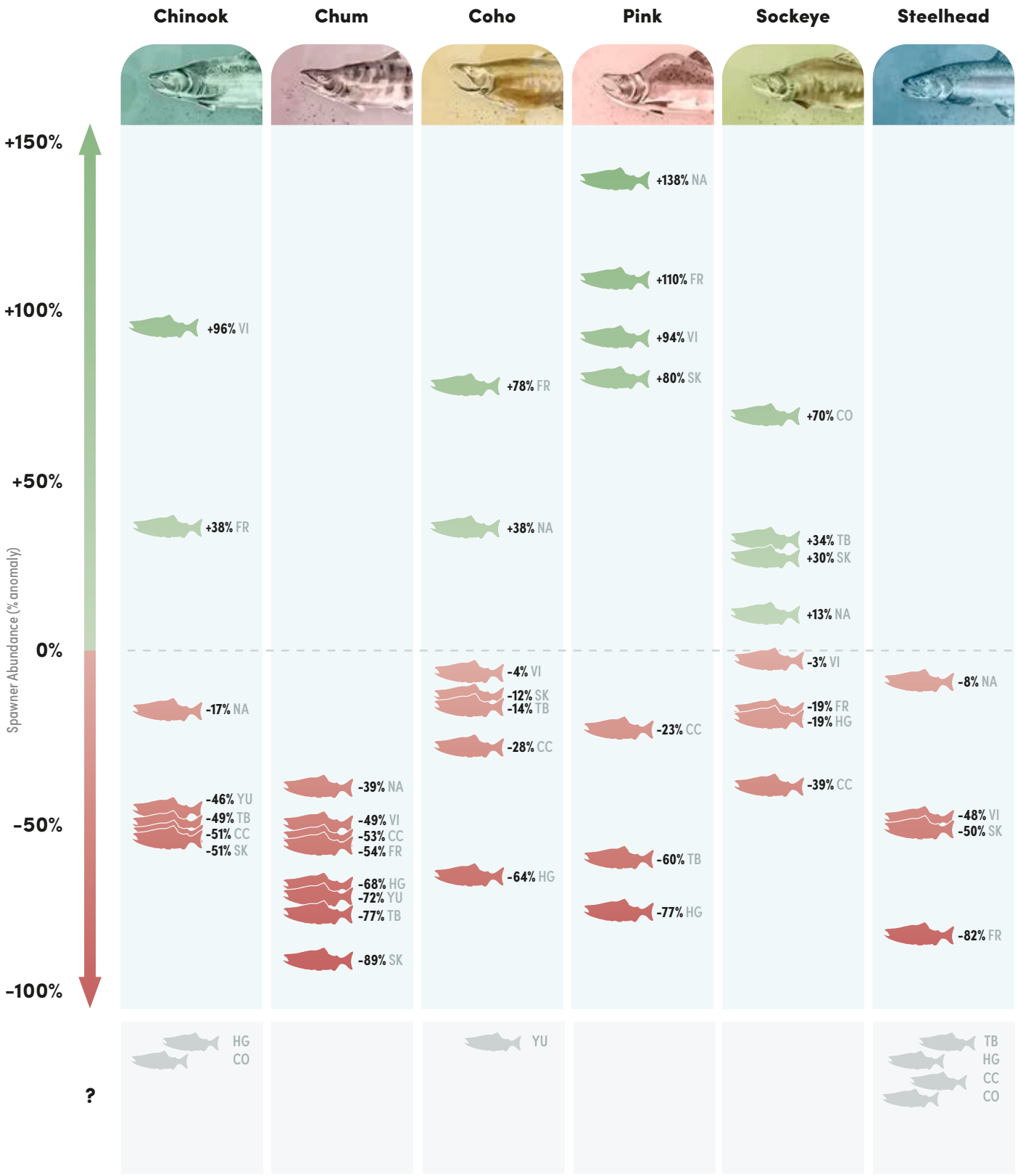
Vancouver Island & Mainland Inlets (VI)
Chum and steelhead are well-below average, while Chinook are above average.

Columbia (CO)
Sockeye salmon are above average, while Chinook and steelhead face critically low population numbers.

CURRENT STATE

The following figures communicate the current state of salmon for each species across all regions of British Columbia and the Yukon. Each fish below shows the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average (horizontal line) for each region and species.

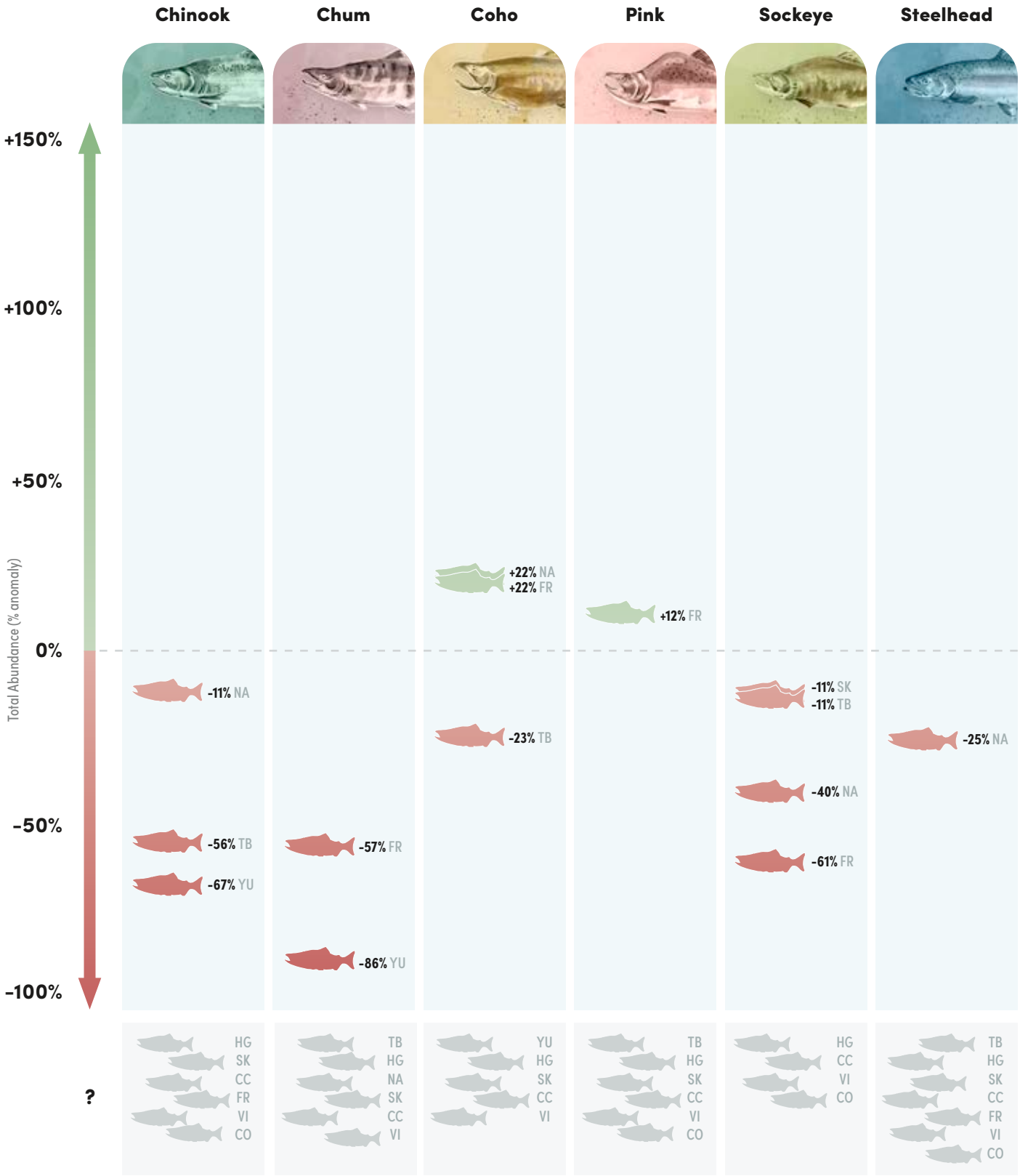
Spawner Abundance



Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
Unknown state due to a lack of readily accessible data.

YU - **YUKON**
TB - **NORTHERN TRANSBOUNDARY**
HG - **HAIDA GWAII**
NA - **NASS**
SK - **SKEENA**
CC - **CENTRAL COAST**
FR - **FRASER**
VI - **VANCOUVER ISLAND & MAINLAND INLETS**
CO - **COLUMBIA**

Total Abundance



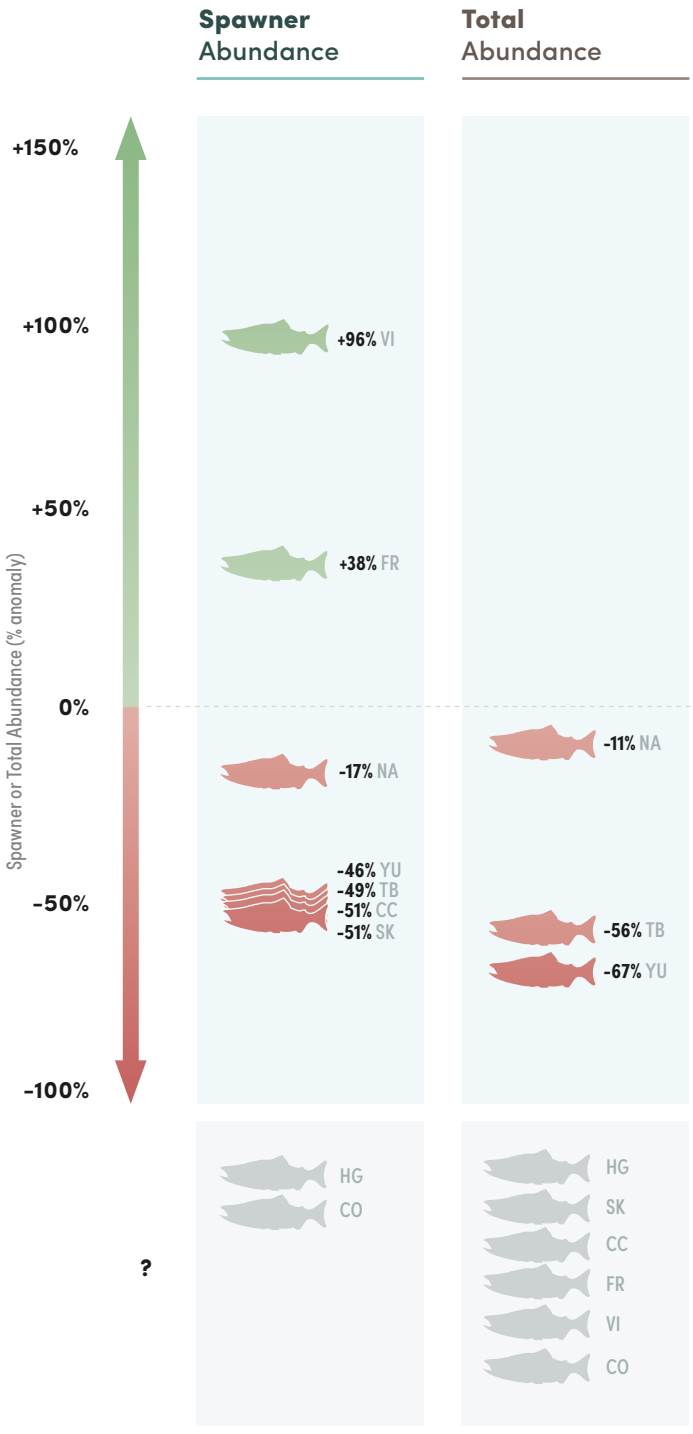
Chinook are below average in northern regions, while Fraser and Vancouver Island & Mainland Inlets have increased above average in recent years.

Yukon Chinook have been declining since the mid 1990s, but significant year-over-year reductions in total abundance since 2015 have prompted a recent moratorium on all fishing of Chinook in the Yukon River for at least seven years[1]. Similar declines are evident in the Northern Transboundary, Nass, Skeena, and Central Coast, with abundances declining from peaks in the late 1990s or early 2000s.

In contrast, many Chinook populations are doing exceptionally well in Vancouver Island & Mainland Inlets with spawner abundance well-above the long-term average. While aggregate spawner abundance has been higher since 2010 than any other period in the past 70 years, there are divergent patterns across individual populations within the region. Some populations show concerning declines, for example West Coast Vancouver Island, while others like the Cowichan River mirror the recent increases at the regional scale.

There was an exceptionally high return of Chinook to the Fraser in 2023, dominated by ocean-type Chinook. Harrison River had a spawner abundance of almost 150,000[2] - more than three times the average of the previous decade (2013-2022). Although this boom increased the current state of Fraser Chinook to above average, the previous 15 years had spawner abundance near or below average and time will tell if the 2023 return was an anomaly or part of a positive trend.

In the Columbia, the spawner time series is relatively short making it difficult to establish a meaningful baseline. For this reason, we show the current state of Columbia Chinook as "Unknown". However, given the perilously low population numbers (fewer than 30 spawners were counted in 2022), Columbia Chinook are considered to face an imminent risk of extirpation with the Okanagan population of Columbia Chinook listed as Endangered[3] by the Committee on the Status of Endangered Wildlife in Canada.



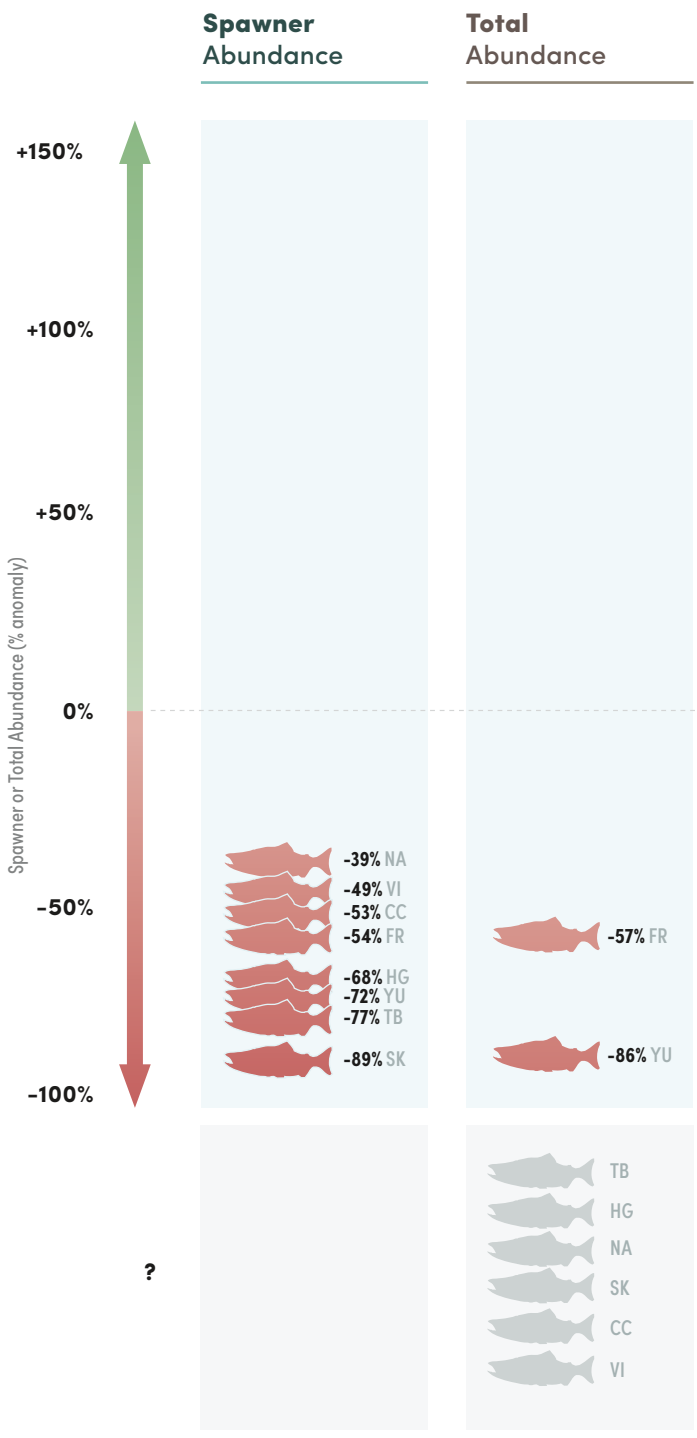
Chum salmon have experienced the most precipitous declines of any species with spawner abundance below the long-term average in every region assessed.

The largest declines are found in the northernmost regions including the Yukon, Northern Transboundary, Haida Gwaii, and Skeena.

In the Yukon, where dismal returns of Chinook have dominated headlines for years, returns of chum salmon have also recently plummeted to historic lows with fisheries closures along the Yukon in 2022 and 2023[4]. The current state and trends for Northern Transboundary chum salmon have been similar, although assessments for this vast region are based on a single fish wheel in the Taku River and may not be representative of all rivers in the region.

While the declines are not as pronounced in the Nass, Central Coast, Fraser, and Vancouver Island & Mainland Inlets, the outlook in these regions is not promising.

Historically, chum salmon were a mainstay of commercial fisheries in Canada, providing the greatest annual catch by weight of any species[5]. It's not clear why chum salmon have experienced such dramatic declines. However, the crash is not isolated to Canadian rivers[6], suggesting that changes in the broader North Pacific may be contributing to their demise.

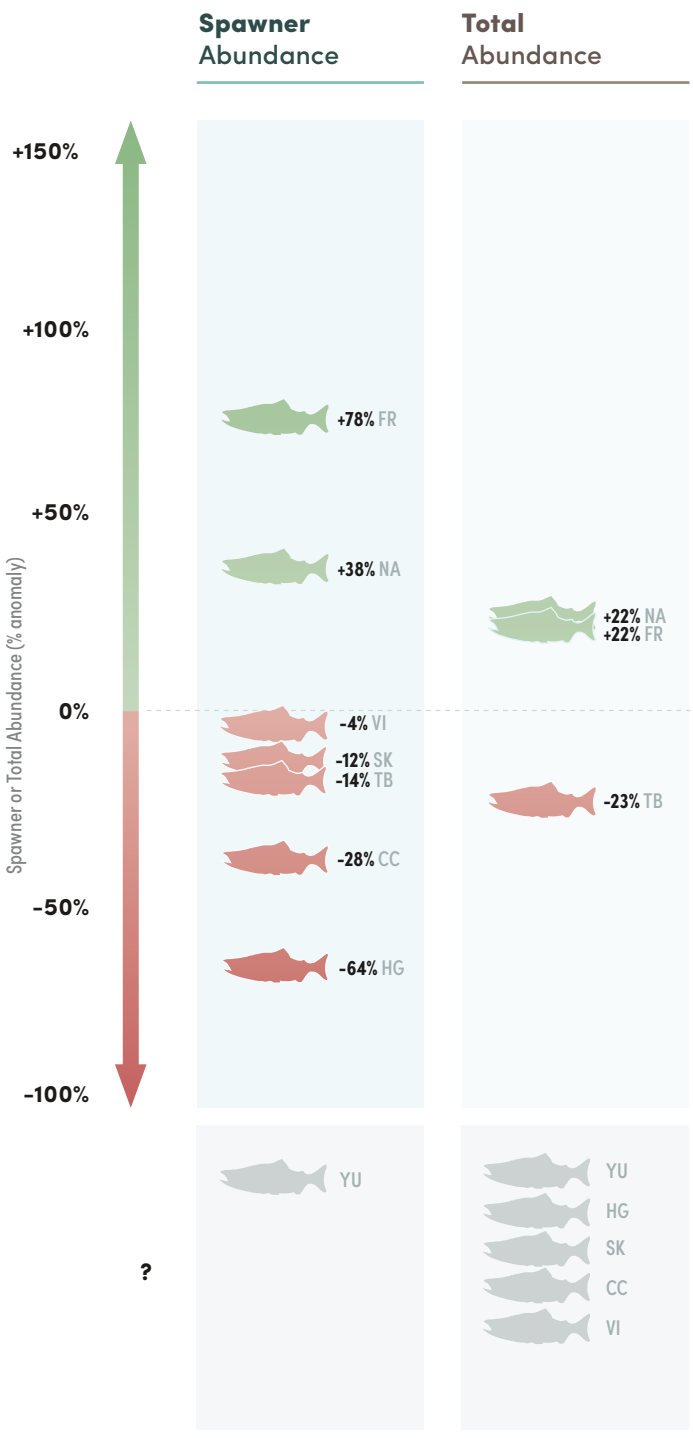


Coho are below the long-term average in many regions, but in the Nass and Fraser both spawner and total abundances are above average.

In all regions, coho spawners crashed in the late 1990s, reportedly due to poor ocean conditions and low smolt-to-adult survival[7]. By the early 2000s, many populations had recovered to average spawner abundance, though total abundance and commercial catches have remained low relative to historical rates. In more recent years, coho abundance has diverged among regions, with current spawner abundance below the long-term average in the Northern Transboundary, Haida Gwaii, Skeena, Central Coast, and Vancouver Island & Mainland Inlets regions and above average in the Nass and Fraser.

In the Nass, coho spawner and total abundances have remained relatively stable over the past 15 years, with increases in 2022 moving both spawner and total abundances above the long-term average. In the Fraser, increases over just the last generation have pushed spawner abundance to levels not seen since before the crash of the 1990s. Total abundance has also increased to above average for the first time in decades, suggesting that reductions in harvest implemented as part of recovery planning for Interior Fraser coho may be paying off.

The status of coho in the Yukon is "Unknown"; there is little information on Canadian-origin coho because they migrate and spawn late in the year, when ice covers the rivers.

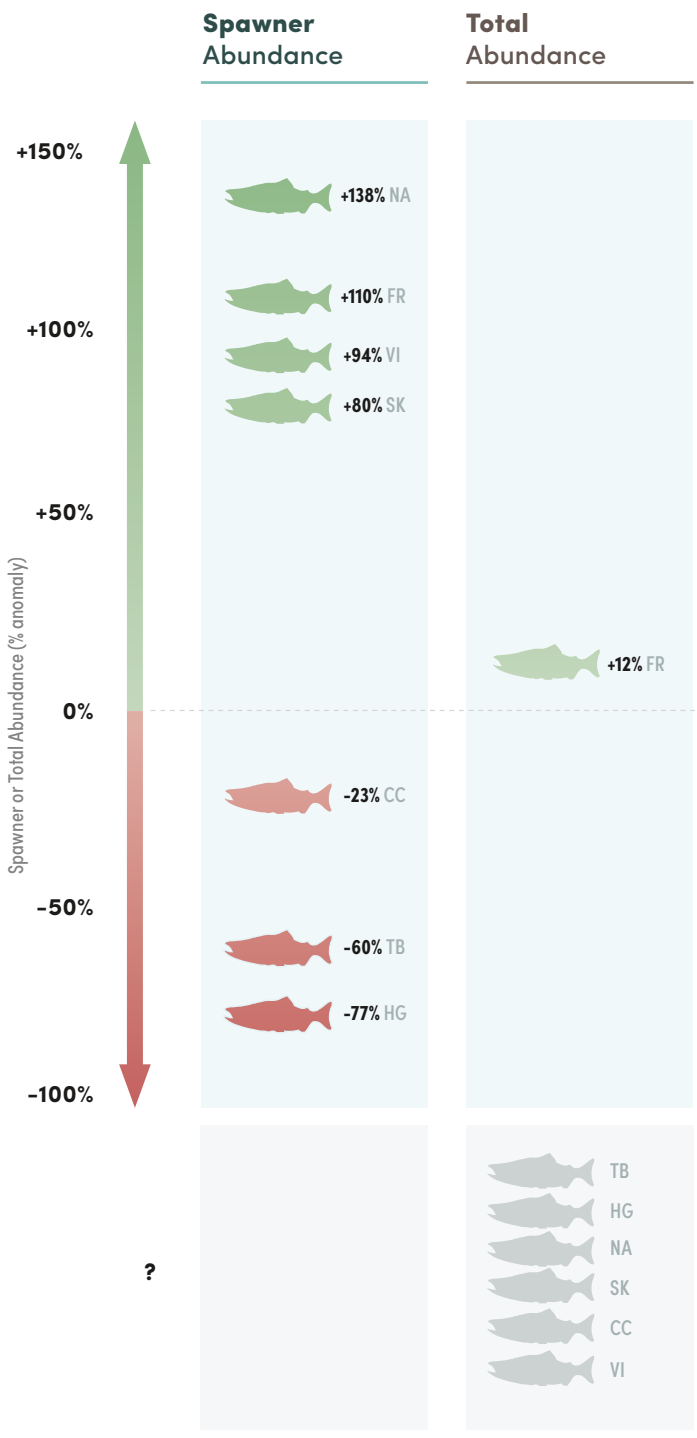


Pink salmon are doing better than most species with spawner abundance above the long-term average in four out of seven regions assessed.

In the Nass, Skeena, Fraser, and Vancouver Island & Mainland Inlets, the current state is above the long-term average for spawners. In the Fraser, where pink salmon are more abundant than any other region, total abundance is also above average.

Conversely, in the Northern Transboundary, Haida Gwaii, and Central Coast, current spawners are below the long-term average.

However, pink salmon abundance tends to fluctuate more than other species, and the current state can change dramatically from year to year. The positive current state and general long-term increases among southern regions reflects broader changes in the North Pacific: pink salmon have doubled in numbers over the past 50 years and are the most abundant species of Pacific salmon globally[8].



Sockeye spawner abundance is above the long-term average in half of all regions assessed.

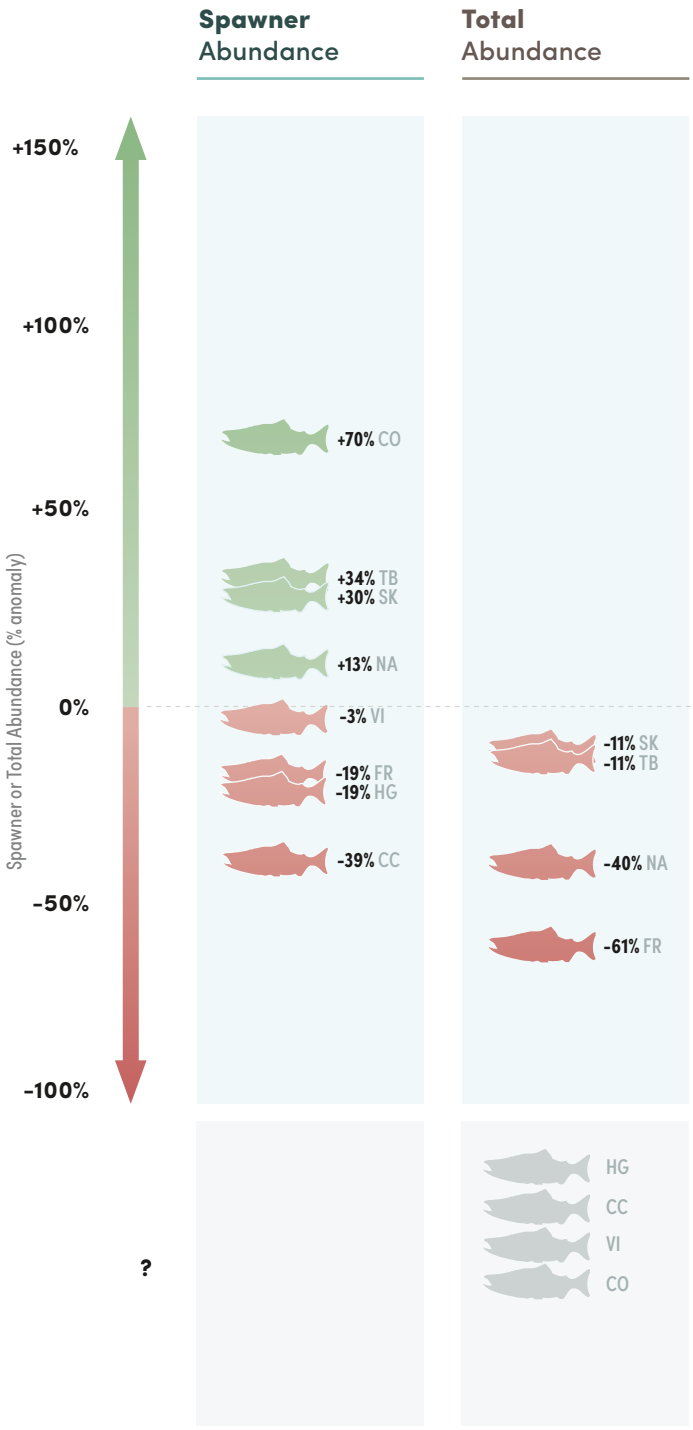
Columbia sockeye are doing the best of all regions with current spawner abundance well-above the long-term average. In other regions with above-average spawners, total abundance remains below average indicating that catch has been reduced in recent years.

In the Northern Transboundary, sockeye are the only species with above-average spawners, driven largely by increases of Taku river-type sockeye[9]. However, several unique groups of lake-type sockeye in the region, including the Kuthai Lake and Neskatahin Conservation Units, are doing poorly[10] and total abundance for the region is still below the long-term average.

In the Nass and Skeena, sockeye are above the long-term average but total abundances have steadily declined from peaks in the 1990s. Enhancement of sockeye in the Skeena via artificial spawning channels created in two tributaries to Babine Lake (Fulton River and Pinkut Creek) has offset declines in abundance of wild populations, but at the cost of reduced biodiversity and resilience[11].

Sockeye are well-below the long-term average on the Central Coast, where historically two large lakes - Owikeno Lake and Long Lake - were one of the three largest salmon runs in British Columbia[12]. These populations have been all but decimated and all major commercial sockeye fisheries in the region have been curtailed.

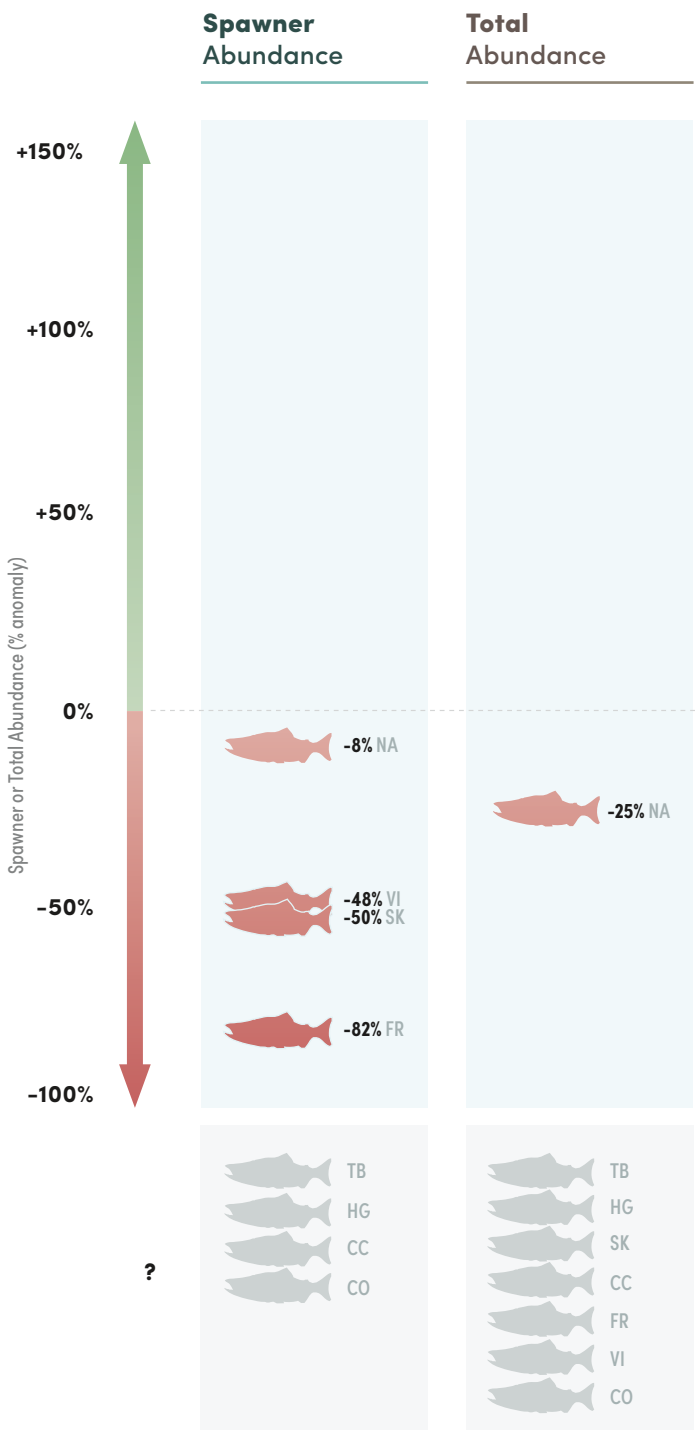
In the Fraser, declines over the past 10 years have put both spawner and total abundances below the 2009 levels that triggered a federal inquiry, known as the Cohen Commission[13]. Perhaps even more concerning than the low aggregate abundance is the disappearance of returns in sub-dominant years, which reduces the stability of salmon benefits to both people and ecosystems.



Steelhead have the lowest absolute abundance of all six species of Pacific salmon, and are below the long-term average for spawner abundance in all regions assessed.

Many populations face an imminent risk of extinction, including in the Fraser where two populations are listed as Endangered[14] by the Committee on the Status of Endangered Wildlife in Canada. In the Columbia, only a handful of natural-origin spawners have been recorded in recent years.

In general, data on steelhead abundance are sparse and there were no abundance data for steelhead in the Northern Transboundary, Haida Gwaii, or Central Coast. With this dearth of information, many steelhead populations may be disappearing, unrecorded[15].



REGIONAL OVERVIEWS

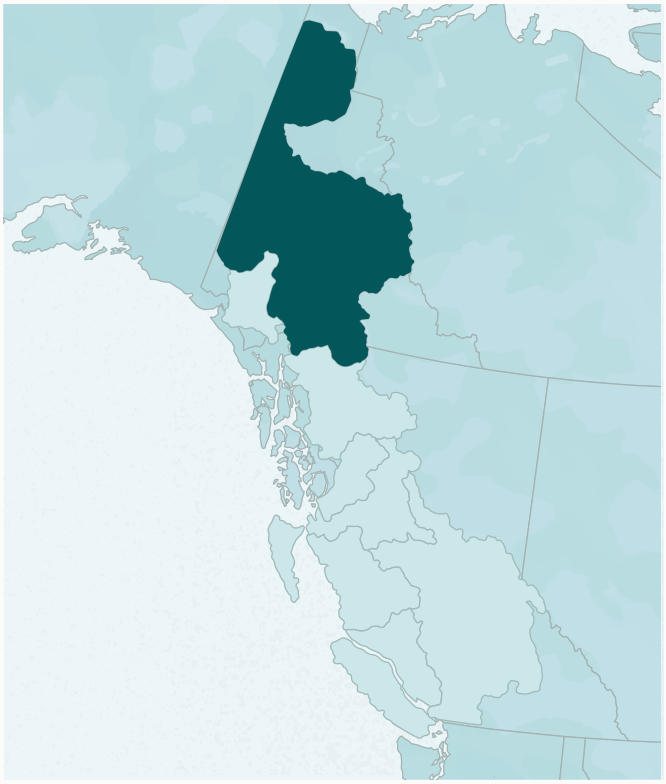
YUKON

Chinook and chum salmon have experienced precipitous declines in recent years.

Canadian-origin Yukon salmon are the longest migrating salmon in the world, some travelling over 3,000 kilometres between the ocean and their spawning grounds. Despite its far northern location, the Yukon is warming three times faster than the global average[16], dramatically altering freshwater habitat for salmon and challenging their survival.

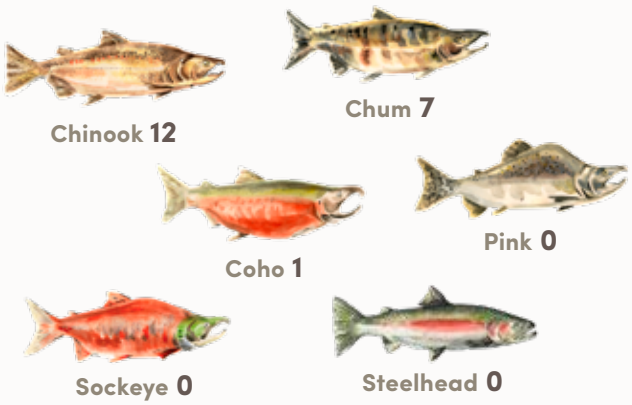
Both spawner and total abundances are well-below the long-term average for Chinook and chum salmon. Chinook have been steadily declining since the 1980s, with more significant year-over-year reductions in total abundance since 2015. In an effort to help recovery, the Canadian federal government and State of Alaska have recently placed a moratorium on all fishing of Chinook in the Yukon River for at least seven years[1]. Returns of chum salmon have also recently plummeted to historic lows, causing fisheries closures along the Yukon River in 2022 and 2023[4].

Coho salmon are also found in the Yukon, however their Canadian distribution is limited to the Porcupine River and they are not found in the Canadian portion of the Yukon River mainstem. Coho are not routinely monitored in the Yukon, making it impossible to assess their status.



Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.



Major Salmon-Bearing Rivers

Fishing Branch River, Kluane River, Yukon River, Pelly River, Big Salmon River

Yukon Profile

The Yukon River flows over 3,300 kilometres from its headwaters in northwestern British Columbia, through the Yukon Territory, and into Alaska before emptying into the Bering Sea.

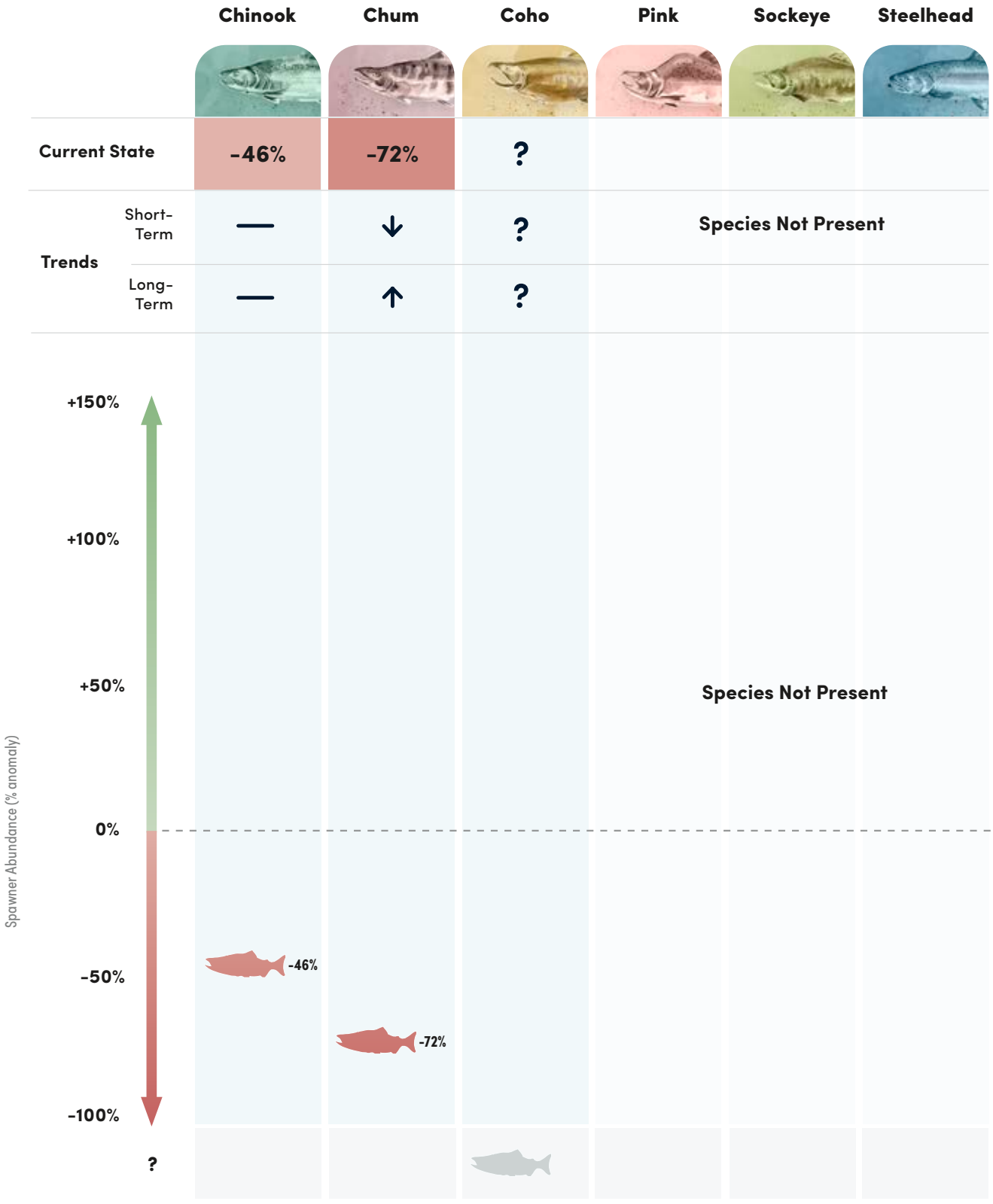
The Yukon River watershed is home to a rugged landscape and pristine wilderness, dominated by glaciers, mountains, plateaus, and river valleys. Climate change is dramatically altering the landscape, melting glaciers, rerouting rivers, increasing stream temperatures, and significantly impacting the locations and quality of salmon habitats. In addition, climate change is causing warmer water in the Bering Sea, which has led to massive changes in the marine ecosystem where juvenile Yukon salmon mature[17].

Yukon Chinook have evolved to be some of the largest and oldest salmon in the world, allowing them to survive the harsh northern environment and epic migrations. Yukon Chinook can weigh up to 45 kilograms and live as long as eight years. However, returning Yukon Chinook are now smaller and younger (typically six years old) as a result of decades of selective fisheries that have preferentially harvested larger and older fish[18]. Since younger, smaller females typically produce fewer and smaller eggs, the reproductive potential of female Yukon Chinook has declined by an estimated 24-35 per cent since the 1970s[19].

YUKON

Tables and figures in this section show the current state and trends for each species of salmon in the Yukon. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance



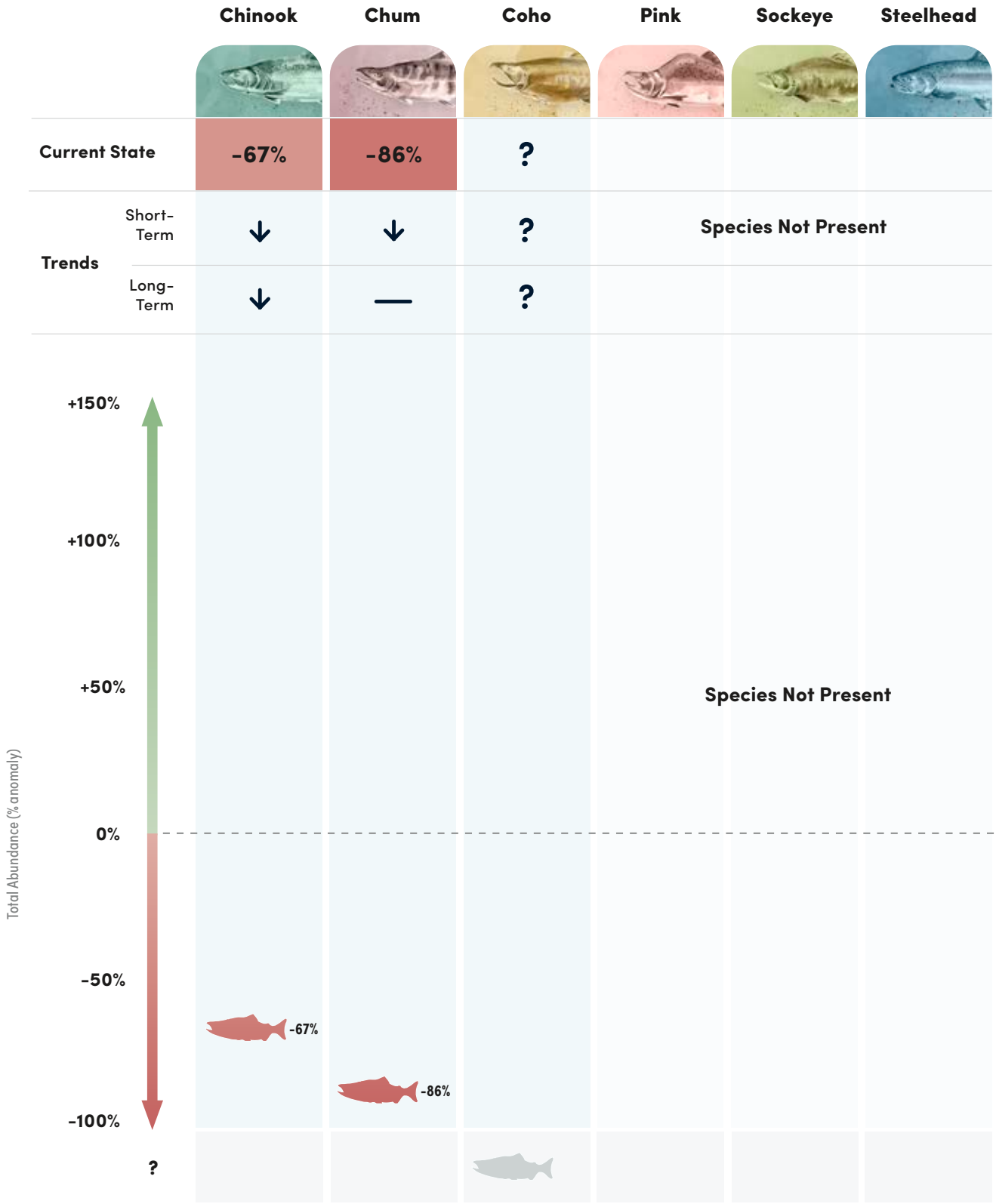
Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

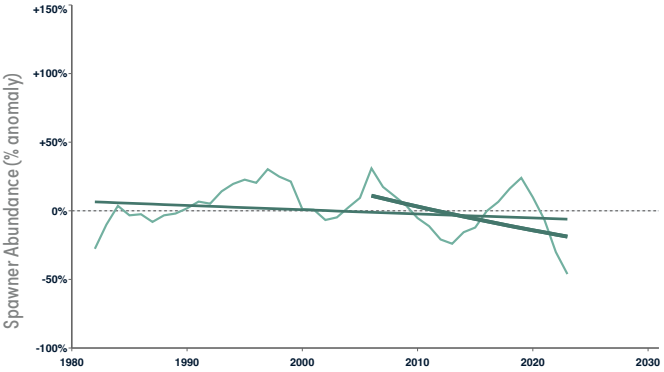


Chinook

The current state of spawner and total abundances are both well-below the long-term average. Stable trends in spawners together with negative short- and long-term trends in total abundance highlight sustained reductions in catch. These Chinook are long-lived, with a six-year generation length, meaning that trends may be slow to reflect the latest data. Numbers below represent absolute estimates of Canadian-origin Chinook for the Yukon River mainstem.

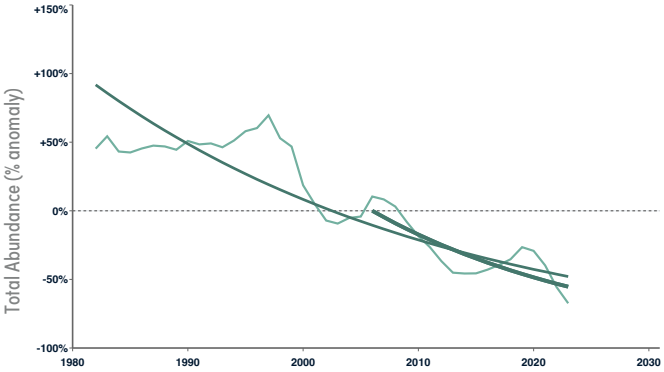
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-46%	—	—	**27,000** (2018–2023)	**50,200** (1982–2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-67%	↓	↓	**36,600** (2018–2023)	**112,200** (1982–2023)

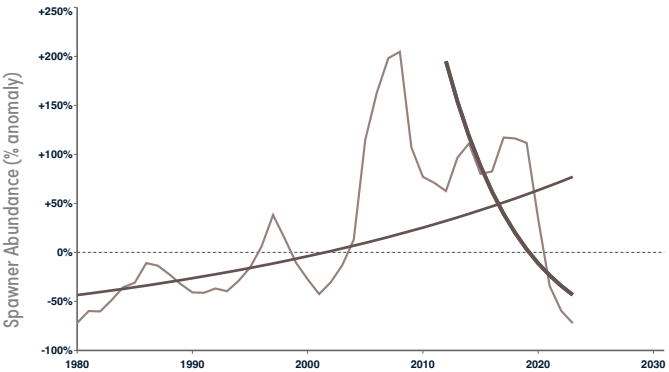


Chum

The current state of spawner and total abundances are both well-below the long-term average. Relatively high abundance over the last two decades (2003-2018) led to an increasing long-term trend in spawners, but the precipitous decline over the most recent generation is reflected by declining short-term trends in both spawner and total abundances. Numbers below represent absolute estimates of Canadian-origin chum salmon for the Yukon River mainstem.

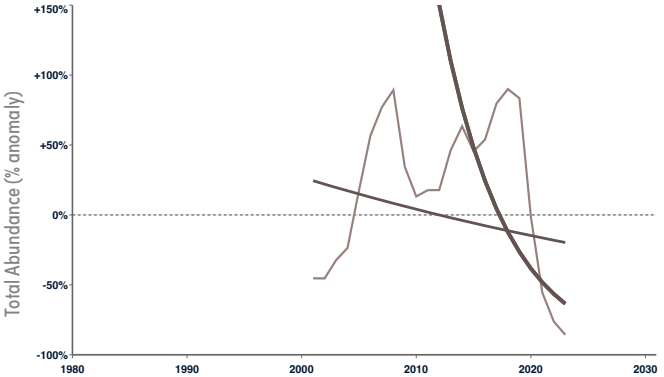
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-72%	↓	↑	**22,700** (2020–2023)	**81,700** (1980–2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-86%	↓	—	**23,500** (2020–2023)	**164,700** (2001–2023)



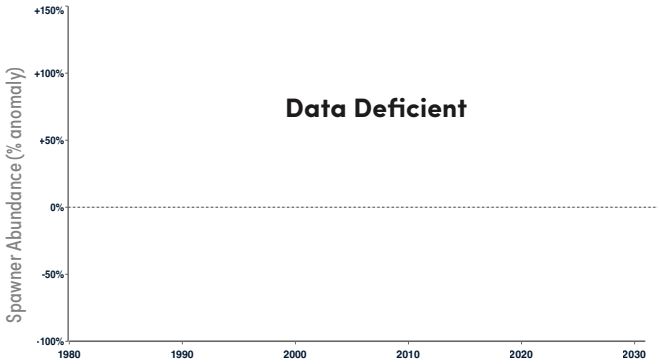
Short-Term Trends —— Long-Term Trends ——

Coho

Canadian-origin coho salmon spawn in the Porcupine River, a tributary of the Yukon River that joins the mainstem in Alaska. There is little information on these coho because they migrate and spawn late in the year, when ice covers the rivers.

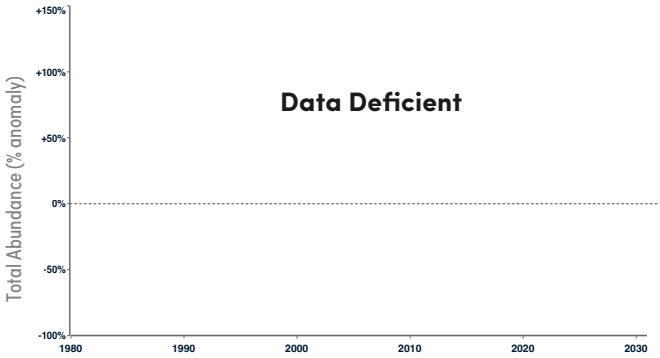
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



NORTHERN TRANSBOUNDARY

Most species are below average but recent increases in sockeye spawners are encouraging.

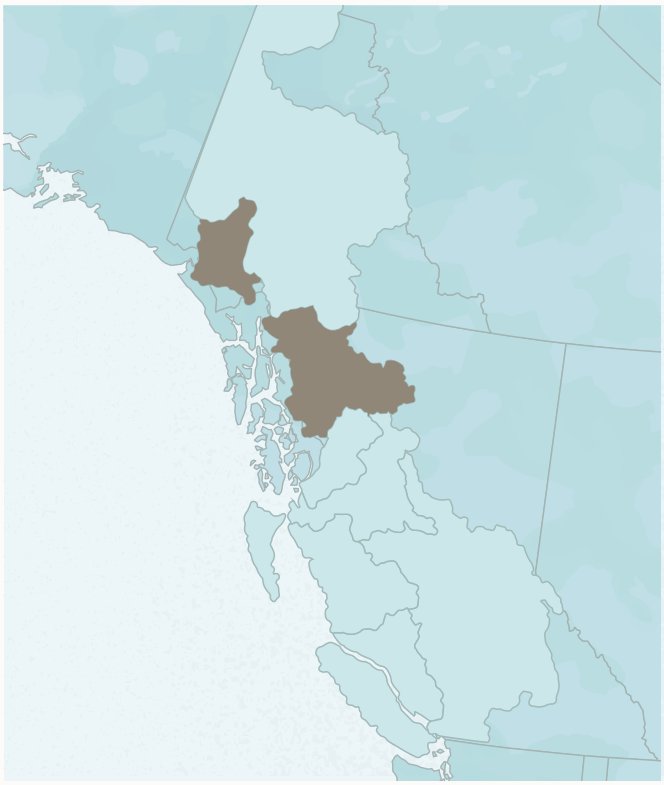
The Northern Transboundary region comprises six distinct watersheds - the Alsek, Chilkat, Taku, Whiting, Stikine, and Unuk - each of which originate in Canada and flow into the Pacific Ocean in southeast Alaska, U.S.

Chinook, chum, and pink salmon are all well-below average and are a significant conservation concern. For these three species, current abundance is half or less of their long-term average and they are all experiencing persistent and significant long-term declines.

Chum salmon are faring the worst of all species in the Northern Transboundary region, however chum assessments for this vast region are based on a single fish wheel in the Taku River and may not be representative of all Northern Transboundary chum populations.

Although sockeye spawners are currently above the long-term average and have a positive short-term trend, this is largely driven by increases in Taku river-type sockeye[20]. Total abundance, including catch, is below average with short-term declines, reflecting curtailed sockeye fisheries and indicating that Northern Transboundary sockeye are still of conservation concern.

NORTHERN TRANSBOUNDARY



Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

Major Salmon-Bearing Rivers

Taku River, Stikine River, Klukshu River, Tahltan River, Alsek River

Northern Transboundary Profile

The Northern Transboundary region comprises six watersheds that cover 110,000 square kilometres and provide an extensive diversity of freshwater spawning and rearing habitat for Chinook, coho, chum, pink, and sockeye salmon, along with steelhead in some watersheds. The Taku watershed has the highest salmon biodiversity in the region with 13 Conservation Units and represents one of the largest runs of sockeye salmon in northern British Columbia.

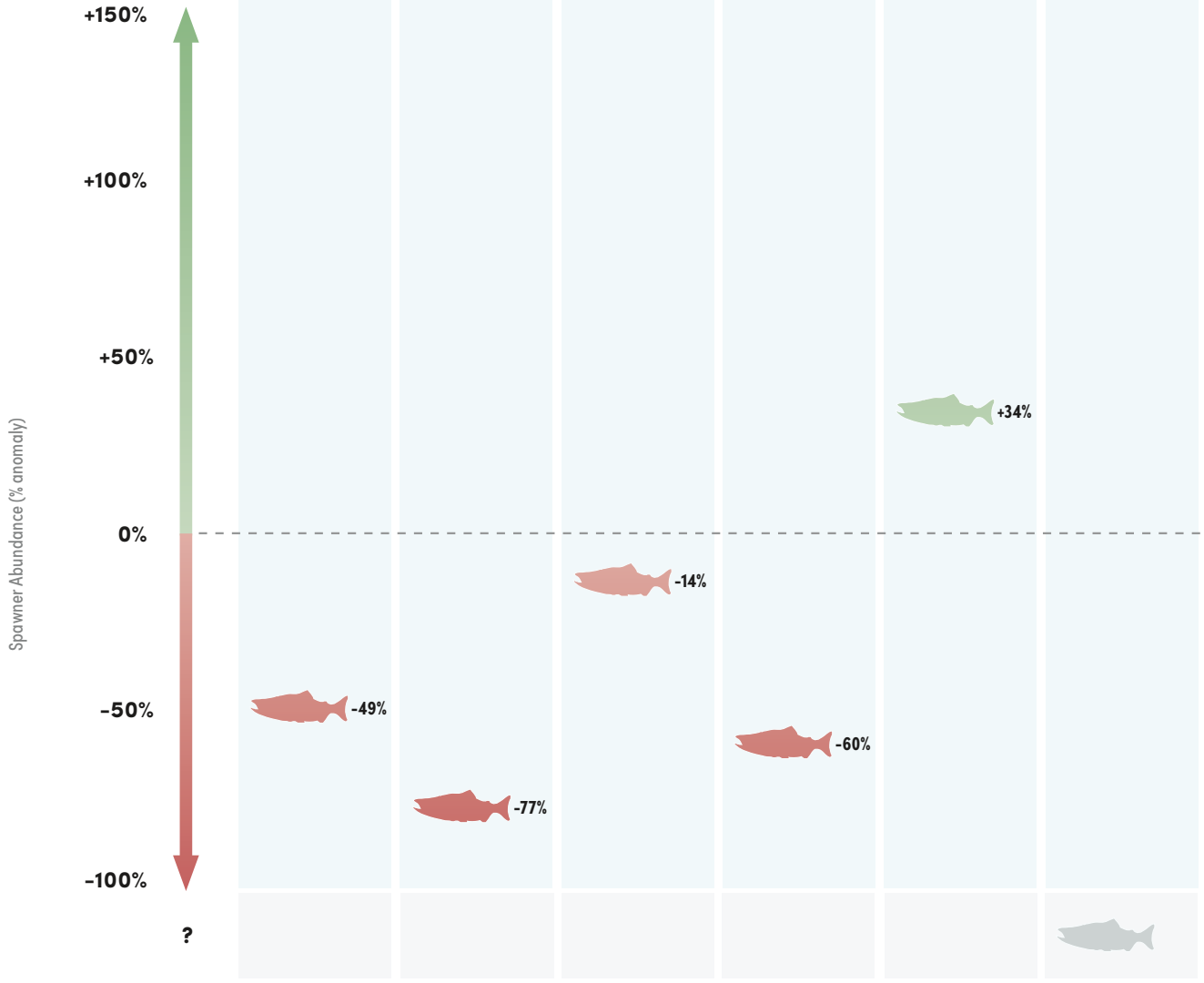
The transboundary nature of the region introduces several challenges for salmon conservation and management and requires international cooperation to ensure the sustainable management of salmon populations. Under the Pacific Salmon Treaty, an international agreement and cooperative fishery management process between Canada and the United States, the Transboundary Panel is responsible for the management, monitoring, and enhancement of salmon originating in the Alsek, Taku, and Stikine watersheds. However, the smaller Chilkat, Unuk, and Whiting watersheds are not within the scope of the Treaty, meaning that little salmon monitoring and assessment is carried out for these smaller, but important salmon-bearing watersheds.

NORTHERN TRANSBOUNDARY

Tables and figures in this section show the current state and trends for each species of salmon in the Northern Transboundary. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
						
Current State	-49%	-77%	-14%	-60%	+34%	?
Trends Short-Term	↓	↓	↓	—	↑	?
Trends Long-Term	↓	↓	—	↓	—	?



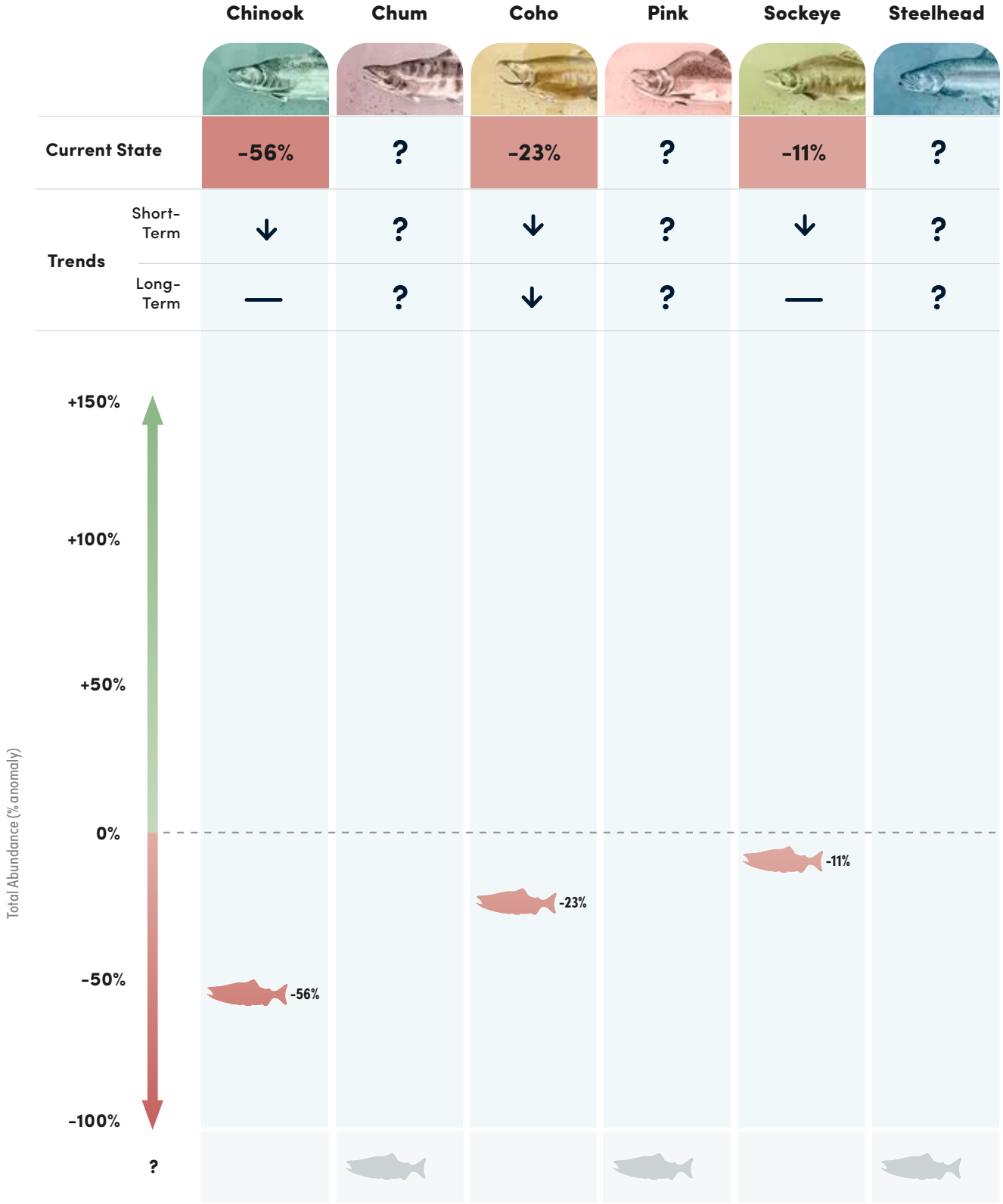
Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

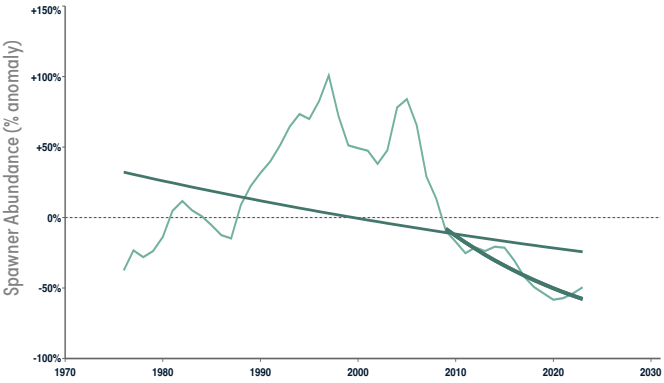


Chinook

The current state of spawner and total abundances are both well-below the long-term average. Short-term trends are both down, highlighting that abundances are both low and declining - a cause for concern. Relatively high abundances in the 1990s and early 2000s mean that long-term trends (1976-2023) are less certain, though still declining for spawners. Numbers below represent the sum of estimated abundance for three major watersheds (Alsek, Stikine, and Taku).

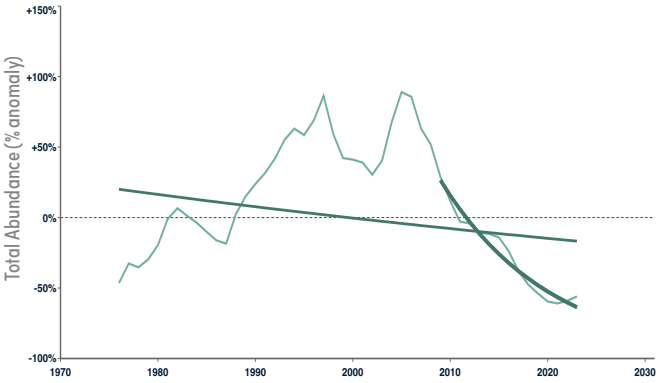
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-49%	↓	↓	28,800 (2019-2023)	56,900 (1976-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-56%	↓	—	30,900 (2019-2023)	70,200 (1976-2023)

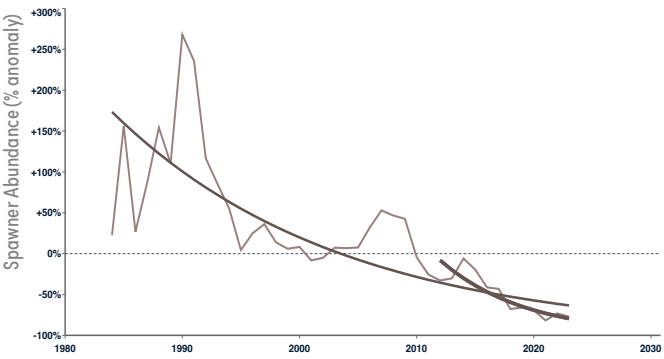


Chum

All three metrics concur that chum salmon spawners in the region are of conservation concern. Data on chum abundance for this expansive region are limited to a single fish wheel on the Taku River, and more monitoring of catch and of other rivers would shed light on the pervasiveness of these declines. Numbers below represent counts from a single fish wheel on the Taku River.

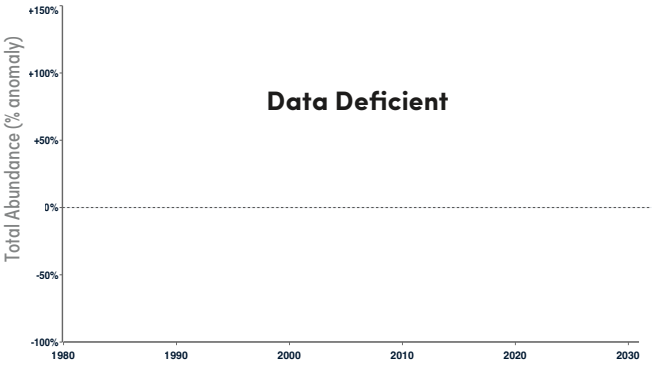
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-77%	↓	↓	58 (2020-2023)	260 (1984-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



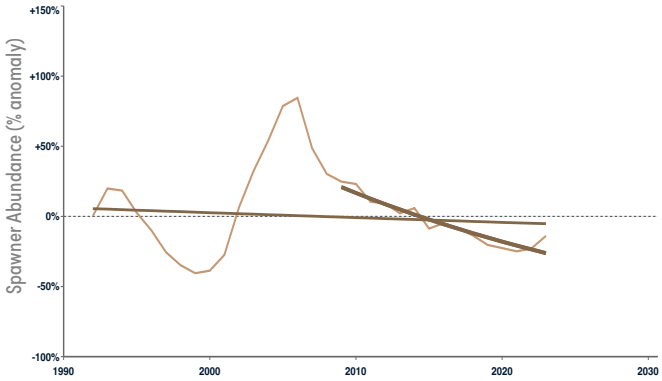
Short-Term Trends —— Long-Term Trends ——

Coho

The current state of spawner and total abundances are both below the long-term average. Short-term trends are both down, highlighting that abundances are both low and declining - a cause for concern. Relatively high spawner abundance in the mid-2000s means that the long-term trend (1992-2023) in spawners is less certain, though total abundance has declined over the long-term. Numbers below represent estimated abundance for a single watershed (Taku).

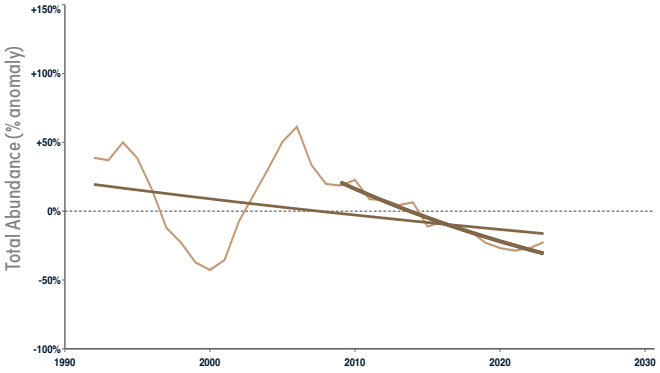
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-14%	↓	—	71,800 (2019-2023)	83,400 (1992-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-23%	↓	↓	91,500 (2019-2023)	118,100 (1992-2023)

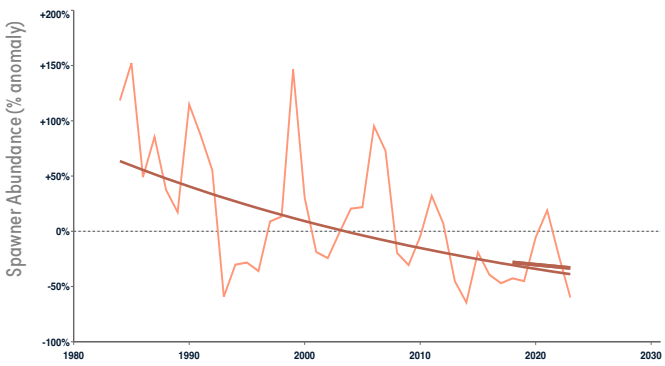


Pink

The current state of spawners is below the long-term average with a negative long-term trend. Spawner abundance has stabilized since 2010, leading to a stable short-term trend over the most recent three generations. Data on pink salmon abundance for this expansive region are limited to a single fish wheel on the Taku River, and more monitoring of catch and of other rivers is needed to fully understand the state of pink salmon in the region. Numbers below represent counts from a single fish wheel on the Taku River.

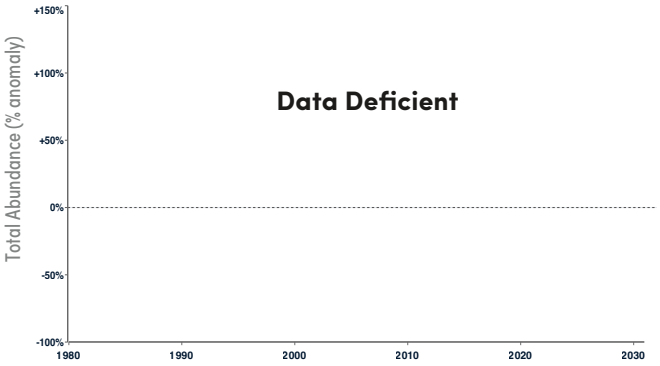
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-60%	—	↓	3800 (2022-2023)	9500 (1984-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

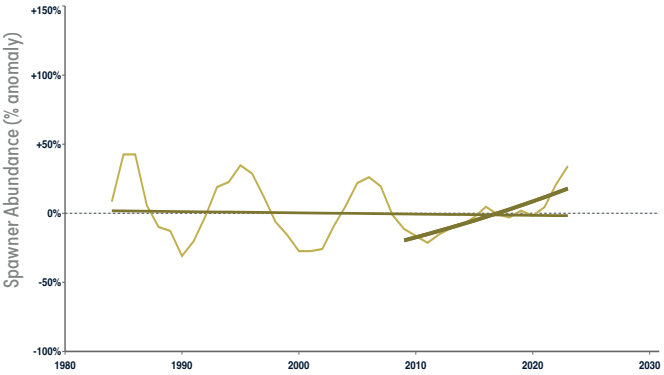


Sockeye

The current state of spawners is above the long-term average with a positive short-term trend that seems to be driven by an uptick in abundance of river-type sockeye in the Taku River. Total abundance is below average with short-term declines - highlighting fisheries declines in recent years. Long-term trends in both spawner and total abundances are stable, although abundance has cycled through time with peaks occurring every 10 years since the time series began in 1984. Numbers below represent the sum of estimated abundance for two major watersheds (Stikine and Taku).

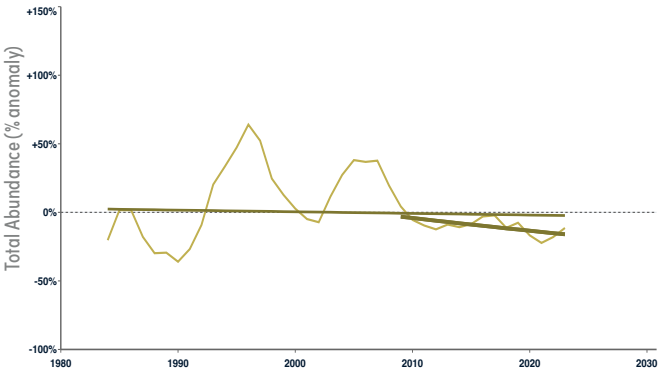
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+34%	↑	—	**163,100** (2019-2023)	**121,600** (1984-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-11%	↓	—	**255,500** (2019-2023)	**288,300** (1984-2023)

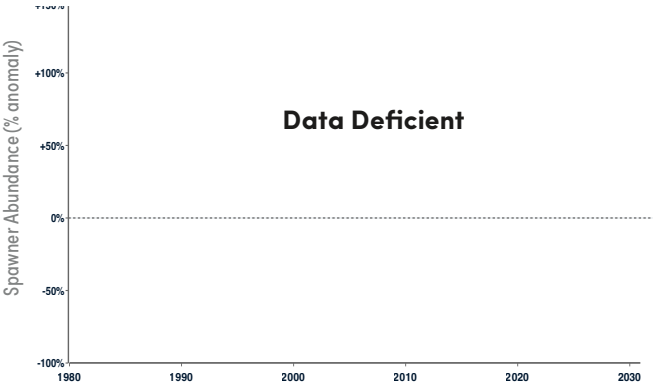


Steelhead

There are no reliable data to assess the state of steelhead in the region. Steelhead are captured in the fish wheel on the Taku River, but data are sparse and absolute abundance is low, making it an unreliable indicator of steelhead abundance in the region.

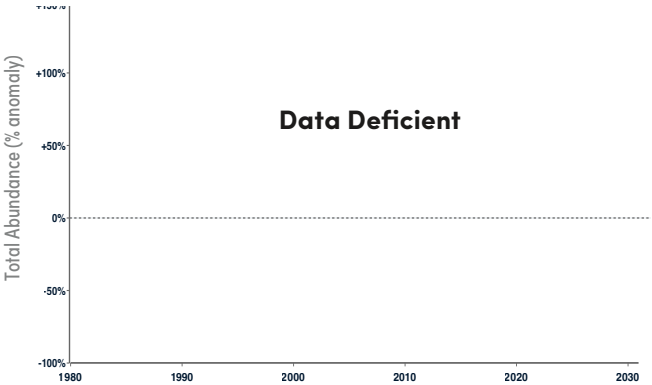
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



HAIDA GWAII

All species are below average, with chum, coho, and pink salmon showing the most dramatic declines.

The outlook for salmon on Haida Gwaii is bleak. All species for which we had reliable data are currently below the long-term average, with short-term and long-term trends either stable or declining. The current state for Chinook and steelhead are unknown due to a lack of recent data for both species.

Unlike other regions where pink salmon have been doing relatively well, pink salmon are well-below the long-term average in Haida Gwaii and have a negative long-term trend. Pink salmon are currently doing worse than any other species in Haida Gwaii. However, pink salmon abundance tends to fluctuate widely and Haida Gwaii pink salmon had above-average spawner abundance as recently as 2020.

Chum salmon are of significant conservation concern. They are well-below the long-term average and have a negative long-term trend. Declines in spawner survey effort of chum salmon in Haida Gwaii since the 1980s means that this assessment may not even be capturing the full picture of chum salmon declines, including the loss of critical genetic diversity.

Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

Major Salmon-Bearing Rivers

Yakoun River, Pallant Creek, Copper Creek, Deena Creek, Naden River

Haida Gwaii Profile

Haida Gwaii is an isolated archipelago of more than 200 islands covering 10,180 square kilometres. Hecate Strait separates Haida Gwaii from mainland British Columbia by about 100 kilometres. Salmon-bearing watersheds on Haida Gwaii range from small streams scattered along the coastline to larger well-known salmon rivers such as the Yakoun and Tlell Rivers. Often called the "Galapagos of the North," it is home to ecologically diverse temperate rainforest and freshwater wetlands which supports a diversity of spawning and rearing habitats for all species of Pacific salmon and steelhead.

Decades of industrial logging have profoundly impacted the structure and function of salmon ecosystems across Haida Gwaii. Although the legacy of logging will take decades to repair, steps have been made to protect and restore Haida Gwaii's ecosystems[21]. In 1993, the Gwaii Haanas National Park Reserve and Haida Heritage Site was established to protect 1,500 square kilometres of the archipelago and, since 2012, logging rates have been significantly reduced under co-management by the Haida Nation and the provincial government.

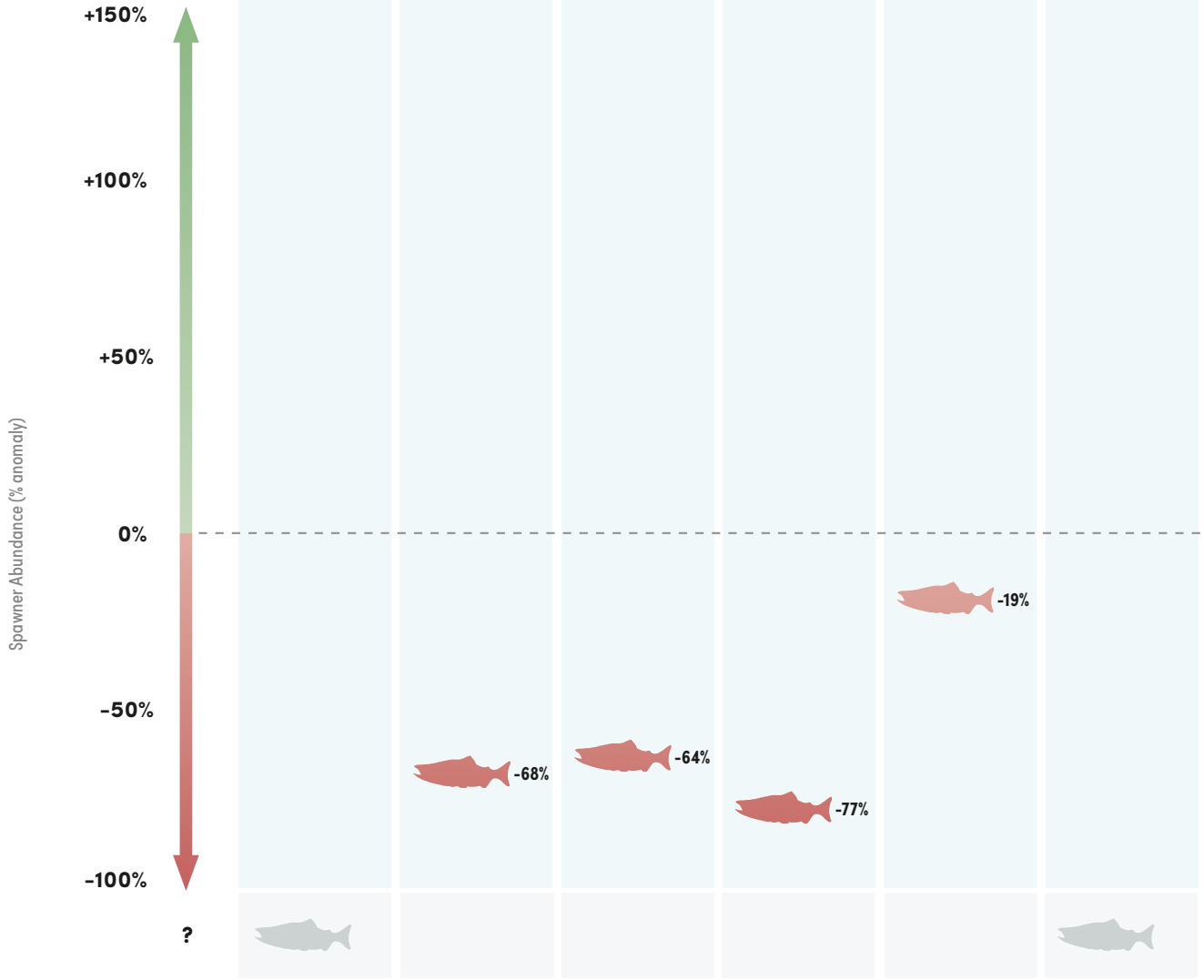
Recreational and commercial fisheries in the region typically intercept salmon on their migrations to other spawning areas. Although the numbers of salmon that actually spawn on Haida Gwaii are relatively small, salmon are a mainstay of cultures and communities in this remote island region. Most streams have a strong return of pink salmon during even calendar years only. Sockeye populations are smaller and are mainly harvested in First Nations food, social, and ceremonial fisheries.

HAIDA GWAII

Tables and figures in this section show the current state and trends for each species of salmon in Haida Gwaii. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
Current State	?	-68%	-64%	-77%	-19%	?
Trends: Short-Term	↑	↓	↓	—	—	?
Trends: Long-Term	—	↓	↓	↓	↓	?



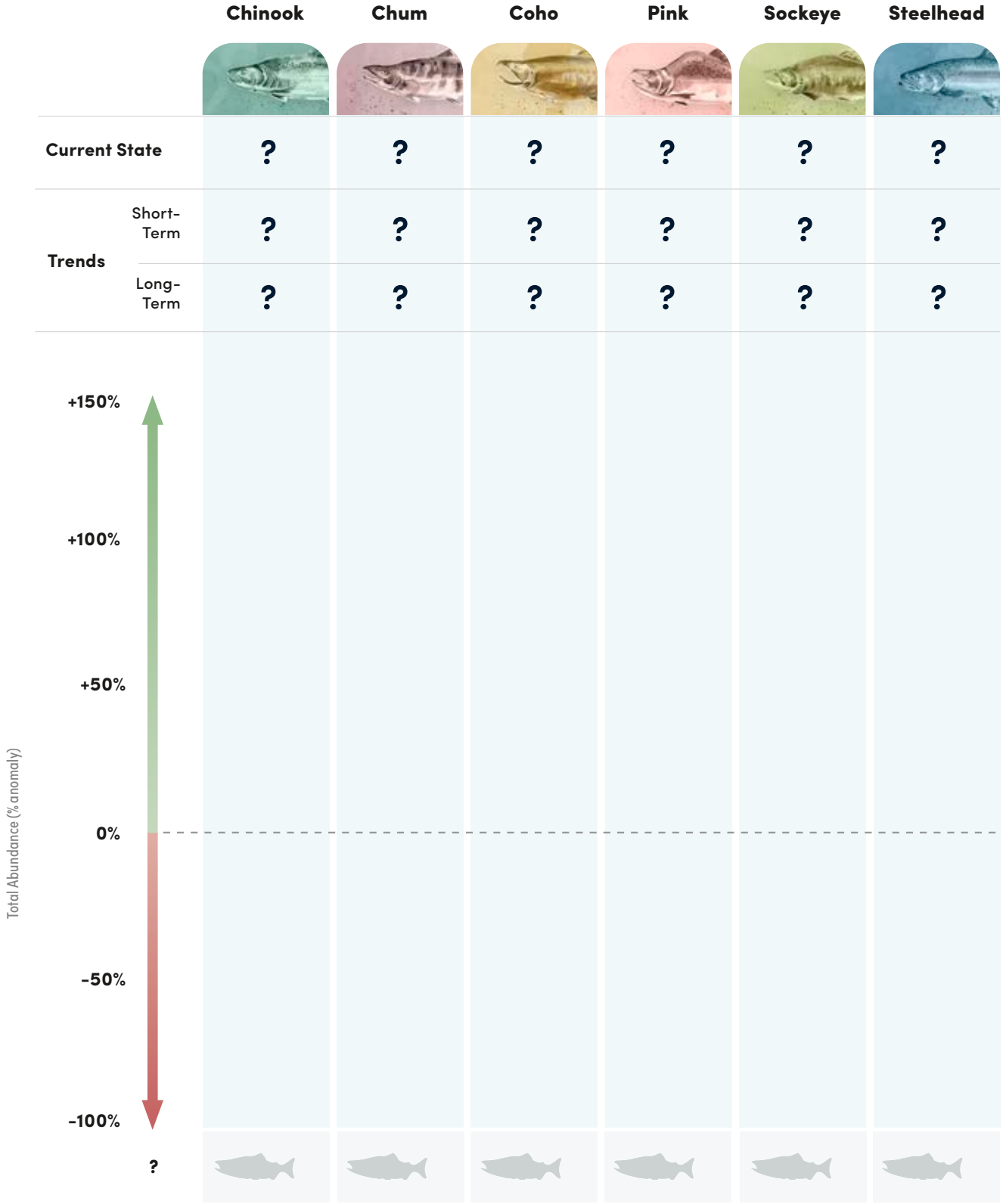
Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

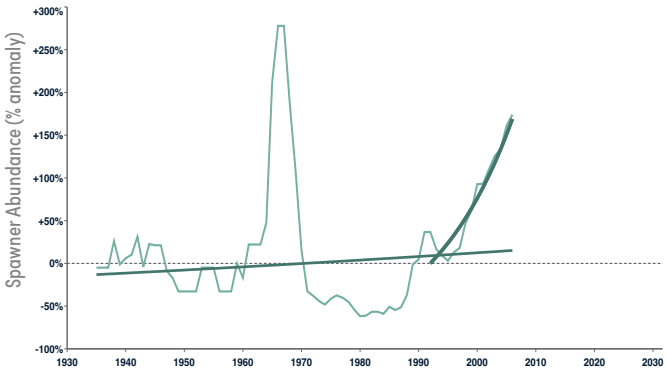


Chinook

The current state is unknown due to a lack of available data in recent years. The long-term trend from 1935–2006 is stable and the short-term trend from 1992–2006 is increasing sharply. Numbers below represent estimated abundance for the Yakoun River.

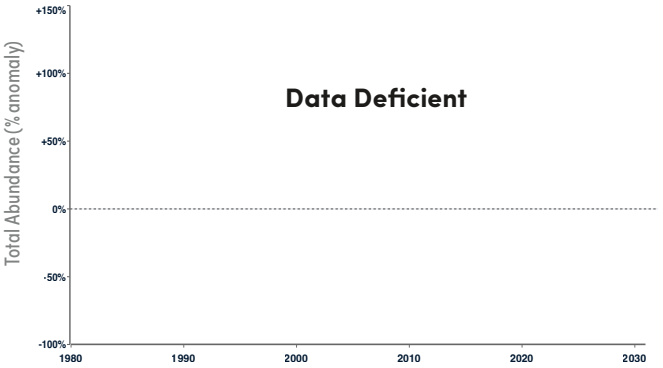
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	↑	—	?	1,600 (1935–2006)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

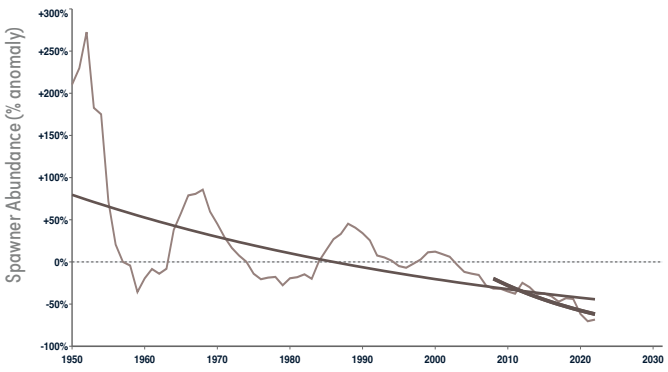


Chum

All three metrics concur that chum salmon spawners in the region are of conservation concern. Numbers below represent the sum of estimated abundance for 207 surveyed streams in the region.

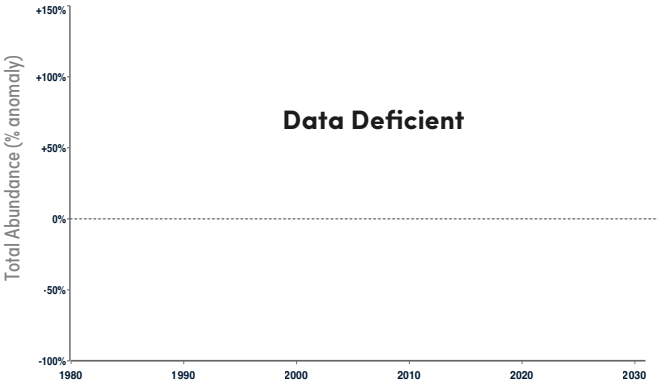
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-68%	↓	↓	90,200 (2018–2022)	285,300 (1950–2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



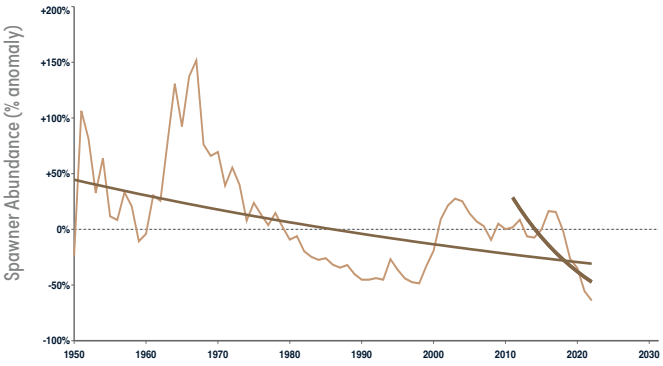
Short-Term Trends ——— Long-Term Trends ———

Coho

The current state is below the long-term average, with the last two years (2021-2022) being the lowest two on record since the time series began in 1950. The recent, sharp decline is reflected in a negative short-term trend, while a less-steep but declining long-term trend points to a sustained downward trajectory. Numbers below represent the sum of estimated abundance for 198 surveyed streams in the region.

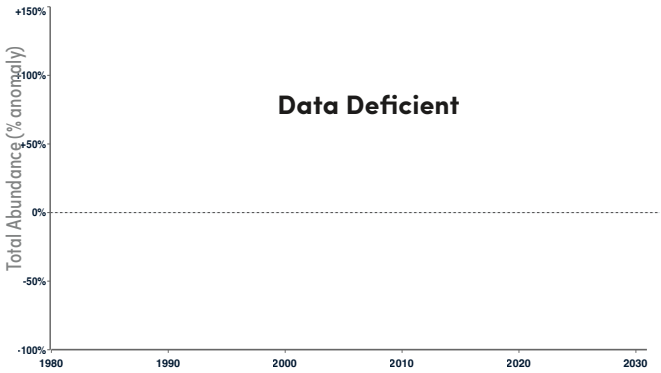
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-64%	↓	↓	**29,300** (2019-2022)	**81,200** (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

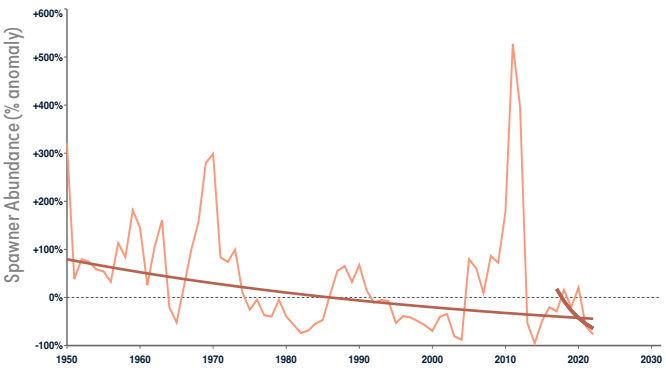


Pink

The current state is well-below the long-term average with a negative long-term trend. However, pink salmon abundance tends to fluctuate more widely than other species, and there was above-average spawner abundance as recently as 2020. A stable short-term trend is a result of swings in abundance from year to year. Numbers below represent the sum of estimated abundance for 146 surveyed streams in the region.

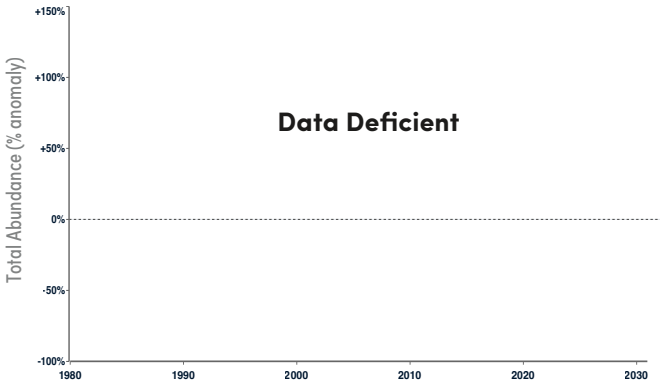
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-77%	—	↓	**26,800** (2021-2022)	**116,400** (1950–2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



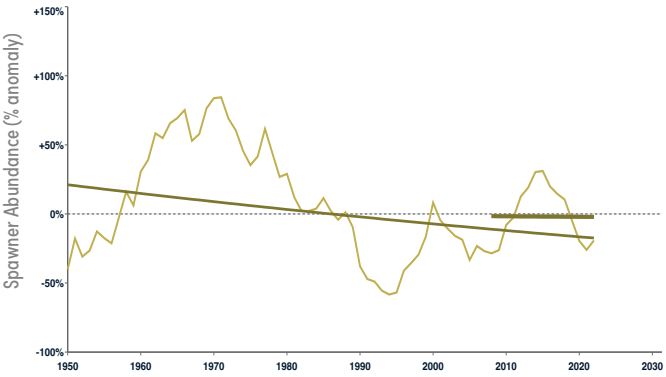
HAIDA GWAII

Sockeye

The current state is below the long-term average with a negative long-term trend. Although the short-term trend is stable, 2022 saw a promising uptick in spawner abundance following a sustained decline since 2015. Numbers below represent the sum of estimated abundance for 46 surveyed streams in the region.

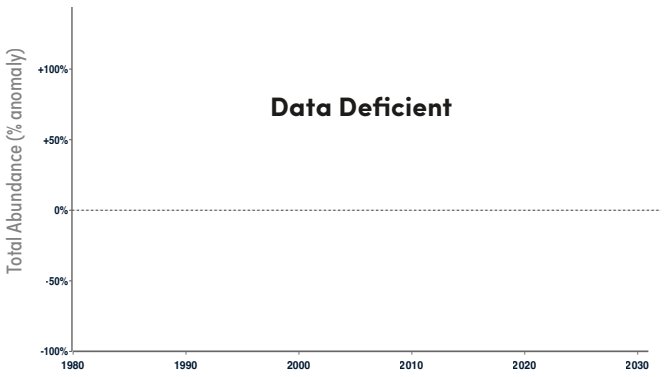
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-19%	—	↓	27,800 (2018–2022)	34,400 (1950–2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

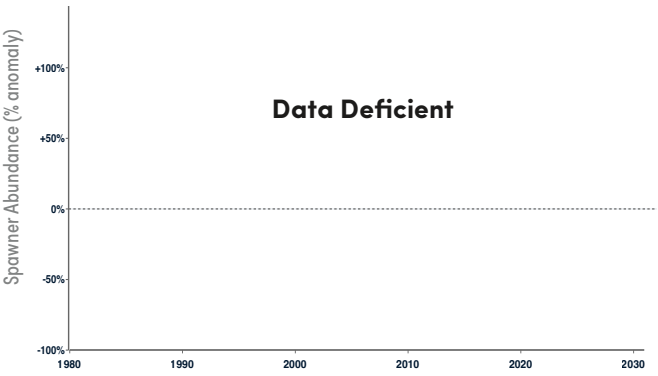


Steelhead

There are no data available on steelhead abundance in the region.

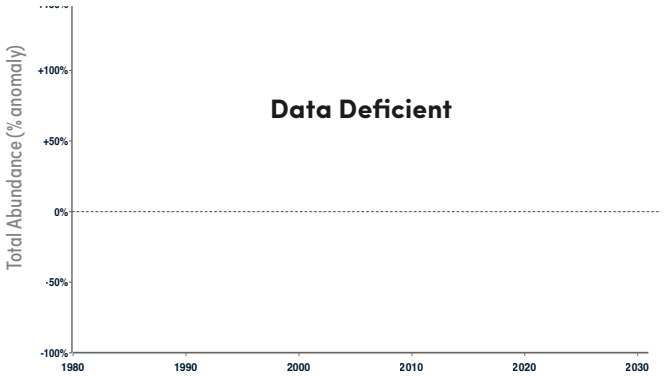
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



NASS

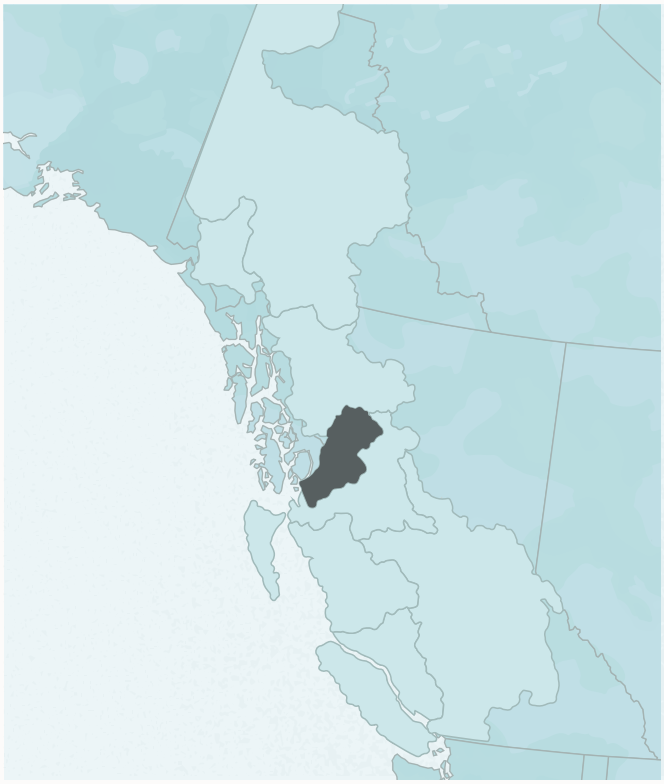
Chum salmon are the furthest below average, while coho and pink salmon are well-above average.

Nass salmon currently have one of the most positive outlooks of all regions. All species have increased in abundance in the past year, though Chinook, chum, and steelhead are all still below the long-term average for spawner and total abundances.

Chum salmon are a significant conservation concern in the region. Spawner abundance has been relatively low since the early 2000s and remains well-below the long-term average.

Although sockeye spawner abundance is above the long-term average, total abundance is below average and not all populations in the region are doing well. The largest population - Meziadin Lake - has not met its spawning goal in six of the last 10 years[22,23].

Coho and pink are both above average with positive long-term trends. However, caution is warranted for pink salmon, as abundance tends to fluctuate more than other species and current status can change dramatically from year to year.



Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

Major Salmon-Bearing Rivers

Meziadin River, Ksi X'anmas, Khutzeymateen River, Xnukw, Boswer River

Nass Profile

The Nass is British Columbia's third-largest watershed, with a drainage area of 20,700 square kilometres. Major tributaries include the Bell-Irving, Cranberry, Meziadin, Kwinageese, and Damdochax rivers.

Meziadin Lake hosts a large, naturally productive sockeye population, which accounts for 70-80 per cent of all Nass sockeye[22]. However, more than 250 other populations of spawning salmon contribute to high levels of biodiversity in the region.

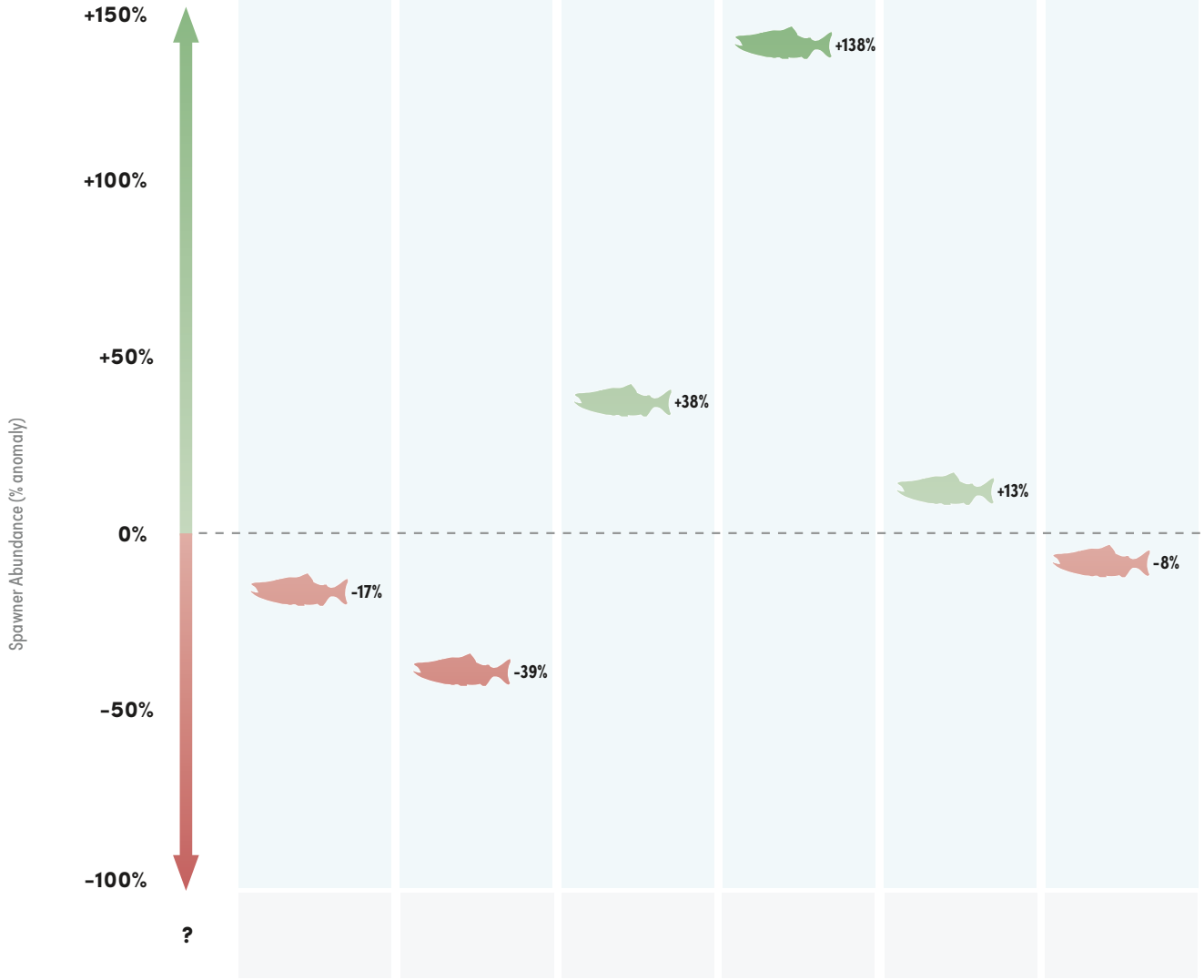
Under the Nisga'a Final Agreement of 1992, the Nisga'a Fish and Wildlife Department is responsible for salmon monitoring and management throughout much of the watershed. The Nisga'a operate two fishwheels, along with a video counter at the outlet of Meziadin Lake, which are used for biological sampling and developing spawner estimates for many Nass salmon populations[24]. There is also a counting fence at Ksi Tsoohl Tsap that supports the only coded-wire tag indicator program on a wild coho population in the province. The Gitanyow Fisheries Authority is also monitoring several salmon systems in the region, including the Bear River and the Meziadin River.

NASS

Tables and figures in this section show the current state and trends for each species of salmon in the Nass. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
						
Current State	**-17%**	**-39%**	**+38%**	**+138%**	**+13%**	**-8%**
Trends Short-Term	↓	—	—	—	↑	—
Trends Long-Term	—	↓	↑	↑	—	↑



Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

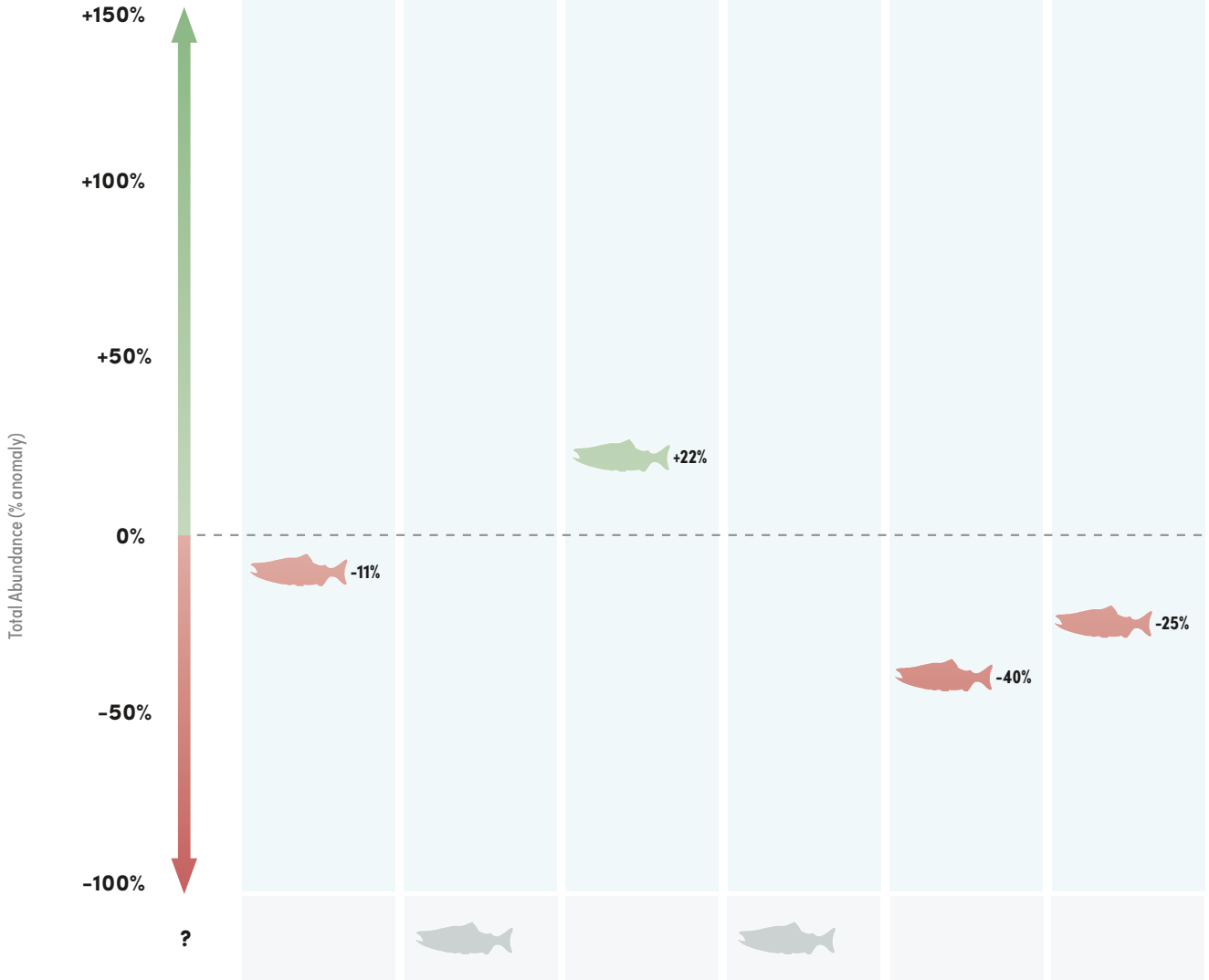
Arrows indicate if the trend in abundance is increasing or decreasing.

— A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
Current State	-11%	?	+22%	?	-40%	-25%
Trends Short-Term	↓	?	—	?	↓	—
Trends Long-Term	—	?	↑	?	↓	—



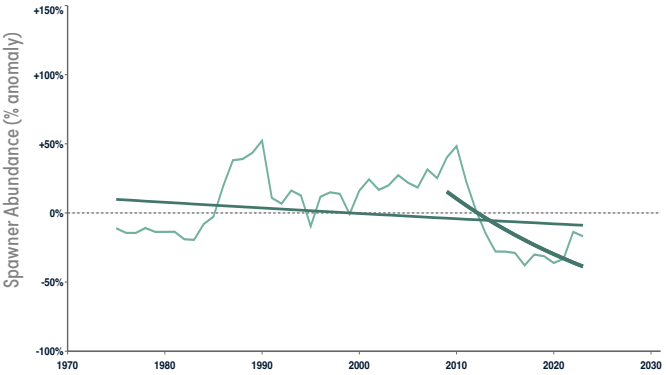
NASS

Chinook

The current states of spawner and total abundances are both below the long-term average. Short-term trends are negative, meaning that abundances are both low and declining - a cause for concern. Stable long-term trends are the result of relatively high abundance from the mid 1980s to 2010. Numbers below represent absolute estimates of Chinook for the Nass River.

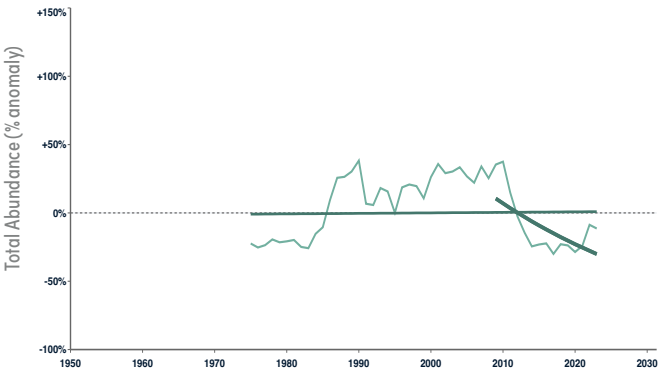
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-17%	↓	—	13,900 (2019-2023)	16,800 (1975-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-11%	↓	—	20,400 (2019–2023)	23,000 (1975–2023)

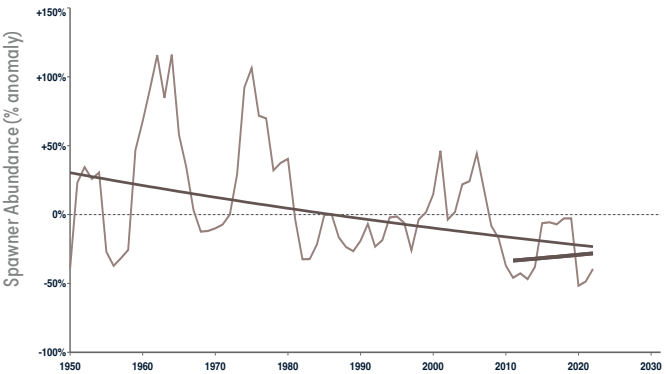


Chum

The current state is well-below the long-term average, a consequence of a negative long-term trend in spawner abundance since the 1950s. Relatively low spawner abundance has persisted since ~2003, but a stable short-term trend and sporadic increases in spawners in some recent years provide hope. Numbers below represent the sum of estimated abundance for 32 surveyed streams in the region.

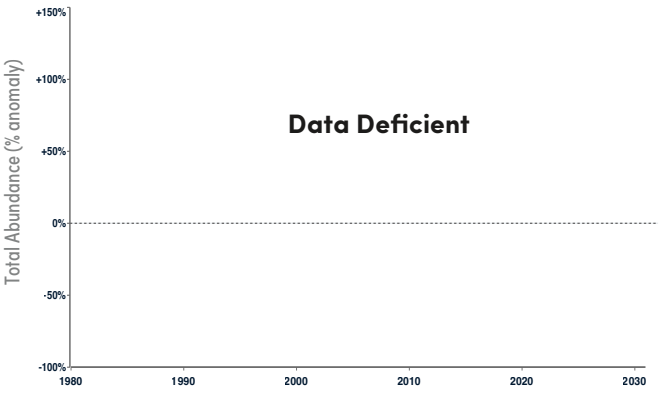
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-39%	—	↓	17,800 (2019-2022)	29,400 (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



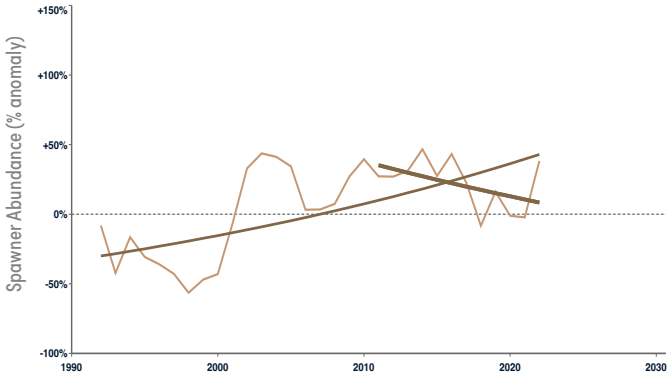
Short-Term Trends —— Long-Term Trends ——

Coho

The current state is above the long-term average for both spawner and total abundances. Coho have experienced positive long-term trends from historic low abundances in the late 1990s - contrary to trends in many other species and regions. Increases appear to have slowed recently, with stable short-term trends in spawner and total abundance. Numbers below represent the sum of estimated abundance for all three coho Conservation Units in the region.

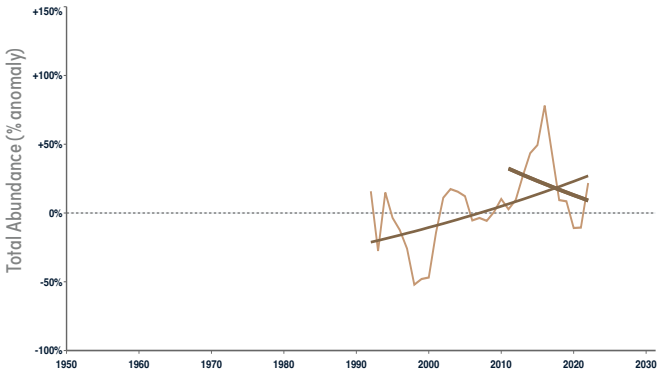
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+38%	—	↑	**164,400** (2019-2022)	**118,900** (1992-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+22%	—	↑	**318,600** (2019-2022)	**261,500** (1992-2022)

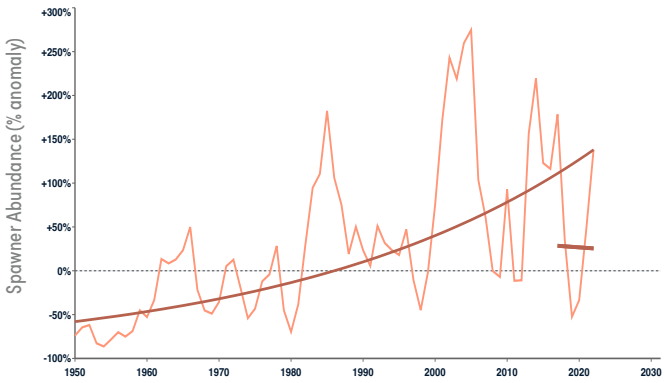


Pink

The current state of spawners is above the long-term average with a positive long-term trend. Pink salmon abundance tends to fluctuate more widely than other species, and the stable short-term trend is the result of lower spawners in 2019 bracketed by spawners well-above average in 2017 and in 2021-2022. Numbers below represent the sum of estimated abundance for 71 surveyed streams in the region.

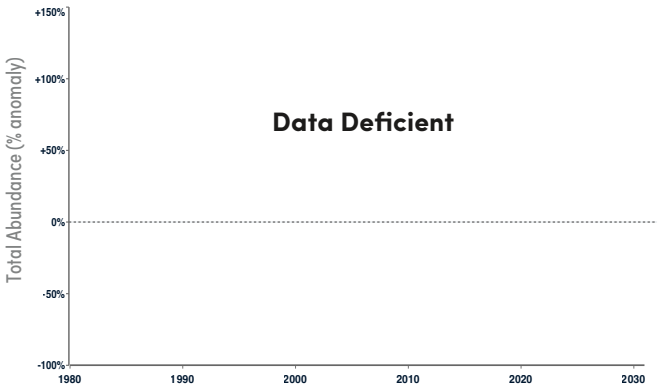
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+138%	—	↑	**513,700** (2021-2022)	**215,700** (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

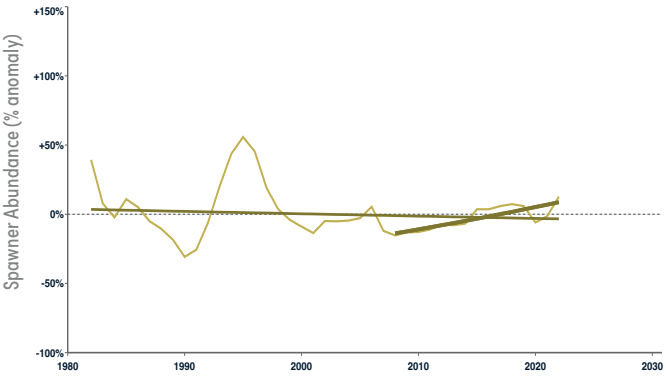


Sockeye

The current state of spawner abundance is above the long-term average, though total abundance is well-below average suggesting declining catch in recent years. Indeed, total abundance shows negative short-term and long-term trends. Spawners have a positive short-term trend due to, at least in part, reduced exploitation rates in recent years[24] allowing more salmon to reach the spawning grounds. Numbers below represent absolute estimates of sockeye for the Nass River.

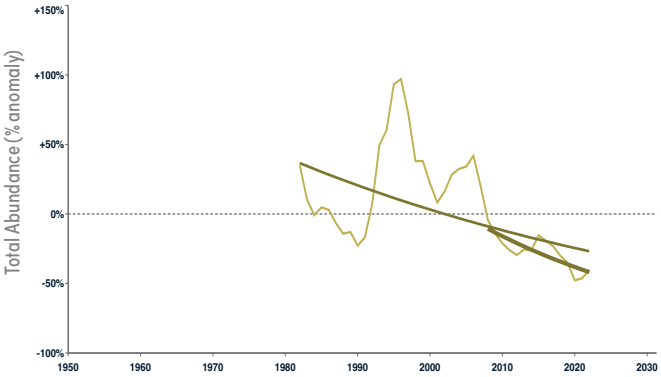
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+13%	↑	—	**283,200** (2018-2022)	**251,200** (1982-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-40%	↓	↓	**406,000** (2018-2022)	**681,100** (1982-2022)

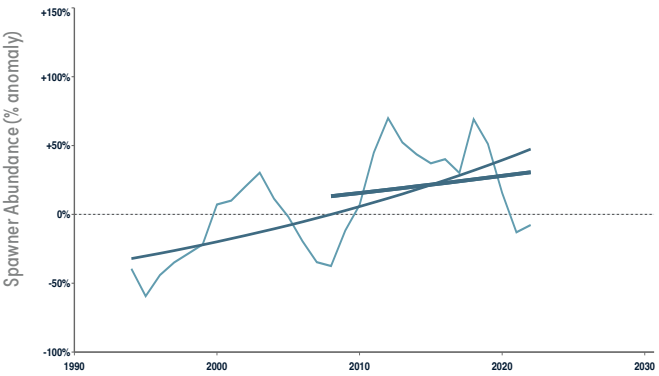


Steelhead

The current states of spawner and total abundances are both below the long-term average. The current states reflect low abundances in 2020 and 2021, but a recent uptick in 2022 and the relatively long five-year generation length of steelhead has meant that trends have been stable or increasing. Numbers below represent estimated abundance for one of two steelhead Conservation Units in the region.

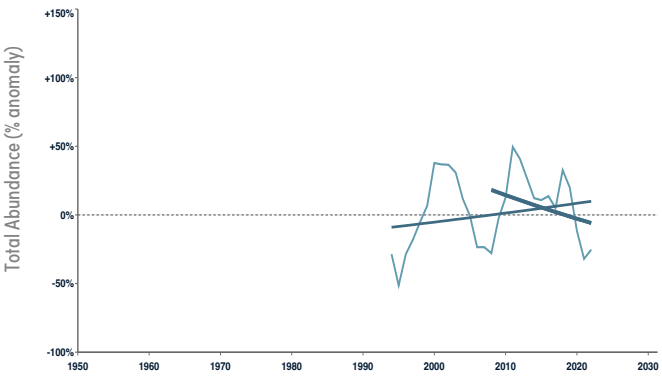
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-8%	—	↑	**10,400** (2018-2022)	**11,200** (1994-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-25%	—	—	**13,500** (2018-2022)	**18,100** (1994-2022)



SKEENA

Chum salmon have declined dramatically, while pink and sockeye spawners are above average.

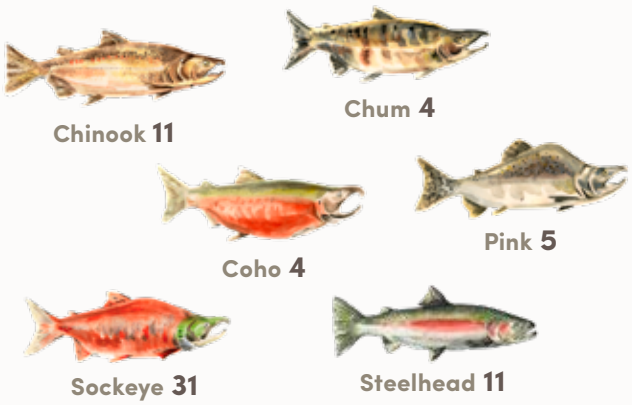
The Skeena is one of British Columbia's largest salmon-bearing watersheds, second only to the Fraser. Skeena chum salmon are a significant conservation concern. They are the furthest below the long-term average of all species and regions and have a relatively steep negative long-term trend. Skeena chum salmon show no sign of recovery.

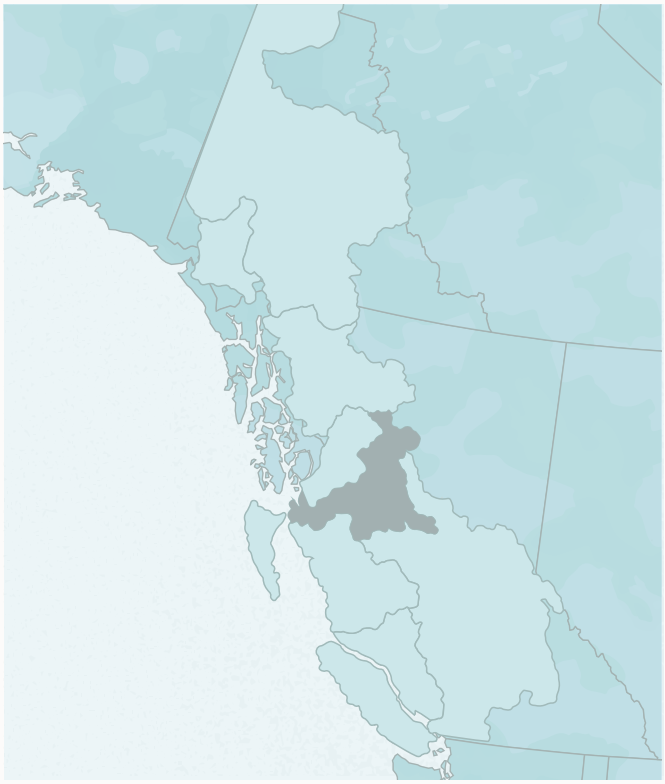
Although sockeye spawner abundance is currently above the long-term average, total abundance has remained below average since the mid 2000s.

Salmon enhancement via artificial spawning channels in two tributaries to Babine Lake has led to a century-long erosion of sockeye biodiversity in the region[11]. The enhanced Babine population now comprises more than 90 per cent of all sockeye returns to the Skeena, with collateral impacts on less abundant populations that are caught in fisheries targeting the enhanced Babine population.

Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.





Skeena Profile

The Skeena River is British Columbia's second largest salmon-bearing watershed, draining an area of 54,432 square kilometres. With its headwaters in British Columbia's northern interior, the 580-kilometre-long river flows southwest to enter the ocean just south of Prince Rupert. Important tributaries within the Skeena River watershed include the Babine River, the Kispiox River, and the Bulkley River.

The Skeena River watershed is one of the most productive salmon watersheds in Canada. All six species of Pacific salmon spawn and rear in a diversity of habitats found throughout the watershed, including the Skeena River Estuary and the lower mainstem Skeena River. Salmon habitat is relatively pristine but faces increasing pressures from industrial development.

The Skeena supports Canada's second largest salmon fishery (second only to the Fraser) and an internationally renowned recreational salmon fishery. In the mid 1960s and early 1970s, two artificial spawning channels were created in two tributaries to Babine Lake - Fulton River and Pinkut Creek - to provide more spawning habitat and boost total sockeye production. Over the past 50 years, these spawning channels have fundamentally changed the composition of salmon populations in the Skeena and eroded the salmon biodiversity of the region[11].

Commercial fisheries have been dwindling since the 1990s. In two of the past four years (2019 and 2021), Canadian fisheries for Skeena sockeye have not operated due to low abundances[25]. More generally, harvest rates of Skeena salmon have been curtailed since the turn of the century to also protect critically low numbers of co-migrating steelhead in the Skeena River[26]. However, harvest for sockeye and also pink salmon in 2022 exceeded the previous 10-year average (2012-2021)[25], which - together with above-average spawners for these species - is potentially good news for the region.

Major Salmon-Bearing Rivers

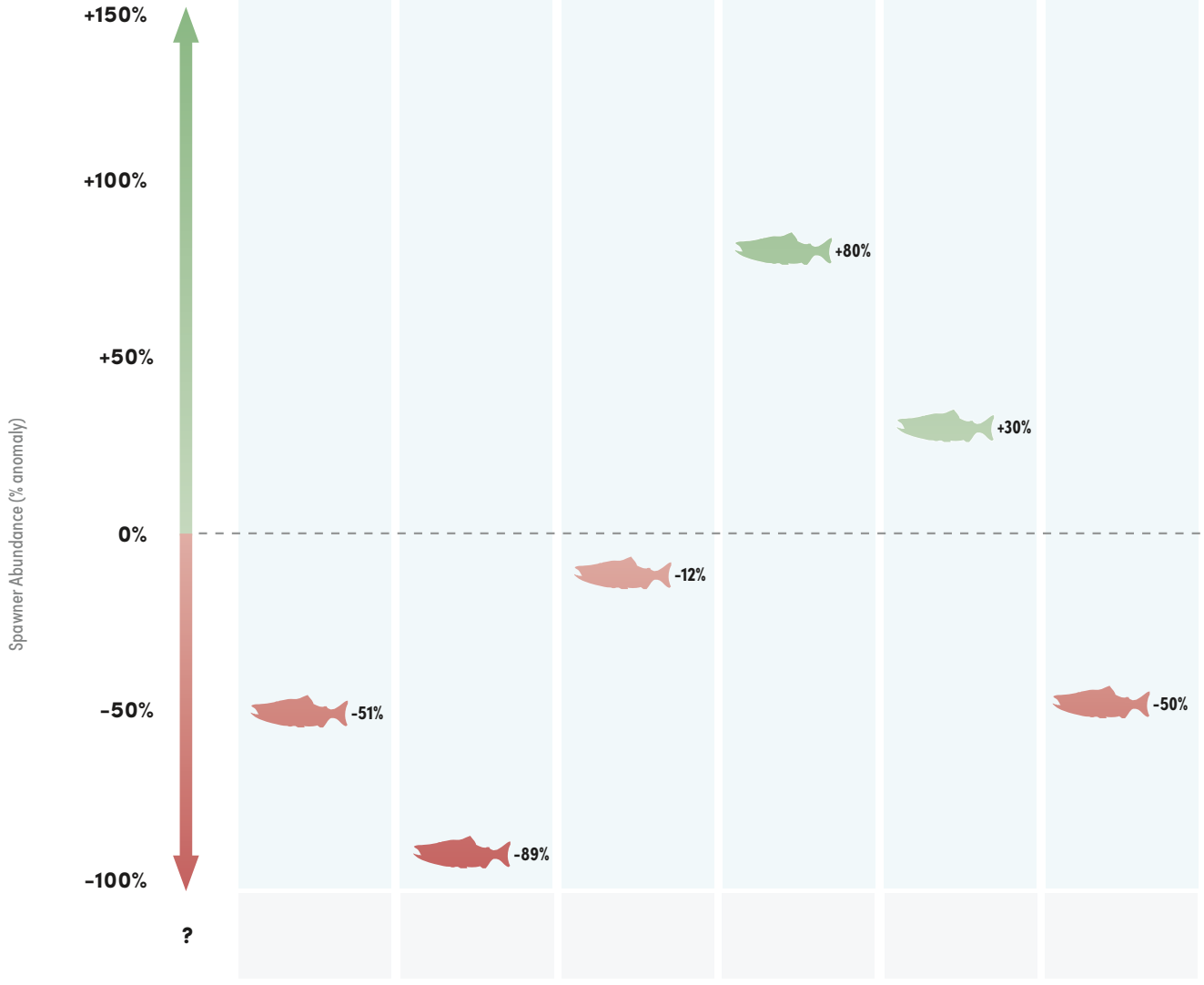
Skeena River, Lakelse River, Fulton River, Kitwanga River, Babine Lake

SKEENA

Tables and figures in this section show the current state and trends for each species of salmon in the Skeena. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
Current State	-51%	-89%	-12%	+80%	+30%	-50%
Trends: Short-Term	↓	—	—	—	↑	↓
Trends: Long-Term	↓	↓	↓	—	↑	↑



Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

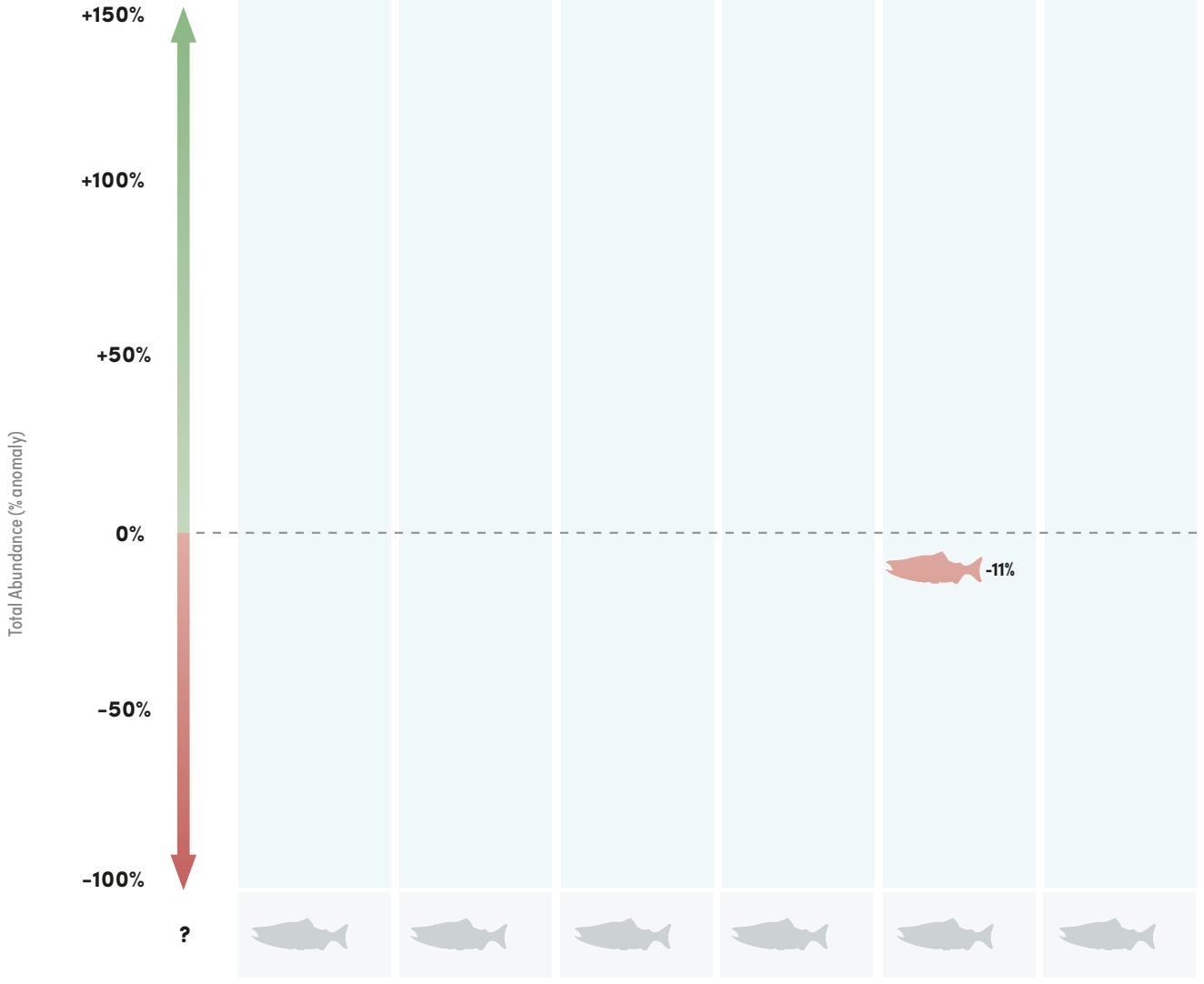
Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

		Chinook	Chum	Coho	Pink	Sockeye	Steelhead
							
Current State		?	?	?	?	-11%	?
Trends	Short-Term	?	?	?	?	—	?
	Long-Term	?	?	?	?	—	?



Chinook

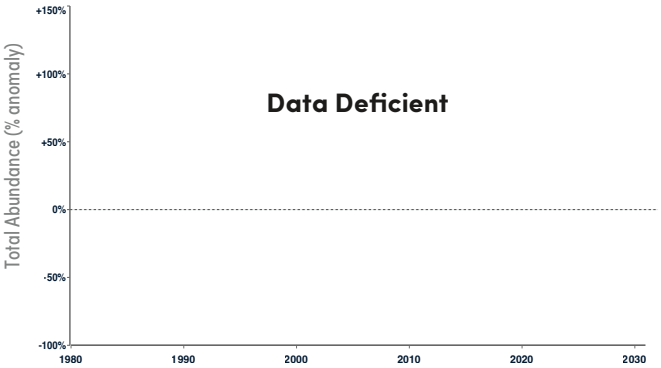
The current state is well-below the long-term average, with the most recent spawner abundance the lowest on record (1984-2022). A negative long-term trend and even steeper, negative short-term trend reflect declines from relatively high spawner abundance in the 1990s and early 2000s. Numbers below represent absolute estimates of Chinook for the Skeena River.

Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-51%	↓	↓	23,000 (2018-2023)	47,200 (1984-2023)

Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

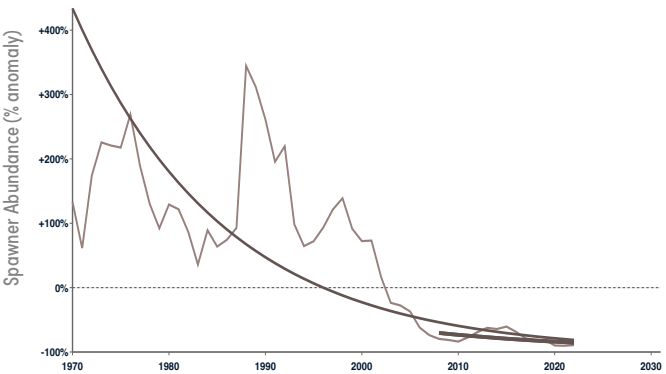


Chum

The current state is the furthest below the long-term average of all species and regions. A steep negative long-term trend from 1970-2022 reflects a sudden crash that occurred in the early 2000s. There is no sign of recovery, with a stable short-term trend. Numbers below represent estimates of chum salmon for the Skeena River.

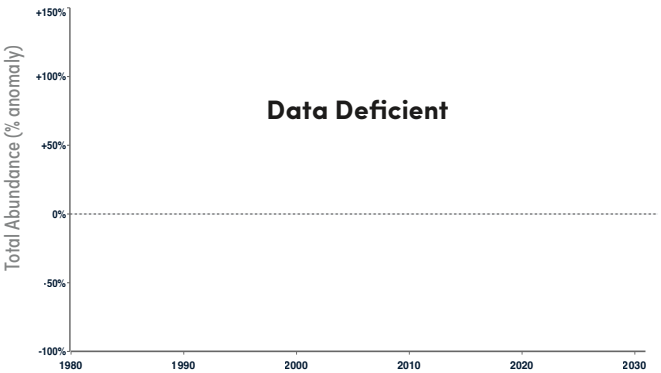
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-89%	—	↓	500 (2018-2022)	4,700 (1970-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



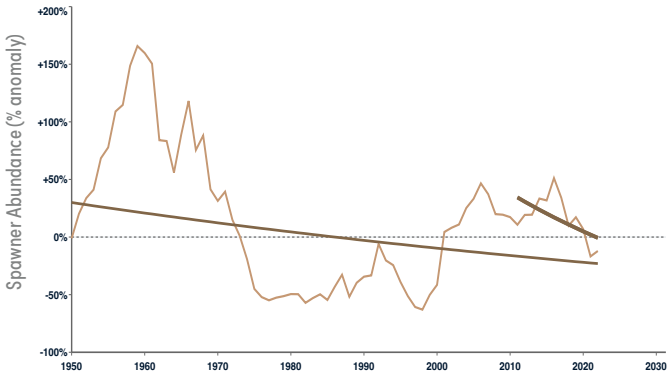
Short-Term Trends —— Long-Term Trends ——

Coho

The current state is below the long-term average. A negative long-term trend highlights declines since record numbers of spawners in the 1950s and 1960s, while a stable short-term trend reflects recent spawner abundances that have been hovering around average. Numbers below represent the sum of estimated abundance for 195 surveyed streams in the region.

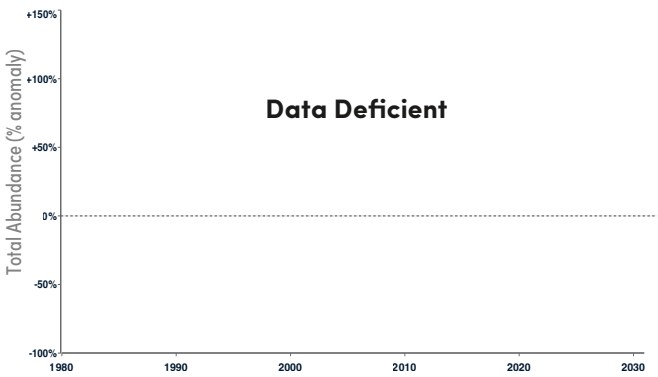
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-12%	—	↓	70,000 (2019-2022)	79,600 (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

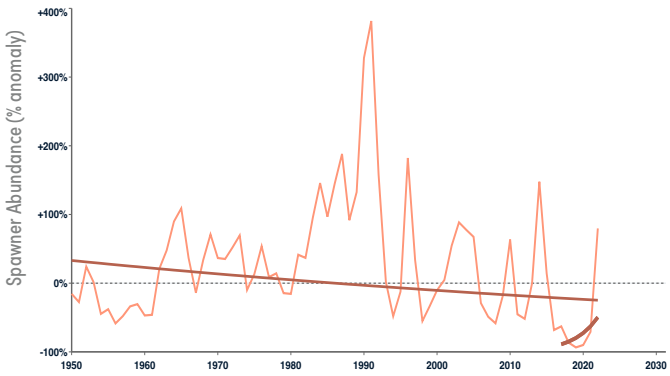


Pink

The current state is above the long-term average, but frequent fluctuations in spawner abundance mean there is no significant trend in spawners over either the short-term or long-term. Numbers below represent the sum of estimated abundance for 138 surveyed streams in the region.

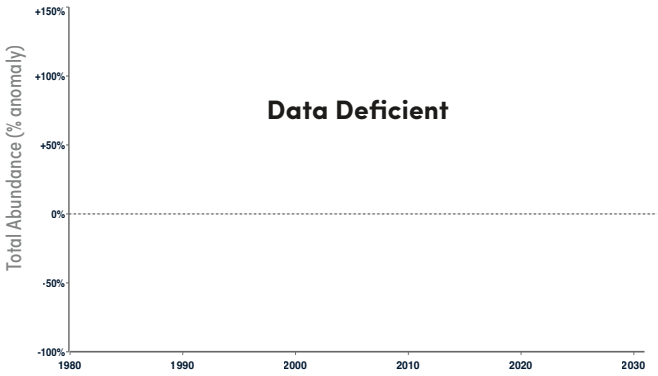
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+80%	—	—	1,466,200 (2021-2022)	815,800 (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



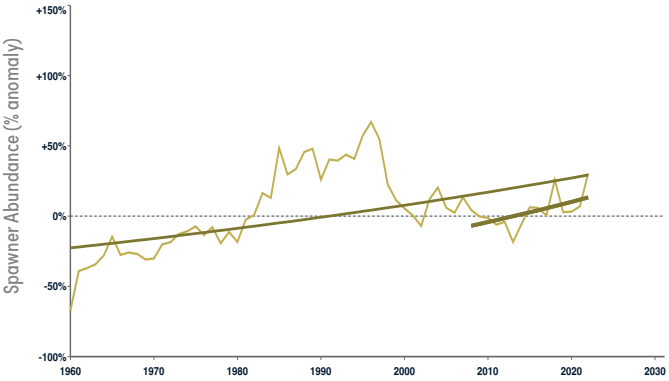
SKEENA

Sockeye

The current state of spawner abundance is above the long-term average, but total abundance has remained below average since the mid 2000s. Positive trends in spawners over the short-term and long-term are also not reflected in trends in total abundance, pointing to reductions in the sockeye catch since the 1990s. The apparent increases in spawner abundance is primarily due to ongoing enhancement of the Babine population. Numbers below represent absolute estimates of sockeye for the Skeena River.

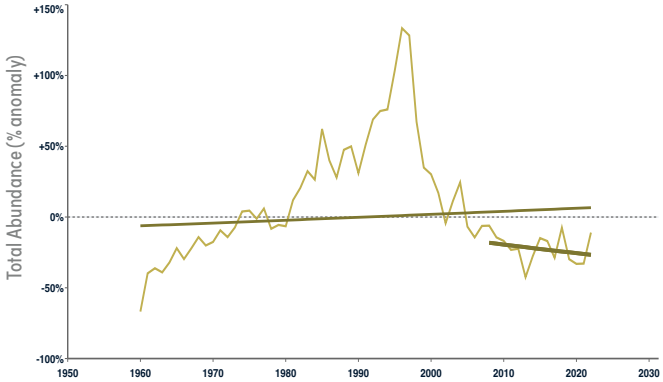
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+30%	↑	↑	1,214,000 (2018-2022)	930,500 (1960-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-11%	—	—	1,790,800 (2018-2022)	2,011,100 (1960-2022)

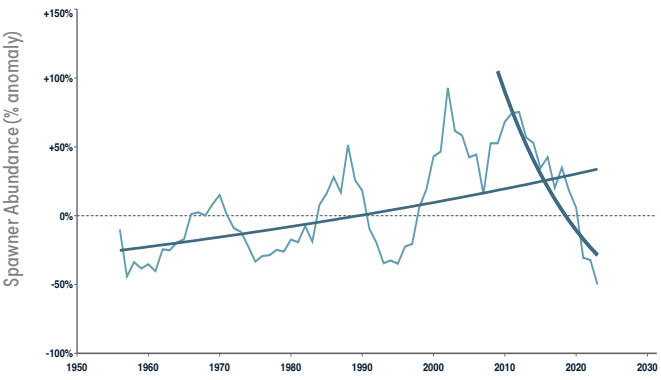


Steelhead

The current state is well-below the long-term average. Although there has been a long-term increase over the entire time series (1956-2023), a dramatic negative short-term trend is cause for concern. The most recent spawner abundance (2023) was the lowest on record. Numbers below represent an index of steelhead abundance from the Tyee Test Fishery.

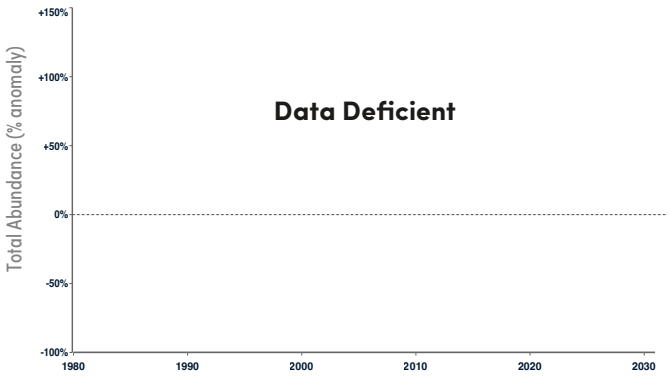
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-50%	↓	↑	11,200 (2019-2023)	22,400 (1956-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



CENTRAL COAST

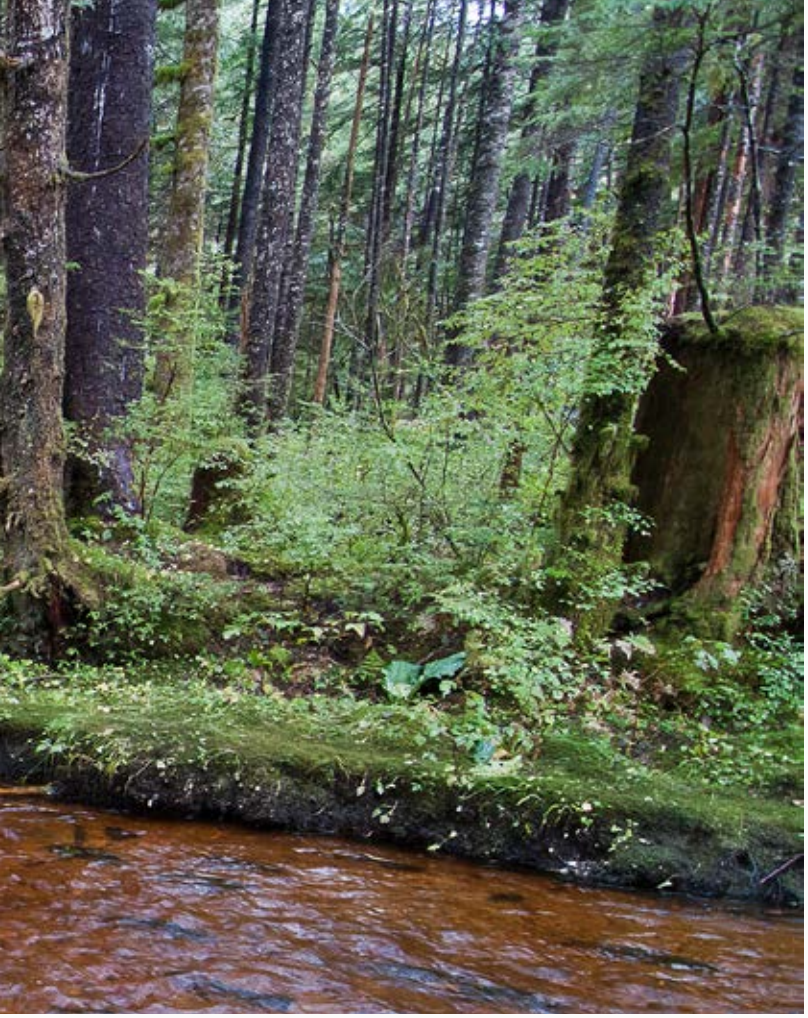
All species are below average, with dramatic declines of Chinook and chum salmon.

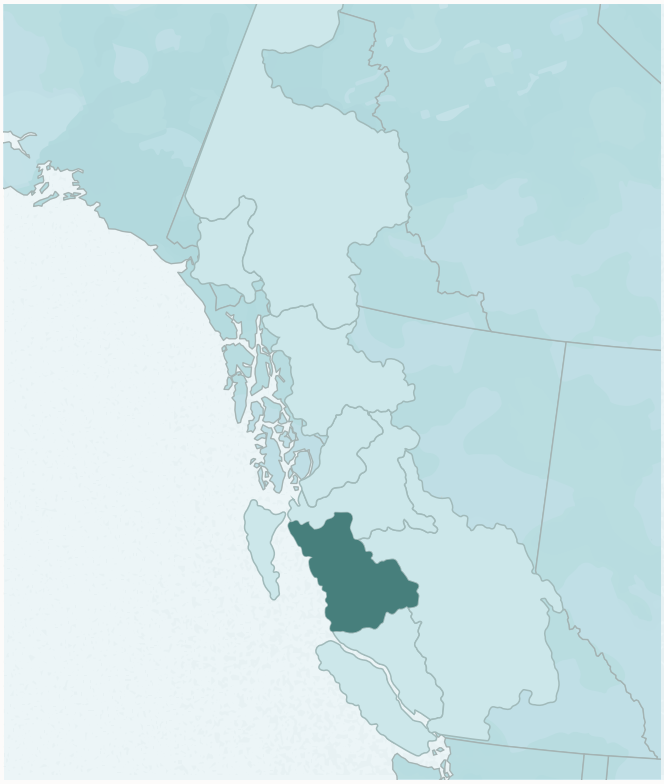
On the Central Coast, numerous small coastal watersheds have given rise to the greatest salmon biodiversity of any region. This biodiversity is being threatened as spawners decline across all species and monitoring cutbacks on the Central Coast means that in many cases we can't properly track what is being lost[27]. Declines in salmon monitoring in the region have been well documented[28], and yet improvements have not been made: fewer than 50% of historically surveyed streams on the Central Coast have been visited in the past 10 years.

Chinook and chum are both well-below the long-term average and are a significant conservation concern. In 2022, Chinook abundance was at an all-time low and chum abundance was one of the lowest on record.

Sockeye spawners have been below average since the mid 1990s and are currently well-below the long-term average. Historically, Owikeno Lake and Long Lake were one of the three largest salmon runs in British Columbia[12]. These populations have been decimated and all major commercial sockeye fisheries in the region have been curtailed.

Commercial fisheries in this region harvest a mix of salmon returning to rivers on the Central Coast and more southern regions, making it difficult to assign catch to this region and calculate total abundance. As a result, our assessment of Central Coast salmon is based on spawner abundances only.





Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

Central Coast Profile

The Central Coast Region is part of the Great Bear Rainforest, one of the largest remaining tracts of unspoiled temperate rainforest left in the world. The Central Coast stretches from Douglas Channel and Banks, McCauley, and Pitt Islands in the north to Rivers Inlet and Smith Inlet in the south, covering 54,813 square kilometres. It comprises large inland fjords, thousands of coastal islands, and 18 small- to medium-sized rivers that drain more than 132,400 square kilometres of streams into Hecate Strait and Queen Charlotte Sound.

With a diversity of stream, river, lake, and estuary habitats, the region offers some of British Columbia's most intact and productive spawning habitats, which support a rich diversity of salmon. All six species of salmon including steelhead occur on the Central Coast, with hundreds of uniquely adapted populations.

Major Salmon-Bearing Rivers

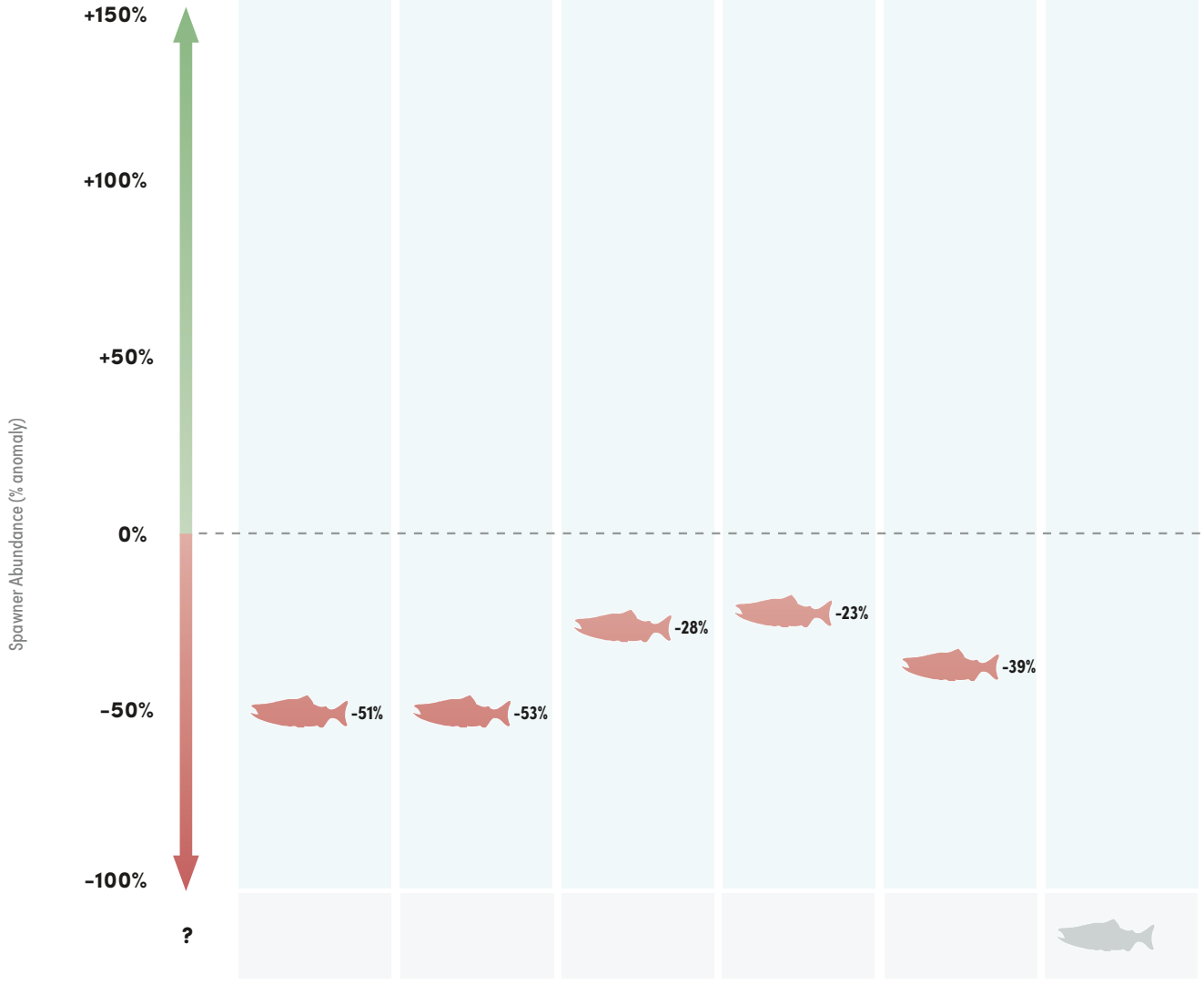
Bella Coola River, Atnarko River, Quaal River, Kemano River, Kainet Creek

CENTRAL COAST

Tables and figures in this section show the current state and trends for each species of salmon in the Central Coast. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
						
Current State	-51%	-53%	-28%	-23%	-39%	?
Trends Short-Term	↓	—	↓	—	—	?
Trends Long-Term	↓	↓	↓	↑	↓	?



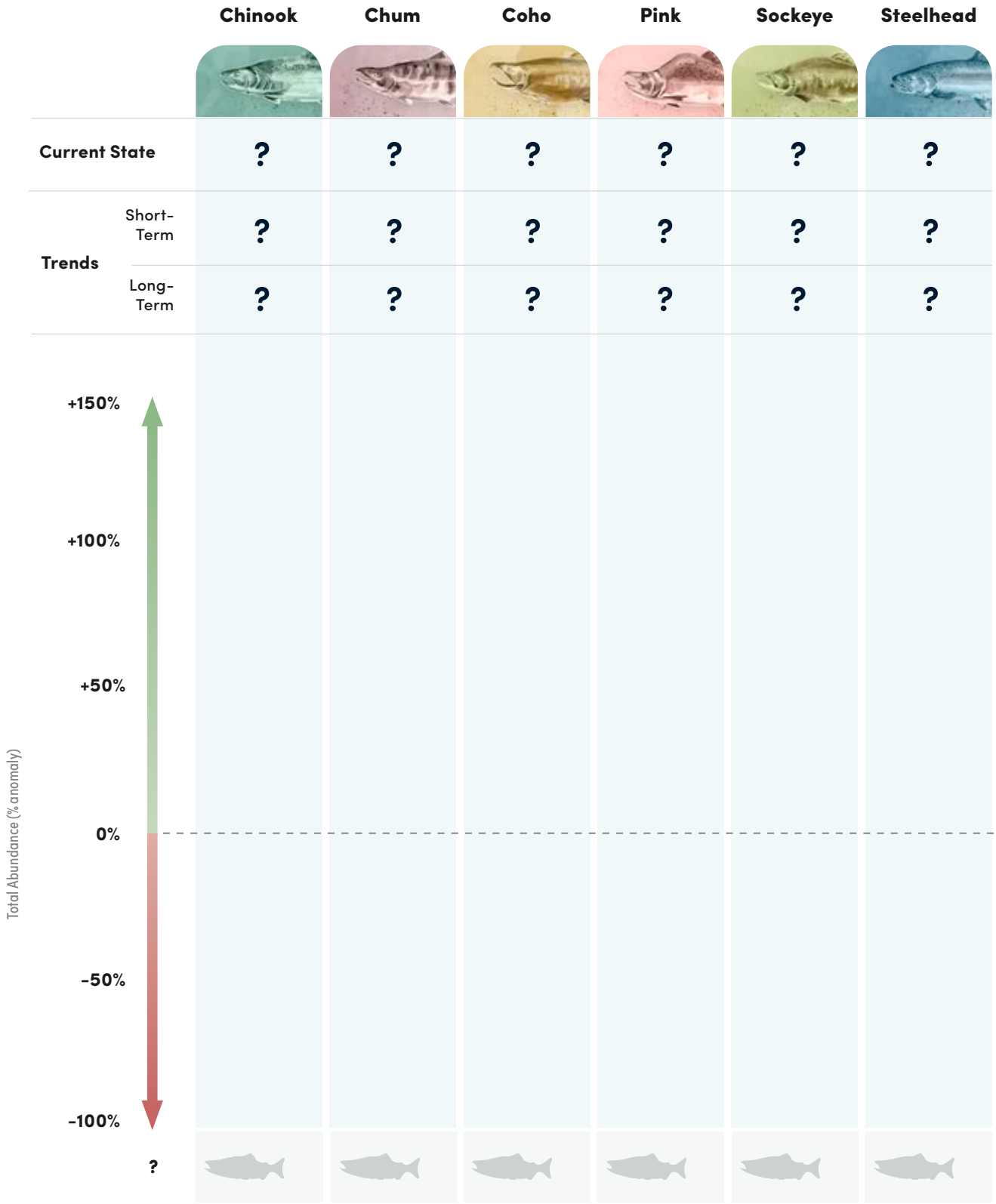
Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

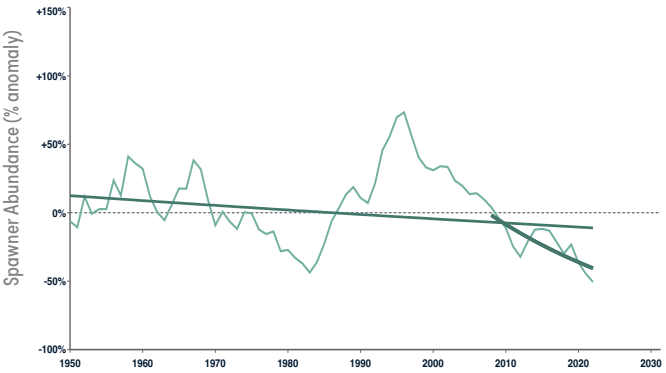


Chinook

All three metrics concur that Chinook spawners in the region are of conservation concern, with 2022 showing the lowest spawner abundance since the time series began in 1950. Steady declines from a peak in the mid 1990s are reflected in a negative short-term trend, while the negative long-term trend tells us that recent abundances are lower than what would be expected given historical cycles in spawner abundance. Numbers below represent the sum of estimated abundance for 75 surveyed streams in the region.

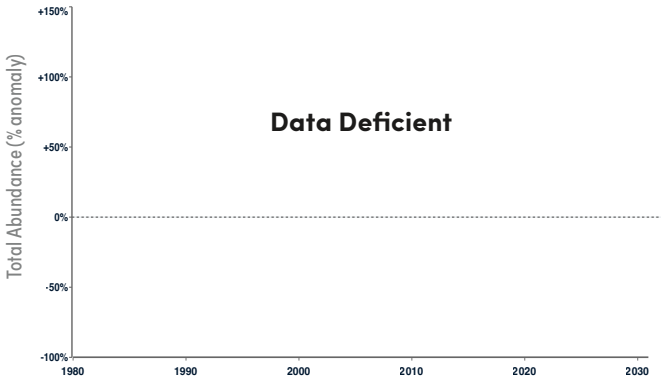
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-51%	↓	↓	**25,700** (2018-2022)	**52,000** (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

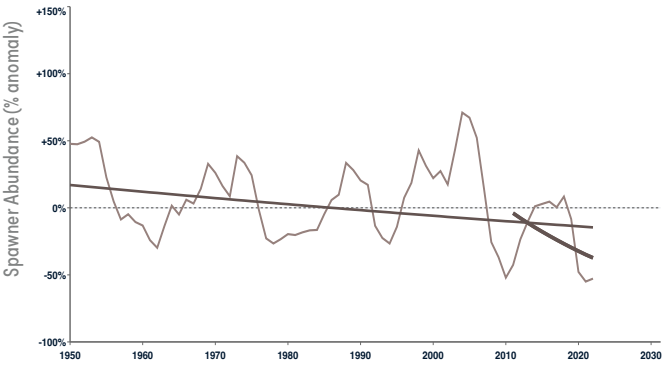


Chum

The current state is well-below the long-term average. Above-average spawners from 2014-2018 resulted in a stable short-term trend, but these cycles in abundance overlie a general decline as shown by a negative long-term trend. Numbers below represent the sum of estimated abundance for 329 surveyed streams in the region.

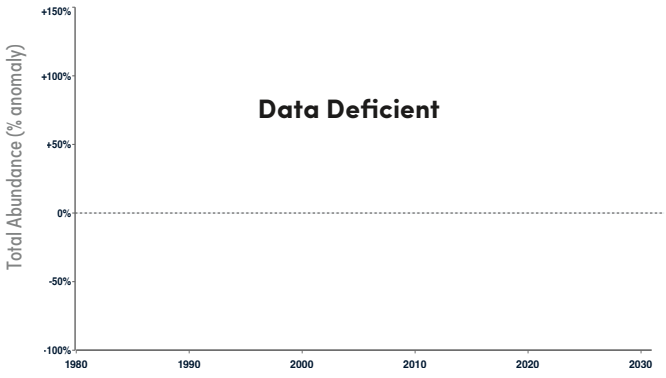
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-53%	—	↓	**299,500** (2019-2022)	**633,900** (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



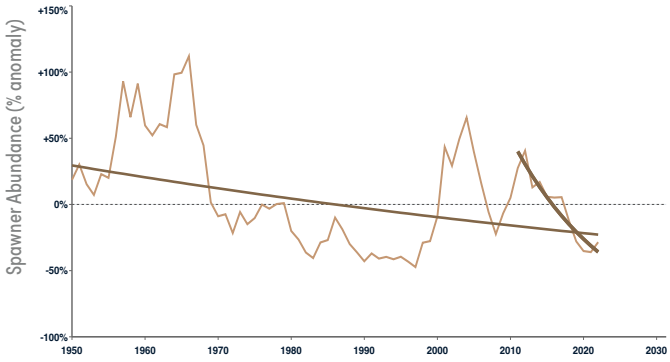
Short-Term Trends —— Long-Term Trends ——

Coho

The current state is below the long-term average following a sharp decline over the most recent three generations. Although spawner abundance isn't as low now as in the mid 1990s, a negative long-term trend tells us that a general decrease has been apparent since the time series began in 1950. Numbers below represent the sum of estimated abundance for 329 surveyed streams in the region.

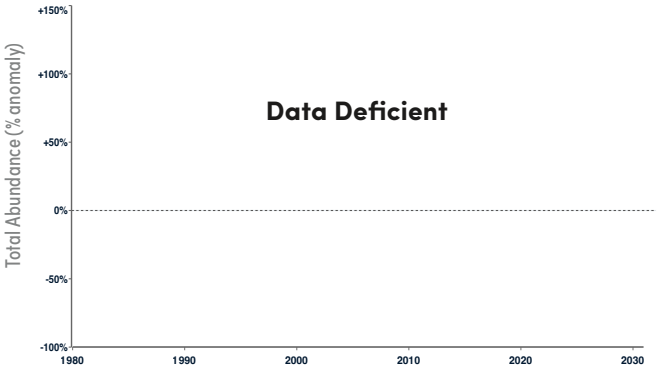
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-28%	↓	↓	130,700 (2019-2022)	182,700 (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

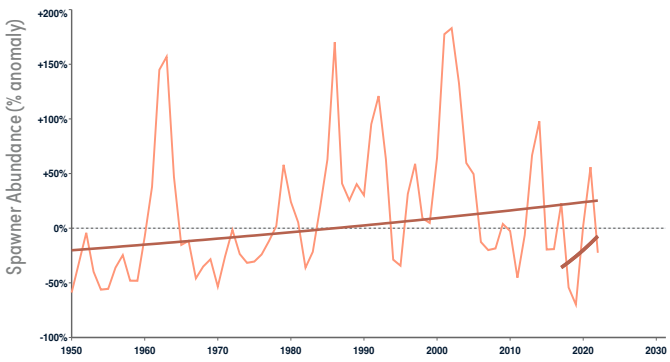


Pink

The current state is below the long-term average. Spawner abundance has fluctuated around average over the past decade, and the short-term trend is stable. A small but positive long-term trend has occurred from 1950-2022. Numbers below represent the sum of estimated abundance for 314 surveyed streams in the region.

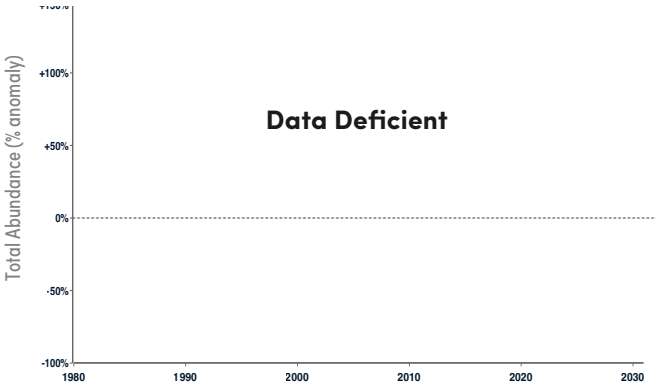
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-23%	—	↑	1,958,500 (2021-2022)	2,527,700 (1950-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



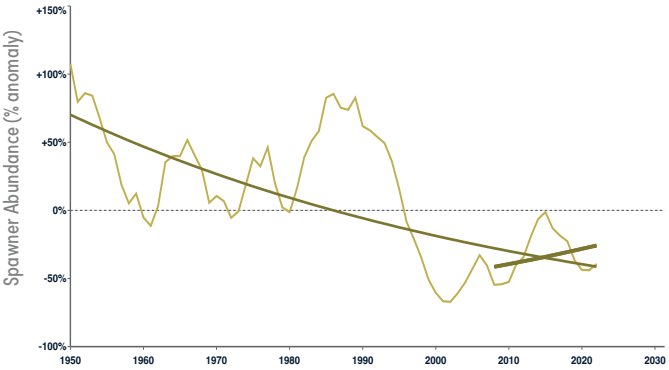
CENTRAL COAST

Sockeye

The current state is well-below the long-term average. A negative long-term trend reflects a tipping point in the mid 1990s from generally above-average spawner abundance to consistently below average. Spawner abundance has remained low with a stable short-term trend over the most recent three generations. Numbers below represent the sum of estimated abundance for 207 surveyed streams in the region.

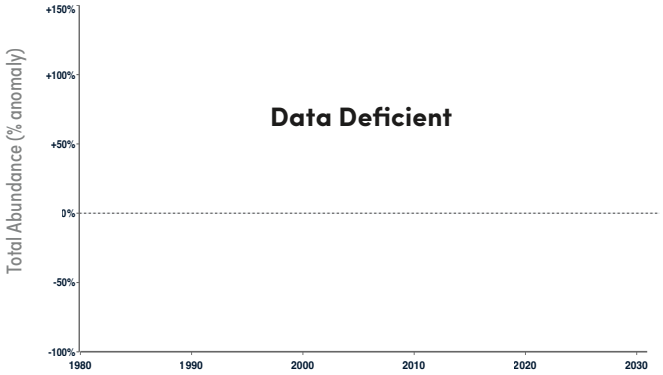
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-39%	—	↓	**244,900** (2018–2022)	**403,500** (1950–2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

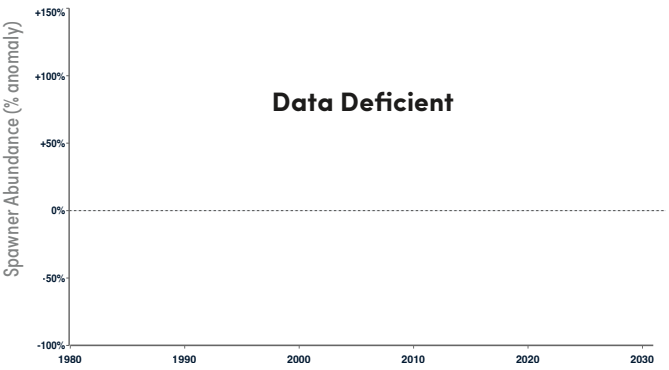


Steelhead

There are no data available on steelhead abundance in the region.

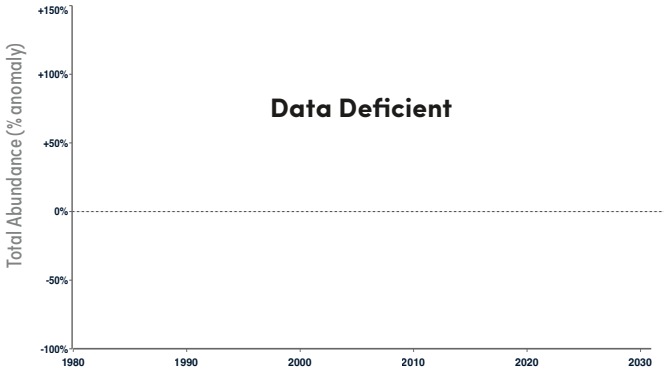
Spawner Abundance

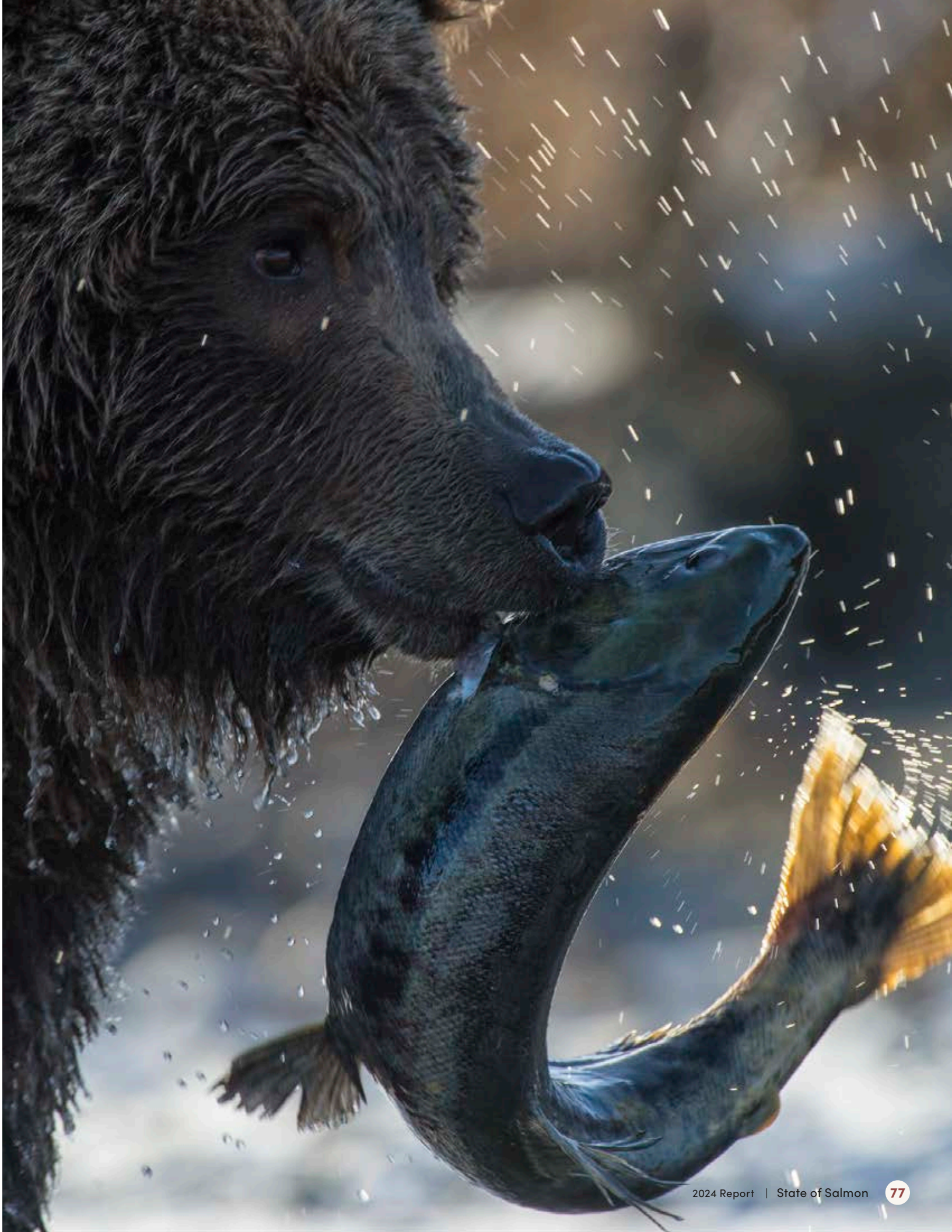
Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?





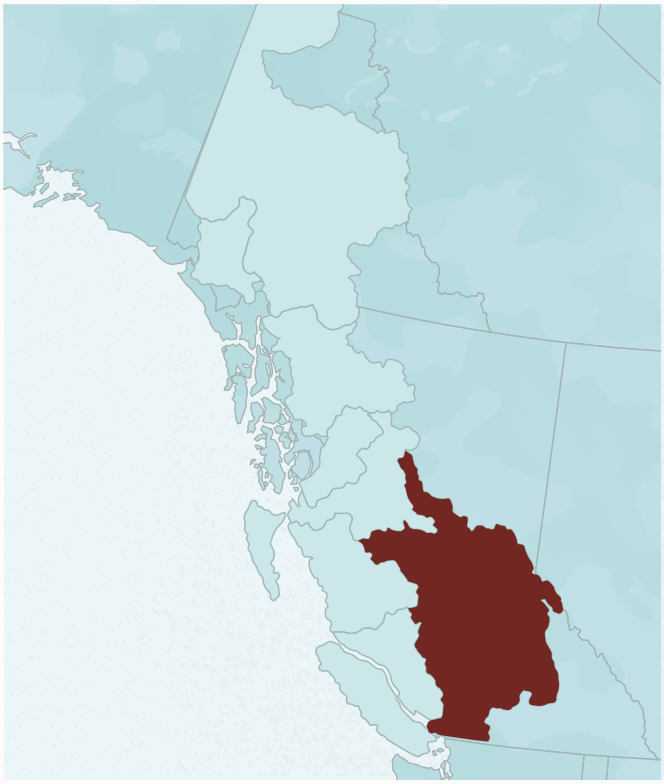
FRASER

Chinook, coho, and pink salmon are above average while other species are below with concerning recent declines.

Pink and coho salmon are showing promising signs of recovery, with spawner and total abundances currently well-above the long-term average. Coho are at levels not seen since before the crash of the 1990s, suggesting that reductions in harvest implemented as part of recovery planning for Interior Fraser coho may be paying off[7]. There was an exceptionally high return of Chinook to the Fraser in 2023, but time will tell if this was an anomaly or part of a positive trend.

Monitoring of Fraser sockeye dates back to 1893, and this 130-year record emphasizes how salmon abundance fluctuates through time. Despite an uptick in sockeye spawners in the early 2010s, the most recent spawner and total abundances are below the devastating returns in 2009 that triggered a federal inquiry[13]. Two of the last four years are the lowest total abundance on record, highlighting the persistent conservation concerns despite major reductions in fisheries.

Steelhead are well-below the long-term average and many populations face an imminent risk of extinction. Interior steelhead (Chilcotin and Thompson River populations) are listed as Endangered[14] by the Committee on the Status of Endangered Wildlife in Canada.



Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

Chinook **19**

Chum **1**

Coho **8**

Pink **1**

Sockeye **32**

Steelhead **6**

Major Salmon-Bearing Rivers

Fraser River, Seton River, Harrison River, Thompson River, Chilko River

Fraser Profile

The Fraser River Basin is the largest salmon-bearing watershed in British Columbia, draining an area almost the size of California. From its source in the Rockies, the Fraser River travels 1,375 kilometres to the Strait of Georgia. It consists of 13 sub-watersheds defined by major tributaries, such as the Harrison, Thompson, Adams, Nechako, Chilko, Chilcotin, and Lillooet rivers.

The region supports an incredible diversity of Pacific salmon. It boasts British Columbia's most abundant sockeye populations, with historical abundance in the millions. At the same time, the Fraser River Basin is home to three million people, nearly two-thirds of the total population in British Columbia. The region is significantly impacted by urban and industrial development. In particular, the land around the Fraser estuary is heavily populated, exposing salmon to the cumulative pressures of habitat degradation and pollution, yet the estuary is critically important to hundreds of populations of salmon across all species of Pacific salmon.

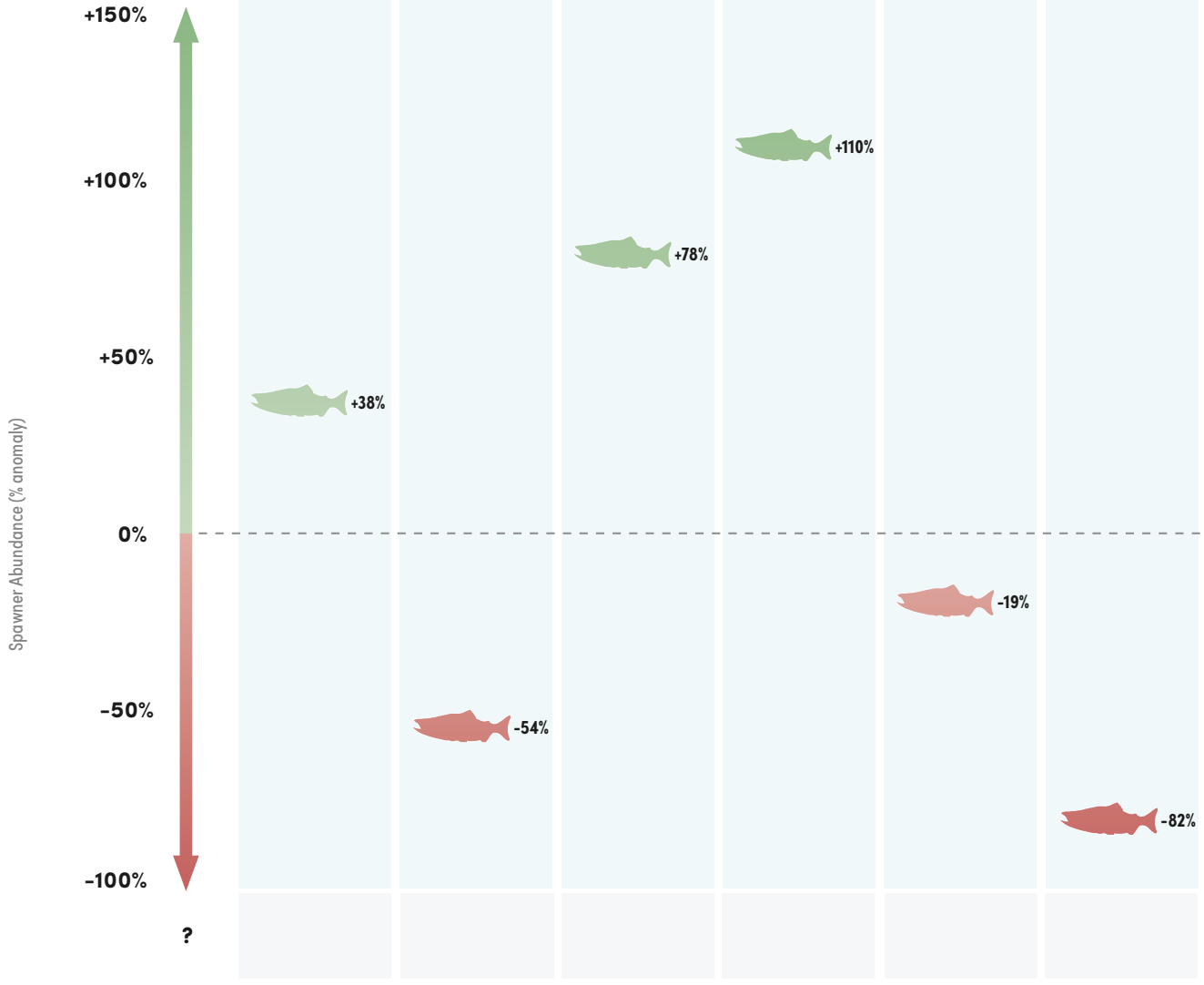
Historical and recent landslides have created a legacy of impacts for Fraser salmon. In 1914, a massive human-caused landslide in Hells Gate blocked passage for migrating salmon, causing significant declines in salmon populations, which never fully recovered. A century later, a landslide at Big Bar near Lillooet in 2019 created a five-metre waterfall that trapped migrating salmon below the slide. A nature-like fishway was developed, but fish passage remains a challenge in other areas of the watershed, especially for early migrating sockeye in years of high flow. In summer 2024, a landslide in the Chilcotin River created a dam, temporarily blocking passage for migrating salmon and causing damage to salmon habitat. Although water breached the dam about a week later, the Chilcotin landslide is an evolving situation and the ultimate impacts on salmon remain uncertain.

FRASER

Tables and figures in this section show the current state and trends for each species of salmon in the Fraser. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
						
Current State	+38%	-54%	+78%	+110%	-19%	-82%
Trends Short-Term	—	↓	↑	—	↓	↓
Trends Long-Term	—	↓	↓	↑	↑	—



Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

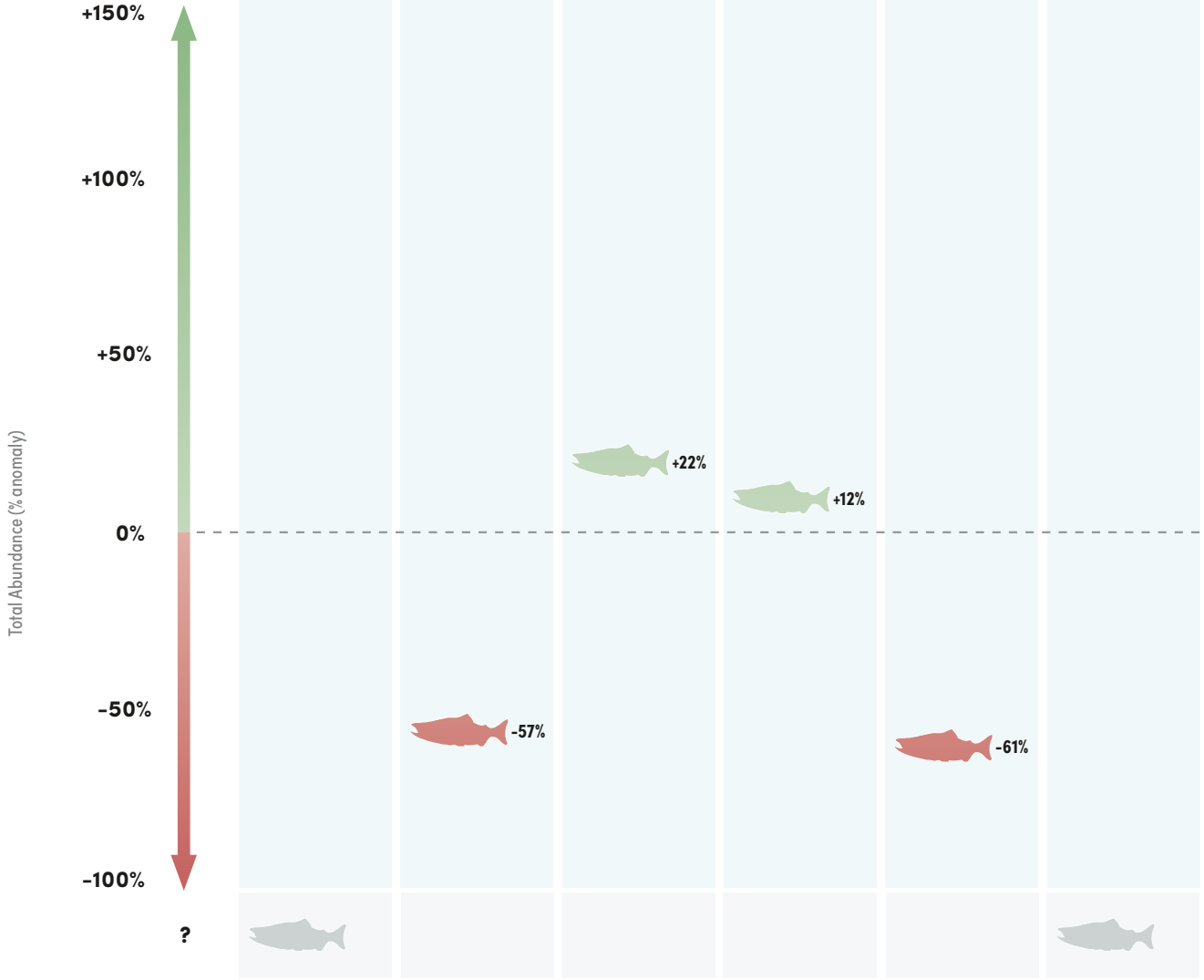
Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
Current State	?	-57%	+22%	+12%	-61%	?
Trends Short-Term	?	↓	↑	—	↓	?
Trends Long-Term	?	↓	↓	—	—	?



Chinook

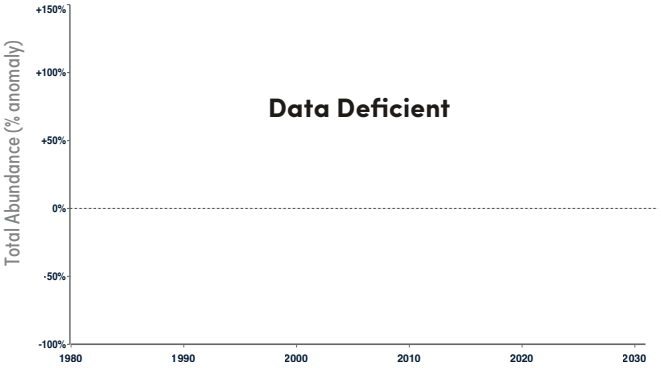
The current state is above the long-term average due to a record return of primarily ocean-type Chinook to the Fraser in 2023. Short-term and long-term trends are stable, and increases in the most recent generation are encouraging. Numbers below represent the sum of estimated abundance for nine wild Chinook indicator stocks.

Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+38%	—	—	**357,700** (2019-2023)	**260,100** (1984-2023)

Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

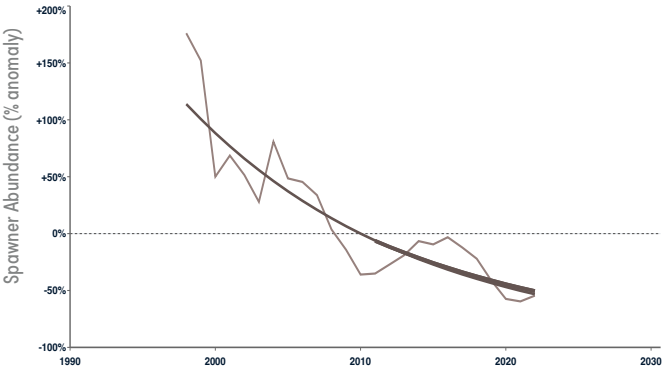


Chum

The current states are below the long-term average for both spawner and total abundances following two decades of declines since reliable monitoring began in 1998. All three metrics concur that chum salmon in the region are of conservation concern. Numbers below represent estimates of chum salmon for the Fraser River.

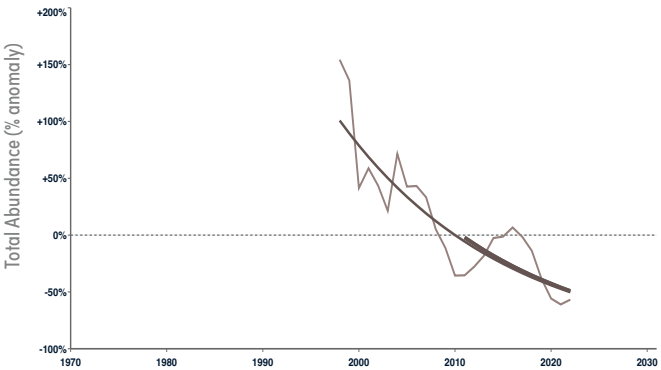
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-54%	↓	↓	**572,400** (2019-2022)	**1,257,500** (1998-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-57%	↓	↓	**625,500** (2019-2022)	**1,447,100** (1998-2022)



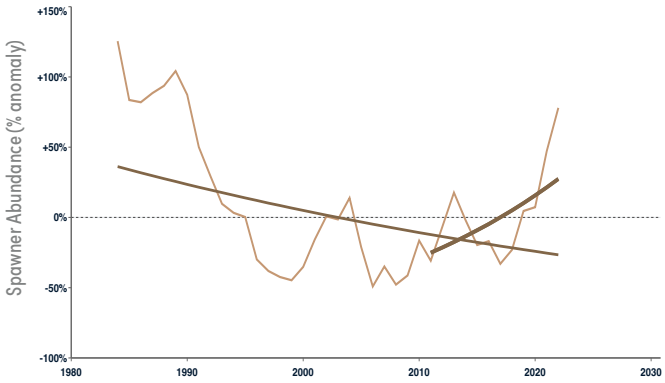
Short-Term Trends —— Long-Term Trends ——

Coho

The current state is well-above the long-term average for spawner abundance with total abundance also rising above average in 2022. Although these recent increases are reflected by positive short-term trends for both spawner and total abundances, negative long-term trends highlight the dramatic declines in the 1980s and 1990s that prompted fisheries closures. Numbers below represent the sum of estimated abundance for five interior Fraser coho Conservation Units.

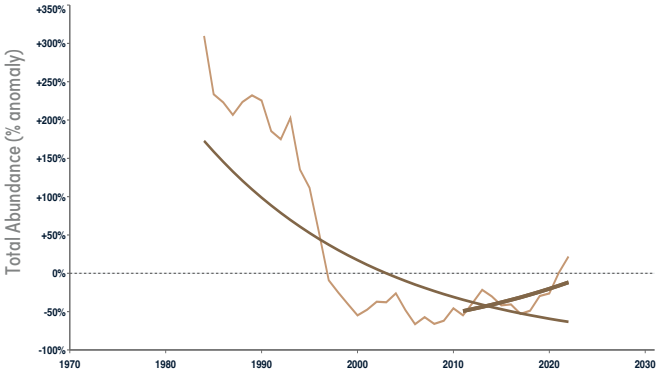
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+78%	↑	↓	**67,200** (2019-2022)	**37,800** (1984-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+22%	↑	↓	**79,300** (2019-2022)	**65,000** (1984-2022)

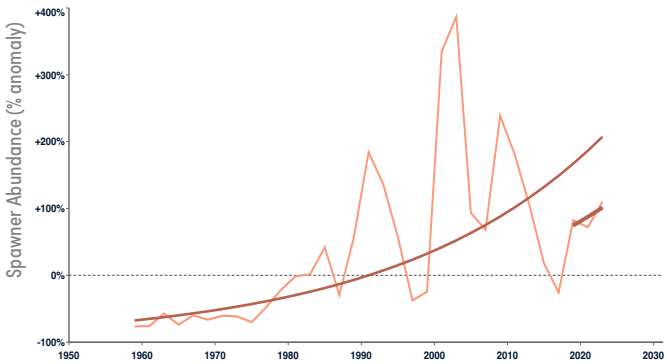


Pink

The current state is well-above the long-term average for spawner abundance, with total abundance also above average in 2023. There is a positive long-term trend in spawners, but relatively low catch in recent years (2015-2023) means that total abundance has remained stable over the long-term. The short-term trend is stable for both spawner and total abundances - the short life cycle of pink salmon makes it unusual to see significant trends over just three generations. Numbers below represent absolute estimates of pink salmon for the Fraser River.

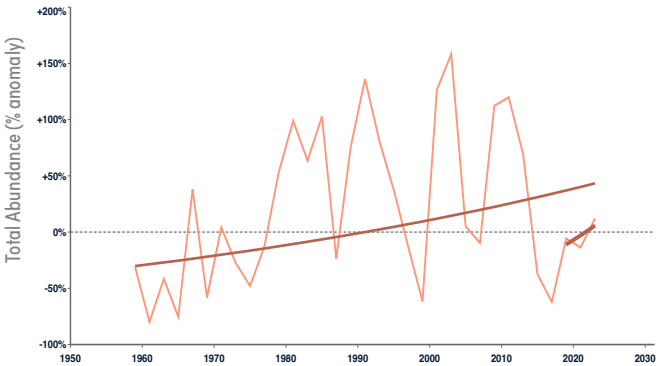
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+110%	—	↑	**9,576,600** (2022-2023)	**4,554,400** (1959-2023)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+12%	—	—	**10,520,800** (2022-2023)	**9,390,700** (1959-2023)

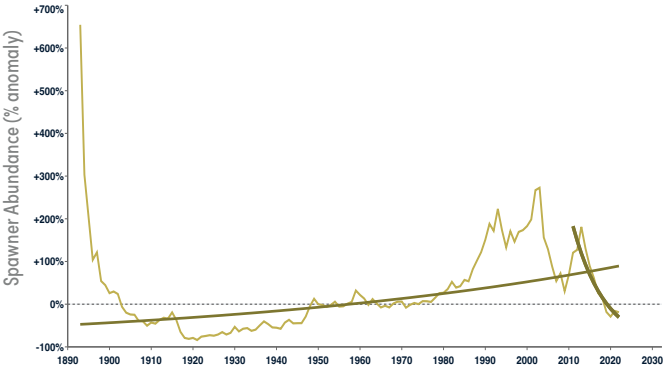


Sockeye

The current state of spawner and total abundances are both below the long-term average with negative short-term trends. Abundances have declined since the rebound in 2010, dropping below the devastating returns of 2009 that prompted a federal inquiry. There is a positive long-term trend in spawners despite recent declines, resulting from steady increases from 1920-2000. Total abundance has been stable over the long-term but declines in catch for sub-dominant years are concerning and indicate an erosion of diversity and reduced resilience of both sockeye and fisheries. Numbers below represent absolute estimates of sockeye salmon for the Fraser River.

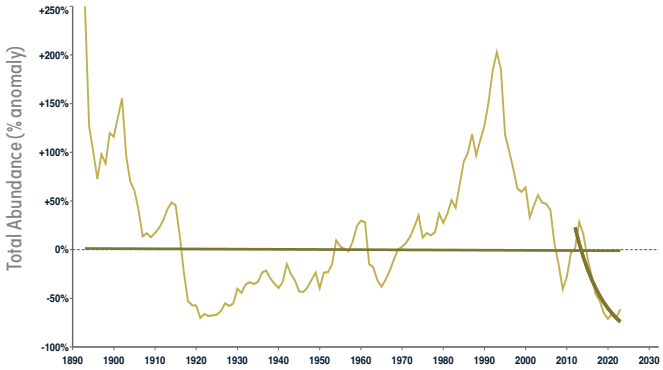
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-19%	↓	↑	**864,300** (2019-2022)	**1,067,200** (1893-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-61%	↓	—	**1,812,900** (2020-2023)	**4,669,000** (1893-2023)

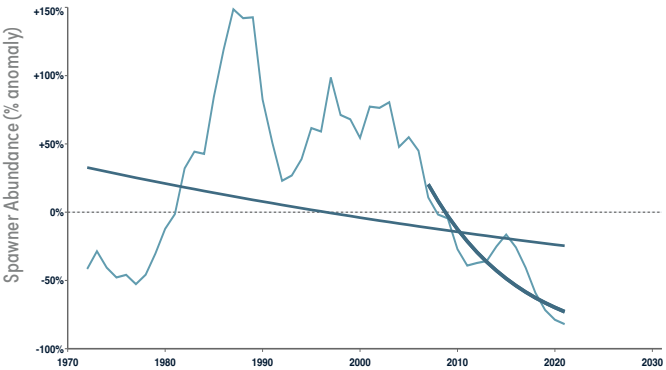


Steelhead

The current state is below the long-term average. The short-term trend reflects steep declines in spawners over the past three generations, while a stable long-term trend from 1972-2021 is due to peak spawner abundance in the late 1980s. Numbers below represent the sum of two out of five steelhead Conservation Units in the region.

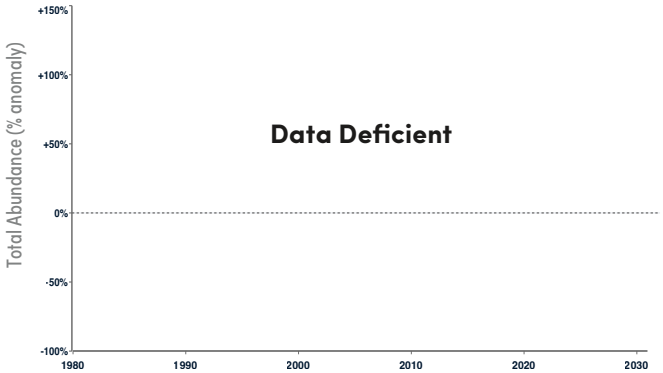
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-82%	↓	—	**300** (2017-2021)	**1,600** (1972-2021)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



VANCOUVER ISLAND & MAINLAND INLETS

Chum and steelhead are well-below average, while Chinook are above average.

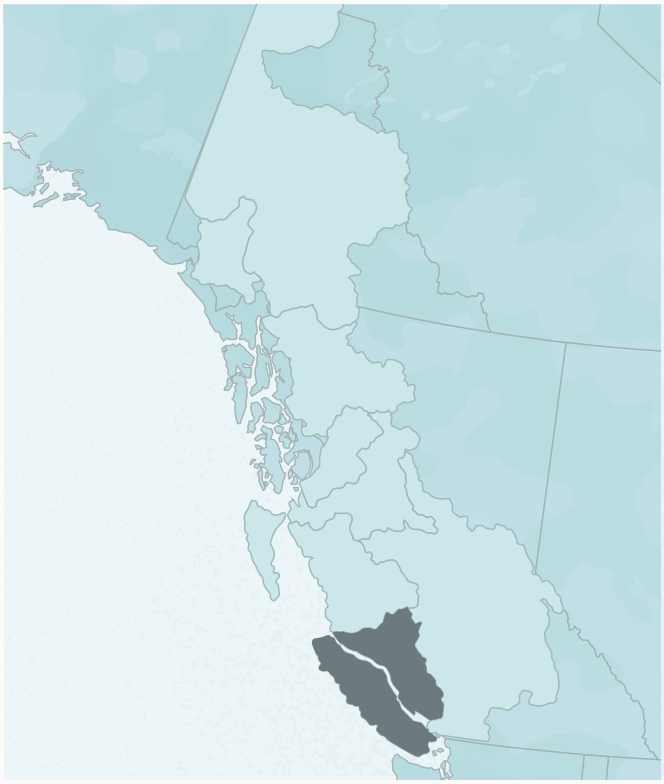
Vancouver Island & Mainland Inlets is one of two regions where Chinook are above the long-term average. Many Chinook populations are doing exceptionally well in this region, including in the Cowichan River where record numbers are returning after near extinction in 2009. However, some populations are experiencing concerning declines and three Vancouver Island Chinook populations were recently assessed as Threatened or Endangered[29] by the Committee on the Status of Endangered Wildlife in Canada.

Our assessment in this region is based on spawner abundances only, due to challenges compiling spawner and catch data that reflect the same populations and are representative of the entire region. Indices of regional spawner abundances draw on data from hundreds of stream surveys, but still don't represent the absolute abundance of salmon returning to spawn due to the multitude of unsurveyed streams. Salmon catch cannot be reliably divided into fish destined for surveyed versus unsurveyed streams, meaning the spawner and catch estimates cannot be added to yield total abundance for the region.

The outlook for pink salmon is very positive, which reflects broader changes in the North Pacific, where pink salmon are the most abundant species of Pacific salmon[8]. However, pink salmon abundance tends to fluctuate more than other species and can change dramatically from year to year.

All other species are below or well-below the long-term average, with chum salmon and steelhead having experienced the most severe declines. Chum spawners have declined dramatically over the short-term, with 2022 spawner abundance reaching lows not seen since the 1960s.

VANCOUVER ISLAND & MAINLAND INLETS



Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.

Major Salmon-Bearing Rivers

Sproat Lake, Glendale Creek, Great Central Lake, Kakweiken River, Cowichan River

Vancouver Island & Mainland Inlets Profile

The Vancouver Island & Mainland Inlets region encompasses 76,411 square kilometres across Vancouver Island and the adjacent mainland fjords and inlets, from Burrard Inlet and Howe Sound in the south, to Smith Inlet and the northern Broughton Archipelago in the north. This drainage area ranges from large, glacier-fed streams in the mainland inlets to small coastal streams on Vancouver Island.

Many salmon from the region spend their early years in the Salish Sea, a semi-enclosed sea between Vancouver Island and the mainland, with a significant freshwater influence from the Fraser River. Most of these salmon exit the Salish Sea through Johnstone Strait in the north. The Salish Sea was once a highly productive place for salmon but, beginning in the 1970s, marine survival rates for Chinook, coho, and steelhead dropped sharply. Recent research suggests that climate-driven changes to the salmon food supply and a dramatic increase in predators are the two most significant issues killing juvenile salmon[30].

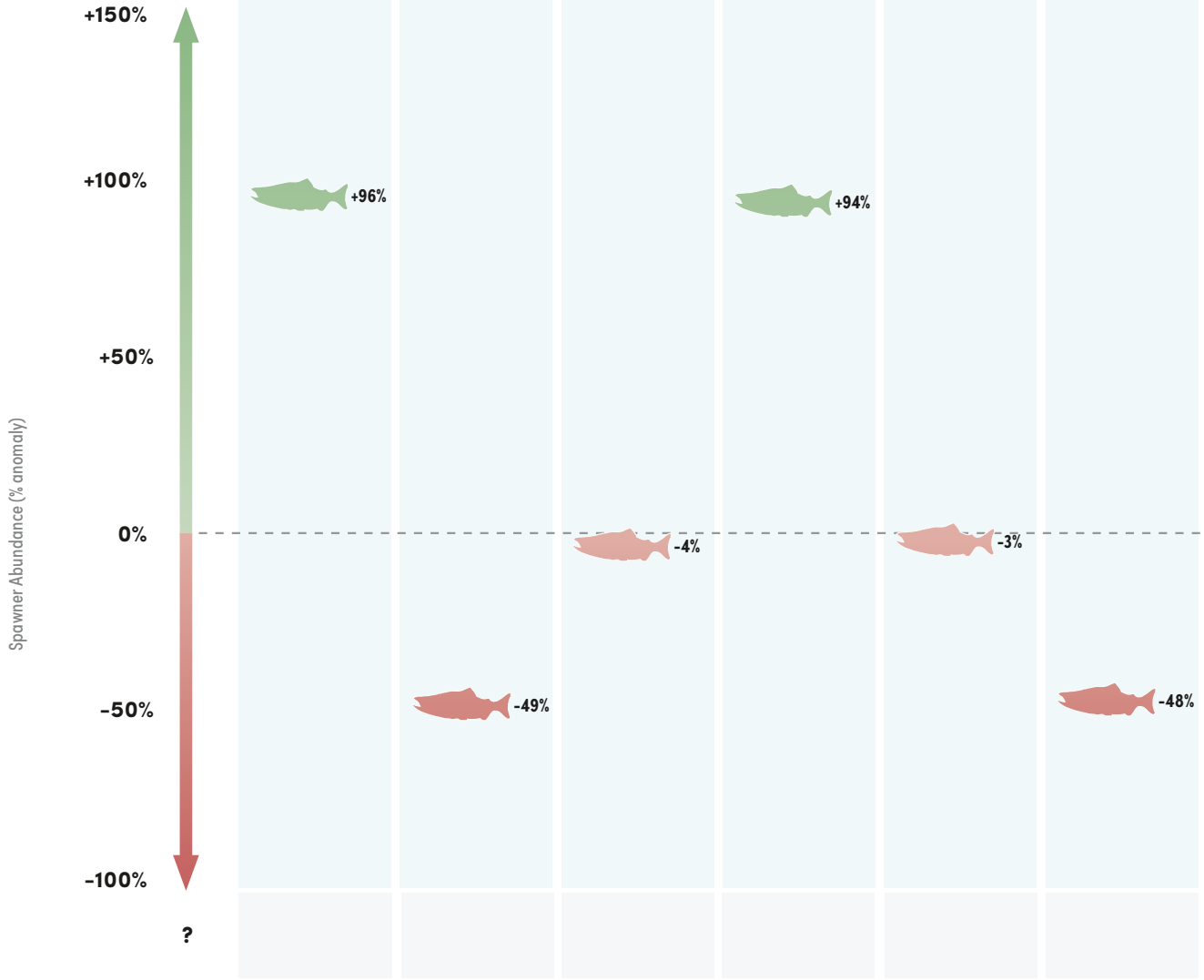
On the west coast of Vancouver Island, Chinook salmon reach more than 13 kilograms. They support socially and economically valuable fisheries from the west coast of Vancouver Island northward to southeast Alaska.

VANCOUVER ISLAND & MAINLAND INLETS

Tables and figures in this section show the current state and trends for each species of salmon in Vancouver Island & Mainland Inlets. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

	Chinook	Chum	Coho	Pink	Sockeye	Steelhead
						
Current State	**+96%**	**-49%**	**-4%**	**+94%**	**-3%**	**-48%**
Trends Short-Term	↑	↓	↓	↑	—	—
Trends Long-Term	↑	↑	↓	↑	↓	↓



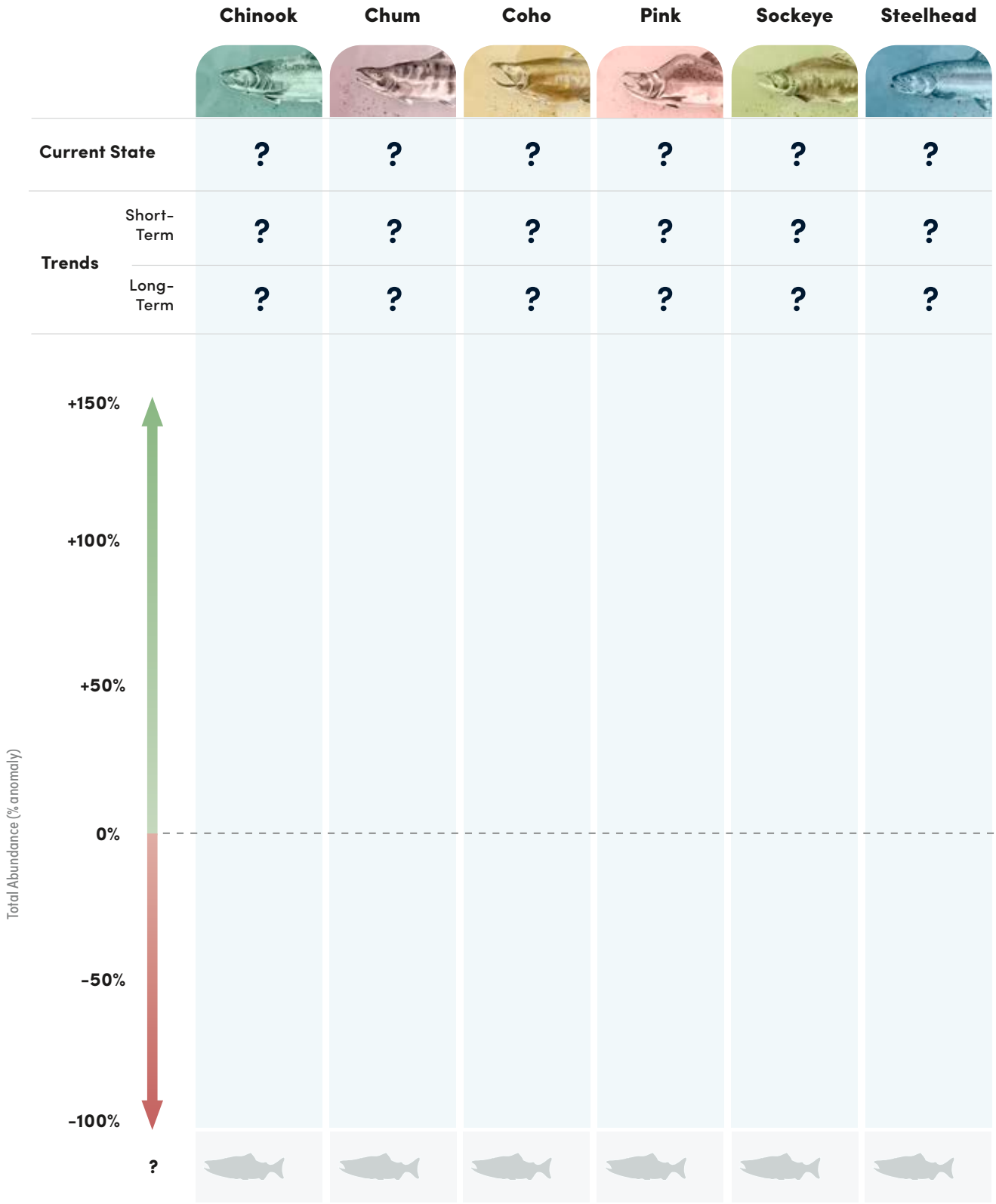
Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

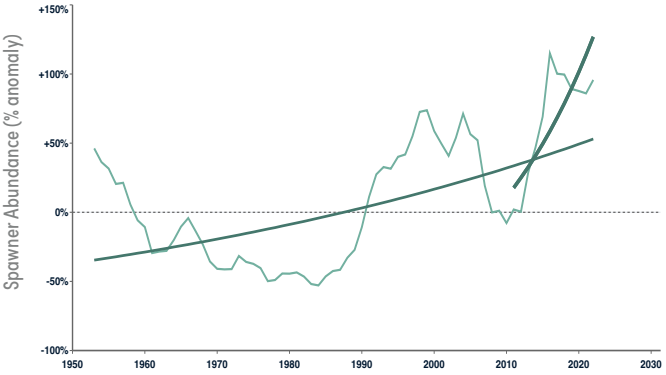


Chinook

The current state is well-above the long-term average, with both short-term and long-term trends pointing to increasing spawner abundance. However, this positive outlook is not reflected in all rivers within the region; many Chinook populations on the west coast of Vancouver Island are declining. Numbers below represent the sum of estimated abundance for 241 surveyed streams in the region.

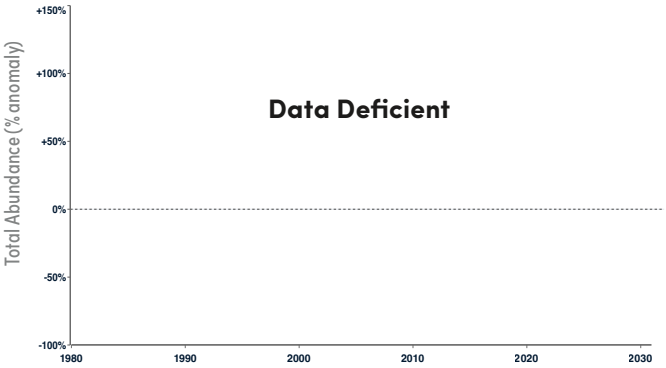
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+96%	↑	↑	211,000 (2019-2022)	107,800 (1953-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

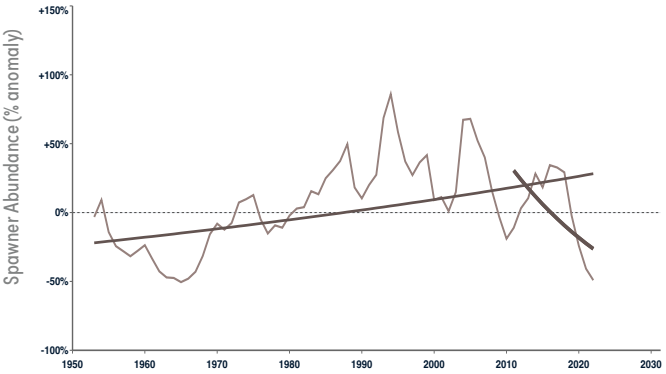


Chum

The current state is below the long-term average. Relatively high spawners from the mid 1980s to the mid 2000s resulted in a positive long-term trend from 1953-2022. However, spawners have declined dramatically over the short-term, with 2022 spawner abundance reaching lows not seen since the 1960s. Numbers below represent the sum of estimated abundance for 559 surveyed streams in the region.

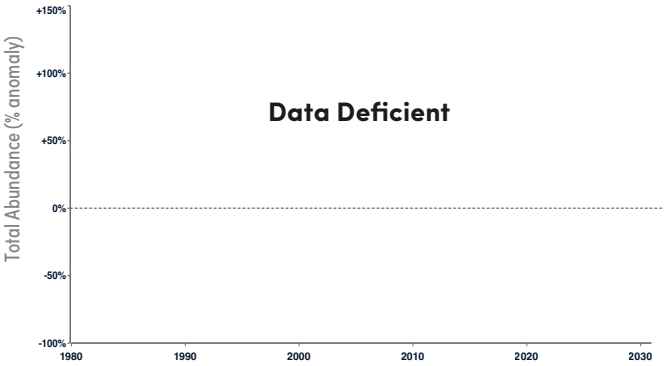
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-49%	↓	↑	649,400 (2019-2022)	1,276,800 (1953-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



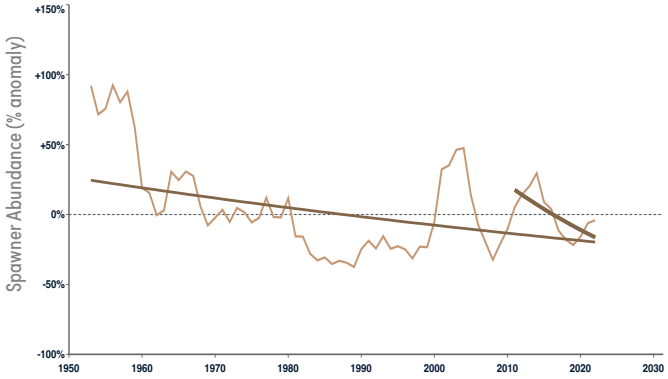
Short-Term Trends ——— Long-Term Trends ———

Coho

Coho salmon are near their long-term average, but short- and long-term declines are cause for concern. The negative long-term trend reflects declines from peak spawners in the 1950s, while a steeper short-term decline has occurred since 2014. Numbers below represent the sum of estimated abundance for 585 surveyed streams in the region.

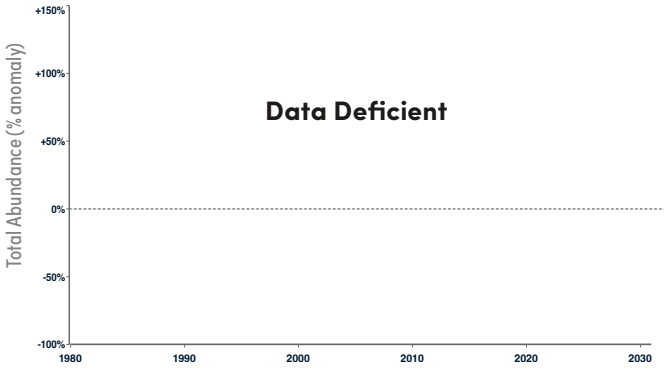
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-4%	↓	↓	370,300 (2019–2022)	386,100 (1953–2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

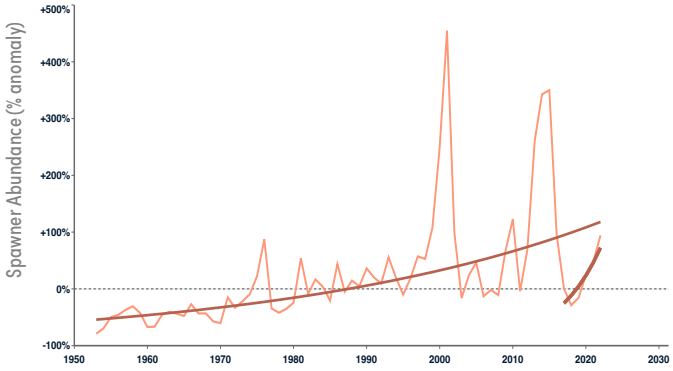


Pink

The current state is well-above the long-term average with a positive short-term trend reflecting year-over-year increases since 2018. The long-term trend is also positive, with high spawner abundances in 2000–2001 and 2012–2015 driving an upward trajectory from 1953–2022. Numbers below represent the sum of estimated abundance for 309 surveyed streams in the region.

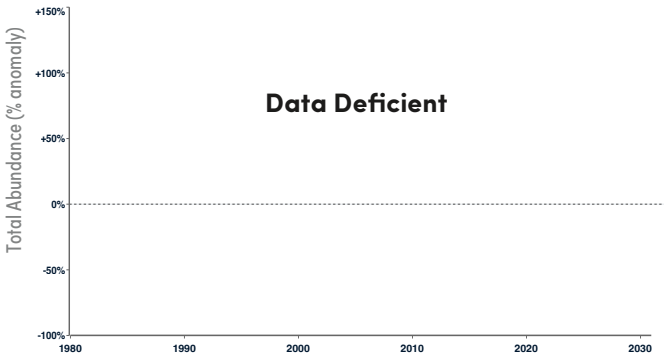
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+94%	↑	↑	2,102,900 (2021–2022)	1,082,100 (1953–2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

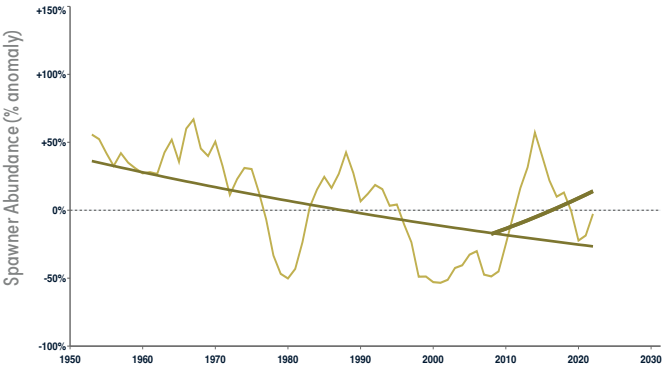


Sockeye

The current state is below the long-term average. A negative long-term trend reflects a general decline in spawner abundance from 1953-2022, but a peak in spawner abundances in 2010-2015 led to a stable short-term trend. Numbers below represent the sum of estimated abundance for 230 surveyed streams in the region.

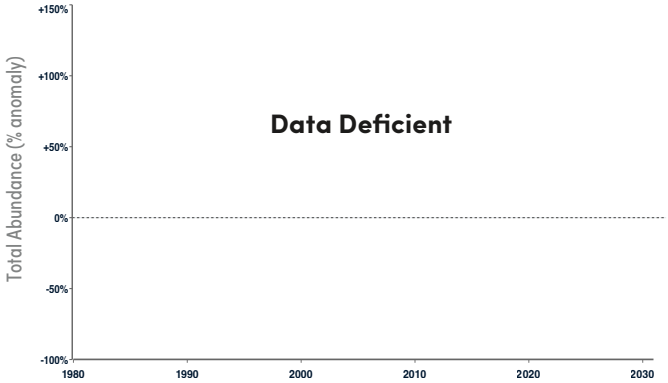
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-3%	—	↓	**504,900** (2018-2022)	**518,800** (1953-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

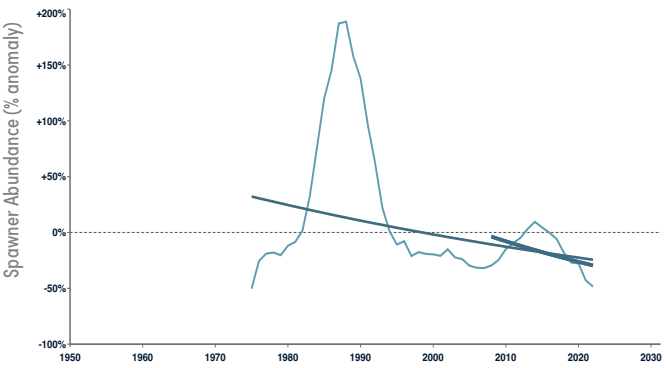


Steelhead

The current state is well-below the long-term average. Although spawner abundance has steadily declined over the past 10 years, a small peak in 2014 means the short-term trend over the past three generations is stable. The negative long-term trend from 1975-2022 reflects a decline from all-time high spawner abundance in the late 1980s. Numbers below represent the sum of estimated abundance for nine surveyed streams in the region.

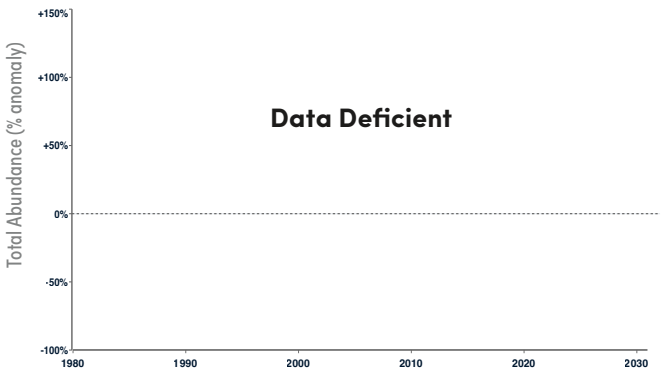
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
-48%	—	↑	**1,100** (2018-2022)	**2,100** (1975-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



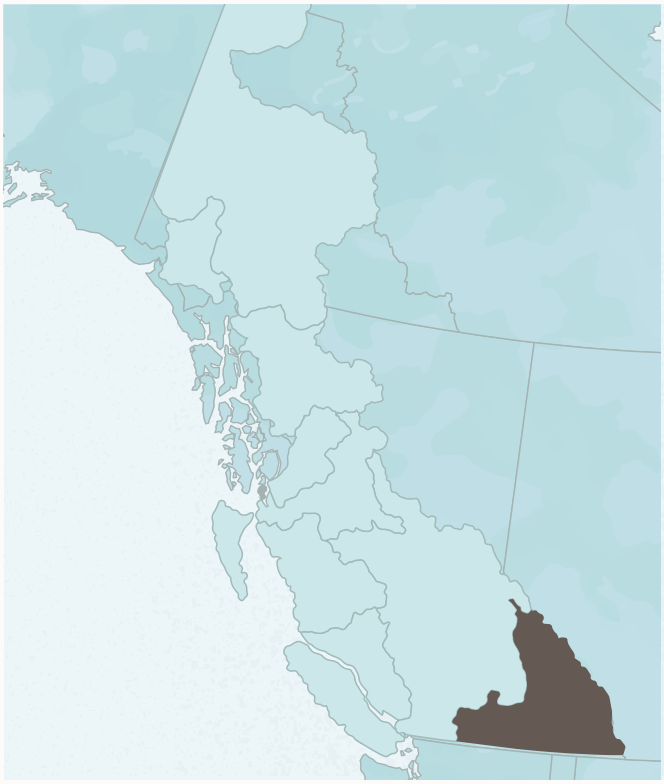
COLUMBIA

Sockeye are above average, while Chinook and steelhead face critically low population numbers.

The Columbia River has an extensive history of development including major dams. Salmon have been virtually eliminated from most of the Canadian portion of the Columbia for more than 80 years[31].

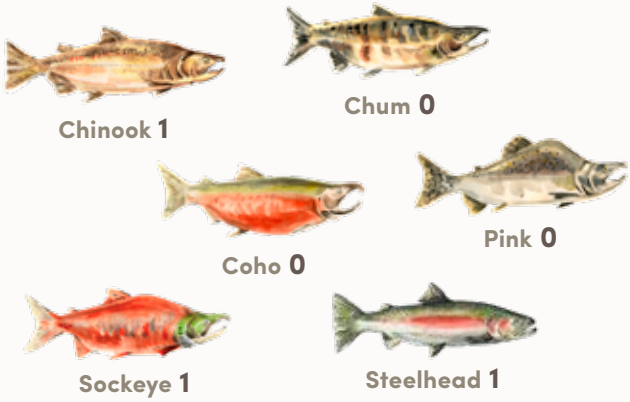
Less than 30 years ago, Columbia sockeye faced extinction, but community-driven efforts have led to an impressive recovery. Record returns of Okanagan sockeye were celebrated in 2022 and a positive long-term trend shows the promise of continued rebuilding.

The current states of Chinook and steelhead are categorized as unknown because of insufficient long-term data, but there is an unequivocal conservation concern. Chinook and steelhead have perilously low population numbers and are at risk of extirpation from the Columbia. The Okanagan population of Columbia Chinook was listed as Endangered[3] by the Committee on the Status of Endangered Wildlife in Canada in 2017 and only a handful of steelhead spawners have been recorded in recent years.



Salmon Biodiversity

Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing conditions.



Major Salmon-Bearing Rivers

Okanagan River

Columbia Profile

The Canadian headwaters of the Columbia River are part of a vast drainage system the size of France (668,000 square kilometres), most of which is found within the U.S. Originating in Columbia Lake in the Rocky Mountains, British Columbia, the river flows northwest and then south and west for 2,000 kilometres to join the ocean at Astoria, Oregon.

The upper Columbia River Basin once supported robust Pacific salmon populations, with historic returns of up to four million fish. But an extensive history of development, including 12 major dams, devastated salmon habitat and has virtually eliminated salmon from most of the Canadian portion of the Columbia for more than 80 years. Reintroduction efforts led by Indigenous communities through the Okanagan Nation Alliance and the Canadian and British Columbia governments have led to an impressive recovery for sockeye.

The Okanagan River, a major tributary to the Columbia River, is the only portion of the Columbia watershed currently accessible to anadromous salmon in Canada. The Okanagan River and the Okanagan, Skaha, and Osoyoos Lakes support sockeye, summer spawning Chinook, and steelhead. Based on local and traditional knowledge as well as downstream observations, a spring Chinook population and coho salmon may also be present[32].

COLUMBIA

Tables and figures in this section show the current state and trends for each species of salmon in the Columbia. The current state is the per cent anomaly of current spawner or total abundance over the most recent generation compared to the long-term average for each species. Trends measure the direction of change and are reported as short-term (over the most recent three generations) and long-term (over all available years).

Spawner Abundance

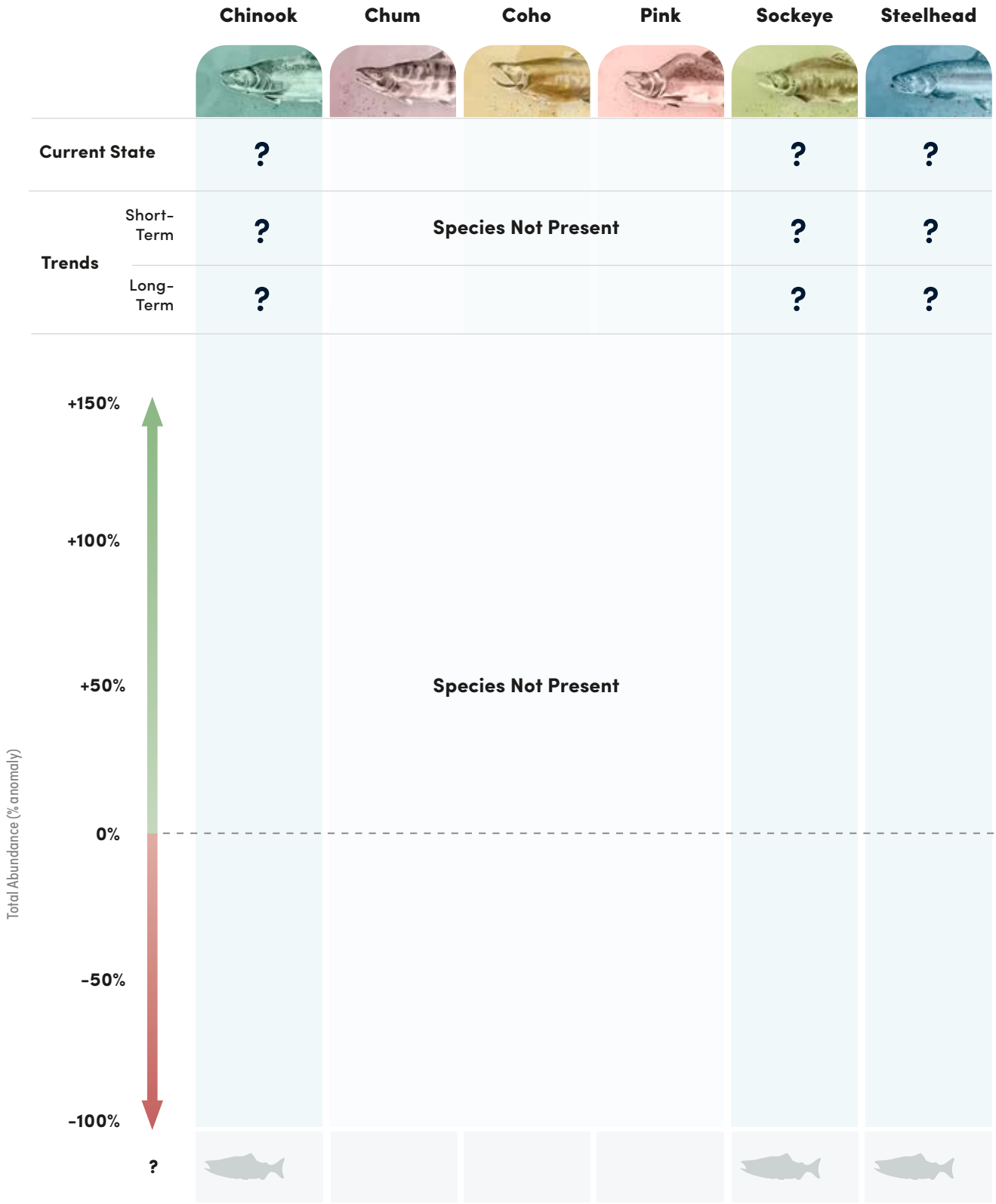
Well-above long-term average. No conservation concern.
Above long-term average. Current outlook is good.
At or near long-term average. Precaution is warranted.
Below long-term average. Current outlook is poor.
Well-below long-term average. Significant conservation concern.
? **Unknown state** due to a lack of readily accessible data.

Arrows indicate if the trend in abundance is increasing or decreasing.

A horizontal line indicates if the trend in abundance is stable.

? A question mark indicates an unknown current state or trend due to a lack of readily accessible data.

Total Abundance

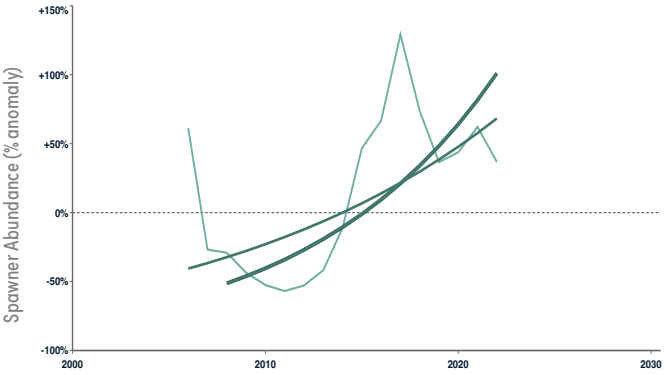


Chinook

The current state is unknown because there are not enough years of data to establish a meaningful baseline against which to compare recent spawner abundance. Spawners have increased since monitoring began in 2006, but numbers are critically low. Historically, Chinook returns to the Columbia River Basin were in the millions, and they were a primary food source for First Nations and central to their cultures and community well-being. Numbers below represent estimated abundance for the Okanagan Chinook Conservation Unit.

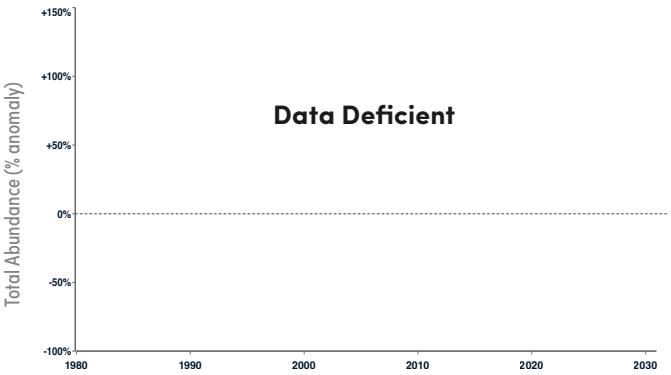
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	↑	↑	29 (2018-2022)	21 (2006-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?

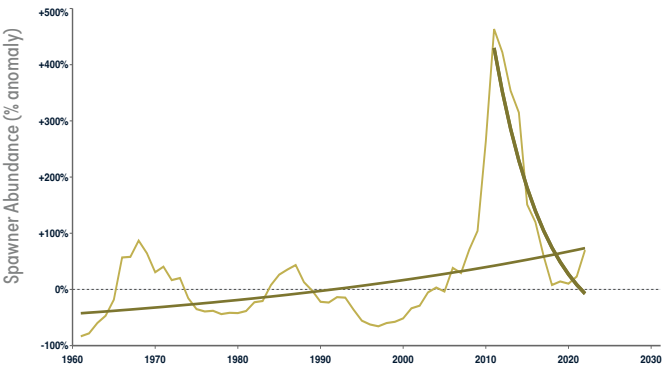


Sockeye

The current state is above the long-term average with a positive long-term trend from 1961-2022. A sharp negative short-term trend is the result of declines from peak spawner abundance around 2010, but relatively high spawners in 2022 provide hope that spawners may remain above average. Numbers below represent estimated abundance for the Osoyoos sockeye Conservation Unit.

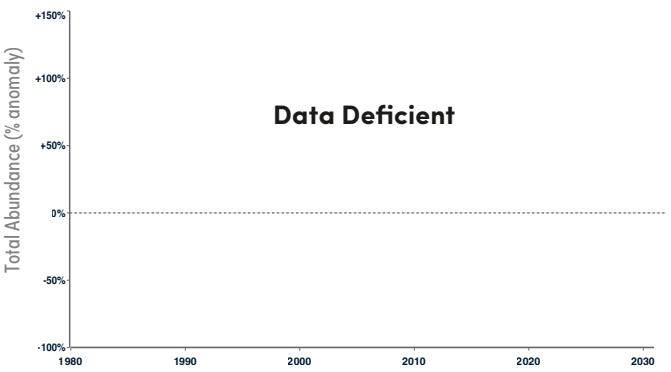
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
+70%	↓	↑	32,500 (2019-2022)	19,100 (1961-2022)



Total Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



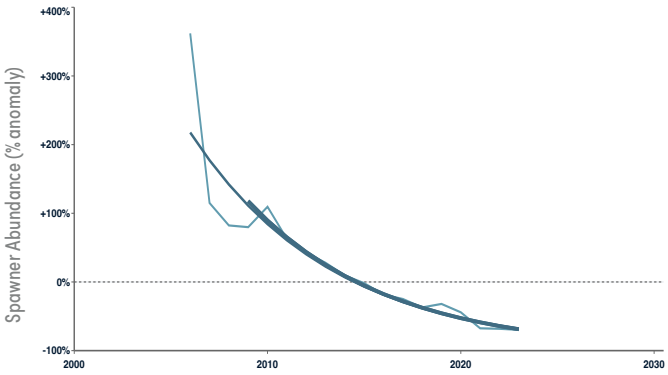
Short-Term Trends —— Long-Term Trends ——

Steelhead

The current state is unknown because there are not enough years of data to establish a meaningful baseline against which to compare recent spawner abundance. Since 2006, when monitoring began, spawners have declined with an average of just 20 natural-origin spawners counted per year since 2013. Numbers below represent estimated Canadian-spawning steelhead from surveys of aksk^{w}ək^{w}ant (Inkaneep Creek).

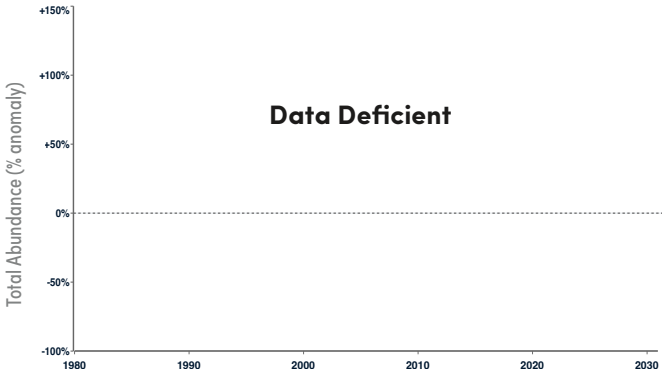
Spawner Abundance

Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	↓	↓	9 (2019–2023)	29 (2006–2023)

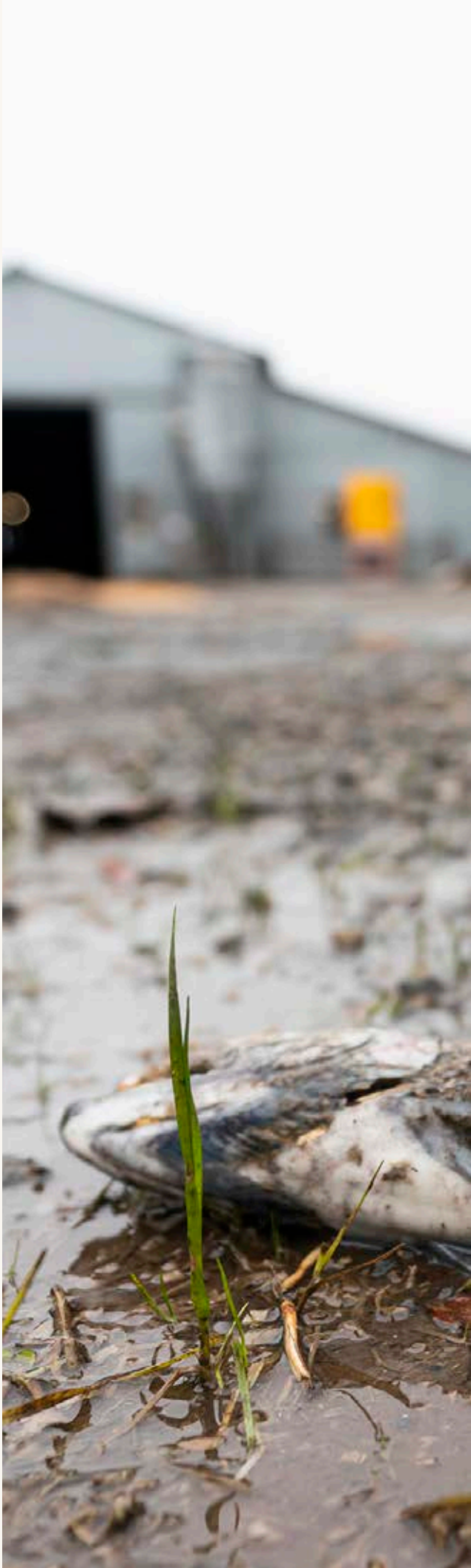


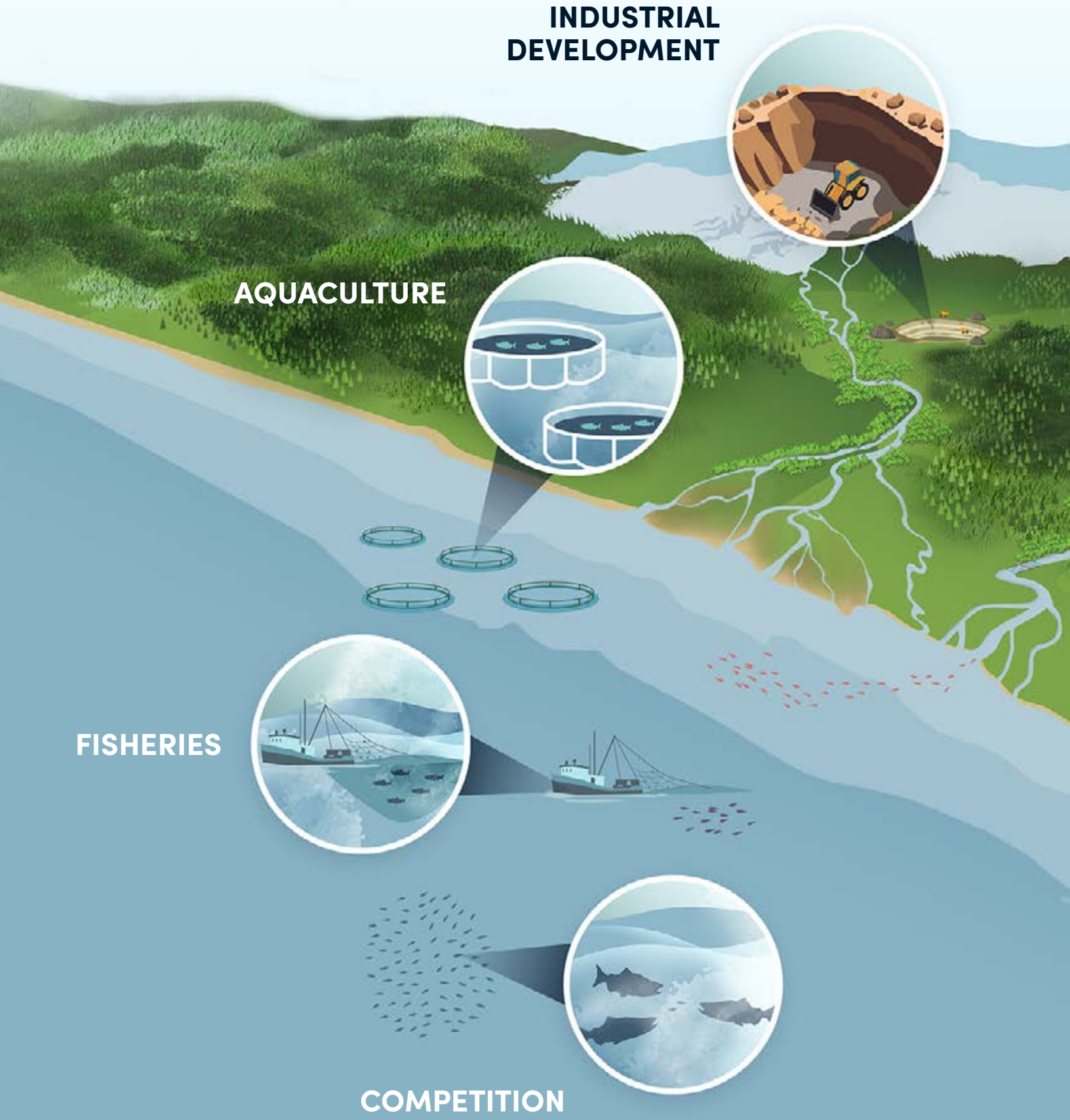
Total Abundance

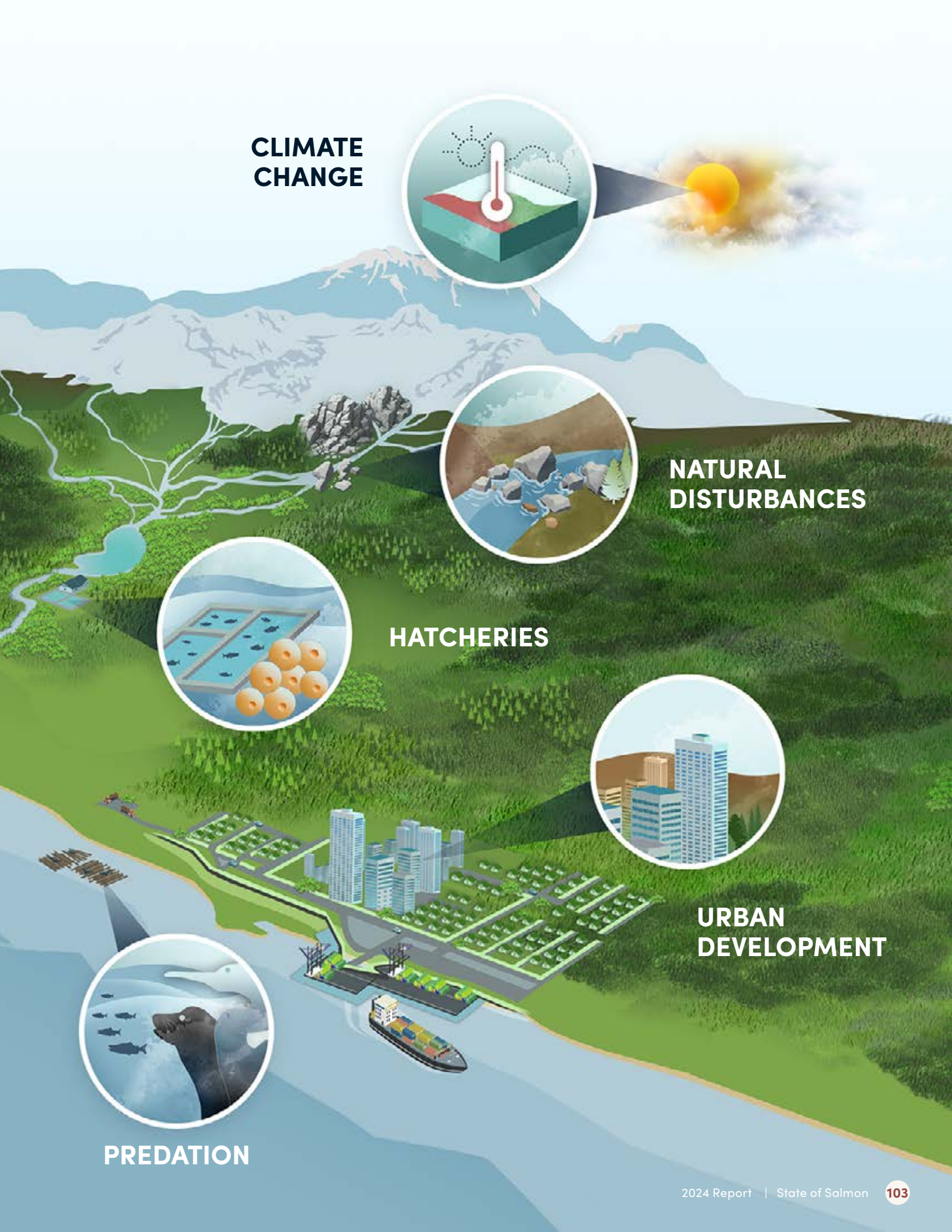
Current State	Trends Short-Term	Trends Long-Term	Current Abundance	Long-Term Average
?	?	?	?	?



FACTORS AFFECTING THE STATE OF SALMON




INDUSTRIAL DEVELOPMENT
AQUACULTURE
FISHERIES
COMPETITION


CLIMATE CHANGE
NATURAL DISTURBANCES
HATCHERIES
URBAN DEVELOPMENT
PREDATION

The salmon life cycle extends from freshwater streams and lakes to the North Pacific Ocean, exposing salmon to numerous pressures that can accumulate and interact to influence survival. Over the past 150 years, the number of factors affecting the abundance of Pacific salmon have dramatically increased, challenging salmon survival.

NATURAL DISTURBANCES Events such as forest fires, floods, and landslides cause ecosystem change and renewal – but the resulting impacts to watersheds can present immediate challenges for salmon. For example, the Big Bar landslide blocked upstream migration of Fraser River salmon in 2019. The debris prevented migrating Fraser salmon from moving beyond the landslide to their spawning grounds, negatively affecting the reproductive cycle of several upper Fraser salmon populations.

INDUSTRIAL DEVELOPMENT Activities like forestry, mining, agriculture, and associated infrastructure including pipelines, ports, dams, and railways can have significant impacts on the landscape, altering geomorphology and hydrological processes. Industrial extraction of surface and ground water can reduce stream flows, increase water temperatures, and limit access to habitats.

FISHERIES Although Canada's commercial fisheries have greatly diminished over the last 30 years, concerns are mounting over the bycatch of non-targeted species and populations in mixed-stock fisheries. Mixed-stock fisheries make it difficult to target enhanced or healthy populations, putting weaker stocks at risk and potentially leading to their over-harvest. Climate change is also making the timing and magnitude of returns less predictable, further challenging sustainable fisheries management.

HATCHERIES Hatchery production can enhance fisheries and provide community connections to salmon, but also poses risks to wild salmon. With five billion hatchery salmon released into the North Pacific annually, competition with wild salmon is a concern. Hatchery salmon can also interbreed or displace wild salmon, reducing genetic diversity, resilience, and adaptive capacity of wild populations.

CLIMATE CHANGE More frequent extremes in temperature, flow, and ocean conditions impact salmon throughout their life cycles. These changes compound and interact with other pressures to affect salmon survival, sometimes unpredictably. Maintaining cold-water refuges and protecting undeveloped watersheds can buffer salmon against climate change in freshwater, but cascading impacts in ocean ecosystems are hindering salmon recovery.

URBAN DEVELOPMENT Buildings, roads, and coastal modifications like seawalls have led to the loss, degradation, and fragmentation of salmon habitats. With urbanization preceding modern-day record keeping in many regions and the passability of different migration barriers often unknown, the magnitude of this impact on salmon is hard to quantify.

COMPETITION Although Pacific salmon in Canada are at a fraction of their historical abundance, there are more salmon in the North Pacific Ocean than ever before - and competition for resources can be fierce. Competition among salmon at sea can influence salmon growth, maturity, and productivity, and the impacts are measurable.

PREDATION Juvenile salmon are an important food source for many species and naturally incur high mortality from predation. Human and natural disturbances can increase predation by reducing habitat complexity, removing hiding places for juvenile salmon. Piers and docks tend to be avoided by salmon, forcing migrating fish into more open habitats where predators may be waiting, while log booms provide a platform for predators (seals and seal lions) to hunt both juvenile and adult salmon.

AQUACULTURE Open net-pen salmon farms pose several risks to wild salmon, mainly the introduction and transmission of pathogens that can impact wild salmon health and survival. Other potential impacts include environmental contamination from chemical use, pollution from feed and effluent, and direct interactions (predation, competition) between farmed and wild salmon.

THE PATH FORWARD

This State of Salmon report provides a data-driven assessment of the current state of Pacific salmon throughout their Canadian range. The results suggest that salmon need our help.

Conserving and recovering wild salmon in the face of climate change requires forward-looking, coordinated action that is focused on protecting and rebuilding the natural diversity of salmon populations and their habitats.

Indigenous communities are leading the way by revitalizing traditional systems of salmon management and taking legislative actions to protect salmon ecosystems. The Pacific Salmon Foundation is empowering First Nations and other decision makers with data, status assessments, and decision-support tools, collaborating on salmon recovery and resilience planning, and supporting grassroots initiatives through our grant making.

Future editions of the State of Salmon report will dive deeper into solutions for supporting the recovery and resilience of Pacific salmon.

METHODOLOGY & REFERENCES

Overview

We report on the state of salmon in each of the nine regions that represent all major Pacific salmon-bearing watersheds in Canada: Yukon, Northern Transboundary, Haida Gwaii, Nass, Skeena, Central Coast, Fraser, Vancouver Island & Mainland Inlets, and Columbia. These regions are also used to organize data in the Pacific Salmon Explorer (salmonexplorer.ca). There are a relatively small number of Pacific salmon that spawn in the MacKenzie River basin in Arctic Canada that are currently not considered here. For each of these regions, we compiled and analysed data on six species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), pink (*O. gorbushca*), sockeye (*O. nerka*), and steelhead (*O. mykiss*).

Where possible, we report on both spawner abundance and total abundance for each region and species. Spawners (also called "escapement") provide information on the number of salmon that "escape" fisheries and make it back to spawn in rivers. These salmon are available to meet ecological needs within watersheds and can reproduce and contribute to future generations. As such, understanding spawner abundance is important to salmon conservation. Where data are available, we also report on total abundance, which is the sum of spawners and catch. In some years, a substantial proportion of salmon that survive to maturity are caught in commercial fisheries. Tracking total abundance provides information on the survival and productivity of salmon as well as their ability to support fisheries. Often, the state and trends for spawner abundance are more optimistic than for total abundance because of widespread declines in commercial catches of Pacific salmon in Canada since the mid 1990s[5].

First Nations fisheries are important for meeting cultural and subsistence needs of Indigenous communities in Canada, and have represented a small proportion of overall catches. Depending on the sources of data, First Nations harvest may be included in spawners (as fish that make it up river) or as catch (for stocks that are managed under bilateral treaties for which this catch is reported).

Data Sources

We constructed an index of aggregate abundance for spawner and total abundances at the regional scale using the best available data. Details of specific data sources for each region and species are outlined in the Technical Documentation (salmonwatersheds.github.io/state-of-salmon) and raw data are publicly available in the associated GitHub repository (github.com/salmonwatersheds/state-of-salmon). We preferentially relied on data vetted by the Pacific Salmon Commission and used to assess international obligations under the Pacific Salmon Treaty. Specifically, these data come from the appendices of reports by the Yukon River Joint Technical Committee, Transboundary Technical Committee, Northern Boundary Technical Committee, Chinook Technical Committee, and Chum Technical Committee. The Fraser River Panel provides data on pink and sockeye abundance directly via their Annual Report Application. Publication of these appendices may take years and more up-to-date versions were provided to Pacific Salmon Foundation staff directly by Fisheries and Oceans Canada (DFO) upon request.

In the Nass region, we worked with LGL Ltd and the Nisga'a Lisims Government - Fisheries & Wildlife Department to construct annual spawner and total abundances for each species[24]. Fraser coho, Columbia Chinook, and Columbia sockeye data were provided directly to Pacific Salmon Foundation staff by DFO upon request. The Fraser coho estimates of spawner and total abundances are based on Interior Fraser coho that spawn upstream of Hells Gate, British Columbia (including five Conservation Units: Fraser Canyon, Interior/Middle Fraser, Lower Thomposn, South Thompson, and North Thompson). Steelhead spawner abundances in the Skeena and Fraser are publicly available from the Province of British Columbia. Steelhead spawner abundance in the Canadian portion of the Columbia is reported by the Okanagan Basin Monitoring and Evaluation Program.

For regions and species that did not have reliable estimates of aggregate abundance at the regional scale, we constructed an index of spawner abundance from spawner surveys reported in DFO's New Salmon Escapement Database System (NuSEDS). We accounted for missing data using a proportional infilling approach to impute missing data based on the average decadal contributions of each stream to the aggregate. We then expanded the imputed dataset to account for smaller "non-indicator" streams. The details of this expansion approach are outlined in the Technical Documentation (salmonwatersheds.github.io/state-of-salmon).

In total we compiled spawner abundance for 44 unique region-species combinations, with an average time series length of 57 years (range 17 to 130 years). The temporal currency of data varied among sources, with most regions and species having spawner estimates to 2022 or 2023. There were three region-species combinations for which we did not assess the current state of spawners: two that had insufficient time-series length to establish a baseline (<20 years for Columbia Chinook and Columbia steelhead) and one with outdated data (Haida Gwaii Chinook), meaning we only assessed the current state of spawner abundance for 41 region-species combinations. Fewer regions and species had estimates of total abundance because information on which rivers (and regions) salmon are destined for when caught in the ocean is not always available, making it difficult to assign catch to a region. We compiled total abundance for 14 unique region-species combinations, with an average time series length of 45 years (range 23 to 131 years). All total abundance time series were current to 2022 or 2023.

Analysis

We smoothed the raw time series of spawner and total abundances using a right-aligned running geometric mean over the generation length. This smoothing reduces the influence of dominant years for species with cyclic dynamics (e.g. Fraser sockeye) and produces an index of abundance that is less sensitive to stochastic interannual variability that is common in salmon population dynamics[33]. The generation length is based on the dominant life-history type for each species in a particular region. To facilitate comparison among species that are naturally very different in their absolute abundance, we transformed the smoothed time series into a per cent anomaly from the average among all years for that species and region.

We summarised the current state as the per cent anomaly for the most recent year of the smoothed time series (i.e. the per cent difference between the geometric mean spawners over the most recent generation and the geometric mean spawners over all years). For species with long generation lengths (e.g. six years for Yukon Chinook), the current state may not reflect recent, dramatic changes in abundance because the generational average will lag behind. Where there are noteworthy changes in abundance in the most recent year that are not obvious from the current state, we provide that context in the regions sections.

We summarised trends as the average annual per cent change in abundance, calculated from the slope of a linear regression model fitted to the log-transformed, smoothed time series. We show both short-term trends based on the slope over the most recent three generations only and long-term trends based on the slope over all available years for each species in a given region.

Data Availability

The outcomes of this State of Salmon report are publicly available through the Salmon Watersheds Program Data Library (data.salmonwatersheds.ca) as two datasets:

1. Time series of **Regional Salmon Abundance** by species. This dataset contains both the raw annual abundance and the smoothed time series shown in the trends plots.

2. **State and Trends in Salmon Abundance** for each region and species, including the values for the current state, short-term trend, long-term trend, the generation length, and the years of data.

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GLOSSARY

Total abundance: The number of salmon that survive to maturity, calculated as spawners plus catch.

Aggregate abundance: The estimated sum of the number of salmon of a particular species either returning to a region (total abundance) or spawning in a region (spawner abundance). The aggregate abundance may be an absolute number or an index of abundance depending on the available data.

Average abundance: The geometric mean of annual estimates over some specified period, such as all years of data or the most recent generation.

River-type sockeye: A life-history type of sockeye salmon that migrate to the ocean shortly after emerging from the gravel, forgoing a freshwater rearing stage in lakes; also called "ocean-type".

Lake-type sockeye: A life-history type of sockeye salmon that rears in lakes for one or more years before migrating to the ocean.

Ocean-type Chinook: A life-history type of Chinook that migrate to the ocean shortly after emerging from the gravel, forgoing a freshwater rearing stage in rivers.

Stream-type Chinook: A life-history type of Chinook that rear in freshwater for a year before migrating to the ocean.

Spawner abundance: The number of salmon that survive to maturity and make it to spawning grounds in rivers or lakes. Data on spawner abundance may or may not account for salmon that are removed for broodstock (i.e. to provide eggs and milt for hatchery production) or in First Nations fisheries, depending on the data source.

Conservation Unit (CU): Conservation Units are irreplaceable groups of salmon that have unique genetic and life-history traits. Maintaining multiple Conservation Units within a region strengthens the resilience of the species as a whole and helps salmon withstand and adapt to changing condition.

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