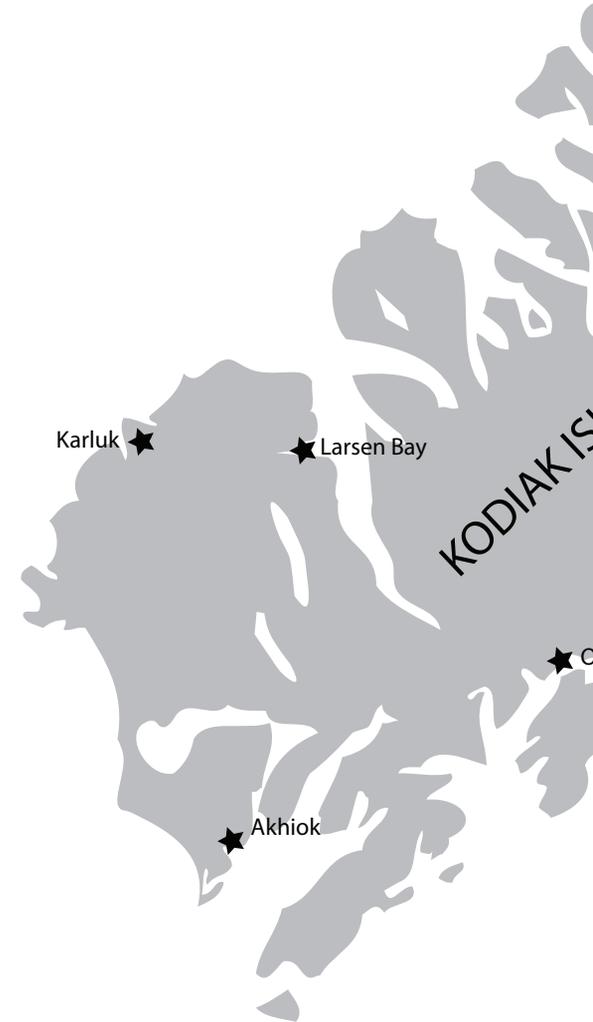




2020 Annual Report

OUR MISSION

The Kodiak Regional Aquaculture Association is dedicated to salmon fisheries development in the Area K Management Area for the benefit of all common property users — subsistence, sport, and commercial — through research and management efforts, habitat monitoring and protection, stocking, enhancement and rehabilitation projects. KRAA further promotes respect for Kodiak Area salmon resources through science, education, and partnership programs.





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LETTER FROM THE EXECUTIVE DIRECTOR



“As the pandemic progressed and people, fisheries managers, processors, and fishermen made adjustments, KRAA’s projects & staff never paused. “

What can we say about 2020 without first acknowledging that the COVID-19 pandemic played a huge part in shaping our lives, our activities, and the fisheries of Kodiak? Every year I’ve written this letter for the KRAA annual report, it seems that the theme comes back to a set of challenges that are unique, unprecedented, and have called upon KRAA’s staff and Kodiak’s fishers to adapt and find new ways carve out success. Change seems the only constant. You think you’re prepared for the “stuff” that will come for you. Then came 2020. The pandemic dominated almost everything and absorbed huge amounts of our time and resources. Fortunately, fish don’t care much about human problems, and, though it took a gargantuan effort, Kodiak, and Alaska in general, was able to prosecute its common property salmon fisheries on schedule and, for the most part, without pause. It was a massive group effort. It wasn’t easy. There were a lot of bumps in the road. But it happened.

In the way the pandemic affects all things, early indications on the coronavirus, along with consideration of hatchery and wild stock forecasts, it factored into the KRAA Board of Directors’ decision to forgo cost recovery fishery activities in 2020 for both the Telrod Cove and Kitoi Bay fisheries. This move by the Board was once again made possible by careful management and long-term investing of the Association’s resources as well as strong bids for the cost recovery licensing opportunities KRAA has made





available in recent years. The KRAA Board looks each year to maximize the number of fish we put in the nets and on the tables of all salmon user groups in Kodiak—subsistence, sport, and commercial.

As the pandemic progressed and people and fisheries managers, processors, and fishermen made adjustments, KRAA's projects & staff never paused. Our managers and crews, whether in the field or in town like the Research and Monitoring crews and Pillar Creek Hatchery Staff or out at Kitoi Bay, never paused. Like so many others, KRAA's leaders maintained their objectives and adapted to the constraints and challenges of conducting research and fish culture in the midst of the coronavirus. And fish came in. In some cases, KRAA's returns even exceeded forecast. That is always a relief in a year that saw changes to the fishery courtesy of decisions by the Board of Fisheries as well as lackluster wild stock returns for some species here and elsewhere in the state. Each year and with each new challenge, it seems to

highlight new ways in which salmon enhancement remains a relevant and viable part of our Kodiak salmon fishery.

The outlook for KRAA enhanced fisheries in 2021 looks good in some areas, like coho and sockeye, with stronger than last year's forecasts and this year's pink salmon forecast is at an all-time high. However, the challenges we've detailed in past years have also taken a toll that will be felt in years to come. Some of our more popular subsistence and personal use projects will not be stocked this year, which will affect future returns. Additionally, some of our other stocking projects that target mainly commercial fisheries will see some variability in returns over the next few years due to drought and temperature conditions at the time of eggtake in previous years. These impacts, though frustrating, do not change that fact that KRAA goes into each season with a strong commitment to do everything in our power to operate at full capacity. KRAA's managers and their crews are already engaged in putting healthy fish into the waters of Kodiak in 2021, and we are looking forward to another busy season. Once more, we hope to navigate the coming season with the confidence to say "challenge accepted" and wish you success in doing the same.

Tina Fairbanks

AQUACULTURE in KODIAK

Regional aquaculture associations were originally formed in 1976 through legislative action prompted by Alaskan fishermen who lobbied for the exclusion of private enterprise from salmon fisheries development and enhancement (and the creation of the nonprofit hatchery associations—both the regional aquaculture association for each area, as well as other private nonprofit, or PNP, organizations). The ultimate goal was to give Alaskans a voice in salmon fishery enhancement decisions and a hand in actions, such as rehabilitation of weak salmon stocks or supplemental salmon production, research and educational outreach, and habitat protection and improvement.

Each association is governed by a board of directors comprised of area salmon permit holders representing each gear group as well as processing, marketing, sport fishing and other interests. The Kodiak Regional Aquaculture Association (KRAA) was officially approved by the commissioner of the Alaska Department of Fish and Game in 1983, and it has

been enhancing and rehabilitating salmon runs in the Kodiak area for over 30 years. During its formative first decade, KRAA achieved much through lake enrichment projects, and, by 1994, supplemental sockeye production from stocking barren lakes had reached significant levels. Since then, KRAA's contribution to the Kodiak Area salmon harvest has continued to expand.

Currently, the Association is primarily funded through two avenues: cost-recovery fishery licensing revenues and a two percent salmon enhancement tax (SET) on first point-of-sale commercial salmon fisheries harvest revenues. The SET is initially paid to the State of Alaska by Area K salmon permit holders. The tax is calculated from gross revenue at the time of delivery and is held in the State of Alaska General Fund until the time of disbursement each year. SET revenues generated in Area K are disbursed annually to KRAA by the state Department of Commerce, Community, and Economic Development.





REGIONAL PLANNING TEAM

The Kodiak Regional Planning Team (KRPT) is comprised of six voting members: three positions are held by representatives of KRAA, and representatives of ADF&G hold three seats. The team currently has a non-voting chairman and several non-voting ex-officio members. The KRPT is tasked with preparing a regional comprehensive salmon plan (updated in 2010) to rehabilitate natural stocks and supplement natural production.

2020 KRPT MEMBERS

- Nathan Weber - KRPT Chair (ADF&G)
- Oliver Holm (KRAA)
- Wallace Fields (KRAA)
- Melissa Berns (KRAA)
- Flip Prior (ADF&G - FMPD)
- Kevin Schaberg (ADF&G - CF)
- Tyler Pollum (ADF&G - SF)



2020 RELEASES

PCH was designed to produce juvenile sockeye salmon for stocking barren-lake systems to enhance adult salmon production and for stocking anadromous lakes to rehabilitate weak sockeye salmon stocks. These stocking projects were developed to increase sockeye salmon harvest opportunities in the Kodiak Management Area (KMA) for common property fisheries, available to all Kodiak commercial, subsistence, personal use, and sport fishermen. PCH was designed as a central incubation facility; where salmon eggs needed for production are collected from brood sources located at sites remote from PCH and transported to the facility for incubation, hatching and rearing of resulting juvenile fish. Most juvenile fish are then transported to and released at stocking sites remote from PCH.

Today, PCH continues to produce juvenile sockeye salmon for lake stocking projects, and has started saltwater net pen projects while continuing to work cooperatively with the ADF&G Division of Sport Fish to produce

coho salmon, king salmon, and rainbow trout to enhance fishing opportunities on the Kodiak road system.

The hatchery was initially designed as a sockeye salmon (*Oncorhynchus nerka*) research facility. By 1976, hatchery production priorities switched to pink salmon (*O. gorbuscha*) fisheries enhancement. The present goal of the facility is to provide enhanced common property salmon fishing opportunities for Kodiak Management Area (KMA) fishermen by increasing returns of pink, chum (*O. keta*), coho (*O. kisutch*), and sockeye salmon through broodstock development, egg takes, incubation, hatching, rearing and releasing juvenile salmon, primarily to the Kitoi Bay area. KBH primarily increases salmon harvest of KMA commercial fisheries. Secondary user groups (in terms of the number of salmon harvested) of hatchery production include subsistence and sport fishermen. KBH has the capacity to produce 230 million juveniles of all life stages (fry, fingerling, presmolt, and smolt).

Some of the pink salmon fry swim up and move to the Kitoi net pens voluntarily. Once in the pen, the fry are fed for several months until a goal of .80g or greater is achieved. In 2020, 170 million 0.91g pink salmon fry were released.





Many fry and smolt released at both KBH and PCH are transported via float plane to various locations across Kodiak and Aforgank islands.

CHUM

LOCATION	FACILITY	SIZE (g)	NUMBER	MARK
Big Kitoi Bay	KBH	2.09	8,800,000	3n,3n,3H
Big Kitoi Bay	KBH	3.58	9,400,000	3,1,3HH

Numbers rounded to nearest 100,000

PINK

LOCATION	FACILITY	SIZE (g)	NUMBER	MARK
Big Kitoi Bay	KBH	0.91	175,000,000	7H

Numbers rounded to nearest 1,000,000

KING

LOCATION	FACILITY	SIZE (g)	NUMBER	MARK
Salonie Creek	PCH	24.4	36,100	none
Olds River	PCH	25.1	39,900	none

Numbers rounded to nearest 100

COHO

LOCATION	FACILITY	SIZE (g)	NUMBER	MARK
Pillar Creek	PCH	13.3	90,200	2,2H
Monashka Creek	PCH	13.5	94,400	none
Island Lake	PCH	14.4	30,200	2,2H
Mission Lake	PCH	15.4	20,000	2,2H
Big Kitoi Bay	KBH	20.5	1,100,000	none
Ruth Lake	KBH	0.94	40,100	3,6H
L. Jennifer Lake	KBH	0.94	90,100	3,6H
U. Jennifer Lake	KBH	0.94	140,100	3,6H
Katmai Lake	KBH	5.31	34,900	3,6H
Crescent Lake	KBH	0.94	190,100	3,6H

Numbers rounded to nearest 100

SOCKEYE

LOCATION	FACILITY	SIZE (g)	NUMBER	MARK
Spiridon Lake	PCH	0.70	1,100,000	2,4,2H
L. Jennifer Lake	PCH	0.70	10,000	2,4,2H
U. Jennifer Lake	PCH	0.70	80,000	2,4,2H
Ruth Lake	PCH	0.70	25,000	2,4,2H
Telrod Cove	PCH	20.9	272,000	5,2H
Ouzinkie	KBH	21.7	50,000	6,3H
Little Kitoi Bay	KBH	23.1	400,000	6,3H

Numbers rounded to nearest 1,000

Sport Harvest

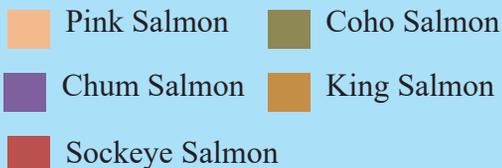


KRAA-produced salmon contributed approximately 12,000 fish to the Kodiak sport fish catch. Coho salmon made up the majority of the harvest at 90%, followed by sockeye salmon (6%) and king salmon (4%).

Escapement/Other



KRAA-produced salmon not utilized as broodstock or harvested are fish that were in excess of brood needs, made up of escapement, or perished prior to use. Pink salmon made up 63% of these fish. Coho (29%), sockeye (6%), and chum (2%) round out the contribution. There is no data for the king salmon.





Broodstock



Just over 380,000 KRAA-produced salmon were utilized as broodstock for KRAA projects. Pink salmon broodstock made up 84% of the total. Chum salmon came in second with just under 15%. Coho and sockeye salmon combine for 1% of KRAA-produced salmon utilized for broodstock.

Commercial Harvest



Nearly 5 million KRAA-produced salmon contributed to the commercial common property fishery in Area K. Pink salmon made up the overwhelming majority of those fish at 94%. Sockeye (3.2%), coho (2.6%), and chum salmon (0.5%) made up the remaining commercial harvest.

EGG COLLECTIONS

The two hatchery facilities operated by KRAA were designed for very different applications. Kitoi Bay Hatchery releases the bulk of its production directly into Kitoi Bay while Pillar Creek Hatchery was designed primarily as a central incubation facility with the intention that production would originate from places like Afognak and Saltery lakes and be stocked into barren lakes remote from the hatchery facility. The differing concepts behind the facilities create widely different strategies and practices in egg collection.

With returns coming directly to the hatchery and releases in close proximity, production from Kitoi Bay Hatchery can be relatively consistent on an annual basis—provided broodstock is available. On the other hand, sockeye salmon projects at PCH tend to have more variability. Many of the 2019 sockeye egg-take goals were based on the recommended 2020 juvenile release figures for each lake stocking project. Some of the recommended stocking figures are based on an in-season assessment of each lake's zooplankton population. As zooplankton levels vary, so do stocking recommendations.





LOCATION	FACILITY	SPECIES	GREEN
Kitoi Bay	KBH	Chum	36,114,000
Afognak Lake	PCH	Sockeye	702,000
Monashka	PCH	King	12,000
Kitoi Bay	KBH	Pink	158,369,000
Saltery Lake	PCH	Sockeye	3,086,000
Little Kitoi Lake	KBH	Sockeye	517,000
Pillar Creek	PCH	Coho	221,000
Kitoi Bay	KBH	Coho	2,320,000
Numbers rounded to nearest 1,000			

FISHERIES MONITORING PROJECTS

To evaluate the success and effectiveness of the Association's programs, KRAA and ADF&G biologists implement projects centered on monitoring and evaluating juvenile salmon survival and adult salmon returns. Projects for 2020 included:

SPIRIDON LAKE/TELROD COVE

Annual sockeye salmon smolt emigrations from Spiridon Lake are enumerated and sampled for age and size to assess growth, juvenile survival and smolt-to-adult survival. Additionally, sockeye salmon harvested in the Spiridon Bay Special Harvest Area (SBSHA), located at Telrod Cove, are monitored by KRAA staff from mid-June to early August. Monitoring duties include estimating the build-up of returning sockeye salmon, estimating and sampling the sockeye salmon harvest, and estimating the incidental harvest.

KRAA also collects otoliths from sockeye harvested inside Telrod Cove and sockeye harvested in adjacent statistical areas. These collections will continue over the next several years and will allow KRAA to evaluate the success of the sockeye smolt net pen project

as well the overall contribution of the Spiridon Lake fry release.

HIDDEN LAKE/FOUL BAY

Sockeye salmon returning to Foul Bay are harvested in the Foul Bay Special Harvest Area (FBSHA). Through KRAA funding, ADF&G annually monitors the commercial harvest and collects scale samples. Lake limnology data is collected to evaluate the response of the lake's zooplankton community to predation by stocked juvenile salmon and to determine stocking levels. Additionally, freshwater growth and fry-to-adult survival data are collected and evaluated.

SALTERY RIVER

KRAA provides funding and personnel to ADF&G to install and operate the weir at Saltery Lake on an annual basis. Once escapement goals are met, KRAA can utilize adult sockeye salmon for Pillar Creek Hatchery broodstock. Saltery sockeye are targeted by subsistence, sport and commercial fishermen.





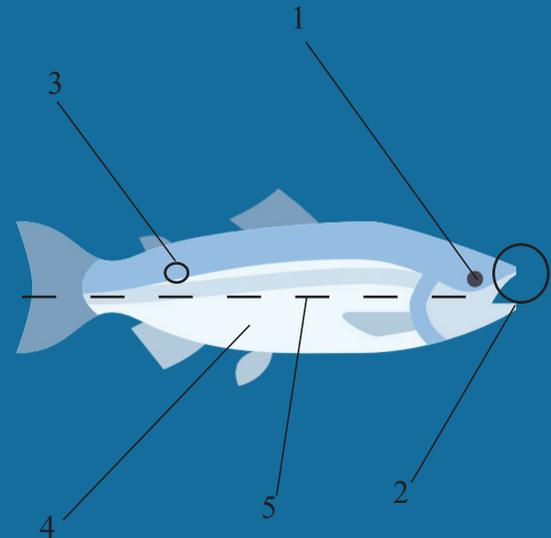
When adult salmon return to KRAA project sites, the harvested fish are sampled for age, sex, and size. Otoliths are also collected to evaluate hatchery proportion and release strategies.



To evaluate the success of the fry stocking project at Spiridon Lake, the emmigrating smolt are captured and rerouted into a collection facility. the smolt are enumerated and size and scales samples are collected by KRAA technicians.

FISHERIES DATA COLLECTION:

- 1. HATCHERY ORIGIN:** the otolith is removed and later examined for a hatchery mark.
- 2. SEX:** the sex of a salmon can often be determined by examining the shape of the snout
- 3. AGE:** a scale sample is taken and later examined to determine age
- 4. WEIGHT:** the average weight of salmon is particularly important during cost recovery
- 5. LENGTH:** the length of each fish is measured from the fork of the tail to the mid-point of the eye



LIMNOLOGY AND ENVIRONMENTAL MONITORING



Hatchery effluent at both KBH and PCH is collected and analyzed each month. The results are compiled and reported to the Alaska Department of Environmental Conservation on an annual basis.

Limnology data collection from Kodiak lakes began in the early 1980's. KRAA, in a cooperative agreement with ADF&G, has provided the funding for the majority of limnology data collection and processing since 1991. In 2017, KRAA collected samples from over 20 lakes and contracted with ADF&G for water chemistry and zooplankton analysis. Limnological data collected at Buskin Lake is done cooperatively with the Sun'aq Tribe of Kodiak (STK).

Most lakes in the Kodiak area are accessible only by float plane. Samples collected while working off the floats include zooplankton net hauls, water samples, temperature and dissolved oxygen profiles, and light incidence measurements. In the laboratory, zooplankton is measured and enumerated under the microscope and water samples can be analyzed for pH, alkalinity, chlorophyll a, and nutrient content.

ADF&G uses limnology data to assess lake productivity and changes in the freshwater rearing environment of sockeye salmon. From these analyses, ADF&G provides stocking recommendations to KRAA for sockeye salmon projects.

Limnology data collected on sockeye salmon nursery lakes that are not regularly stocked with salmon are archived to provide baseline information.



Most limnology collections occur at remote lakes and only accessible by float plane. Below: The KRAA laboratory is outfitted for analyzing water from hatchery effluent collections.

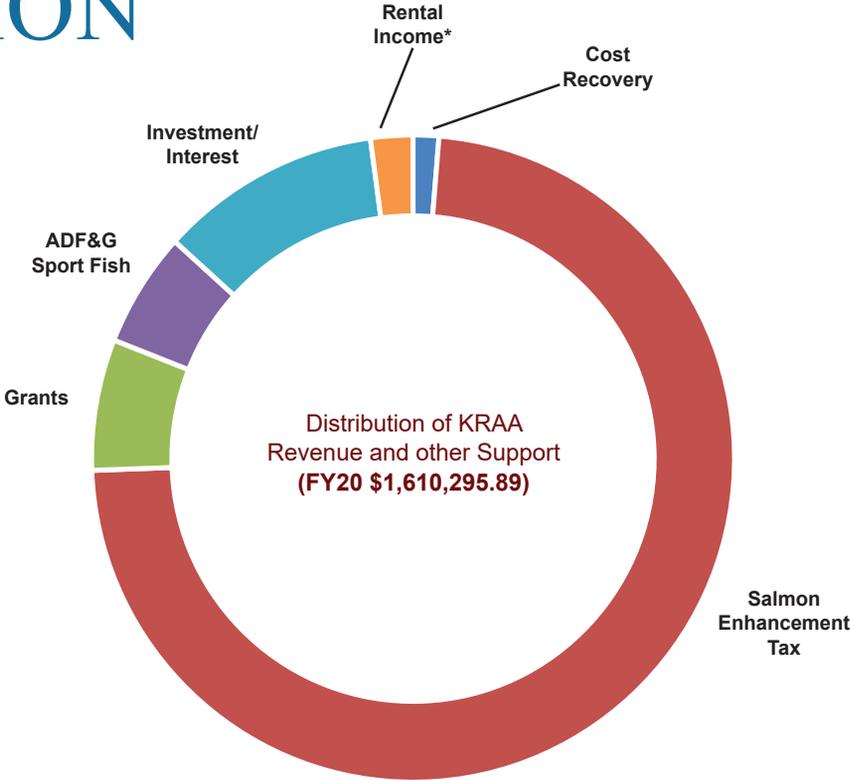


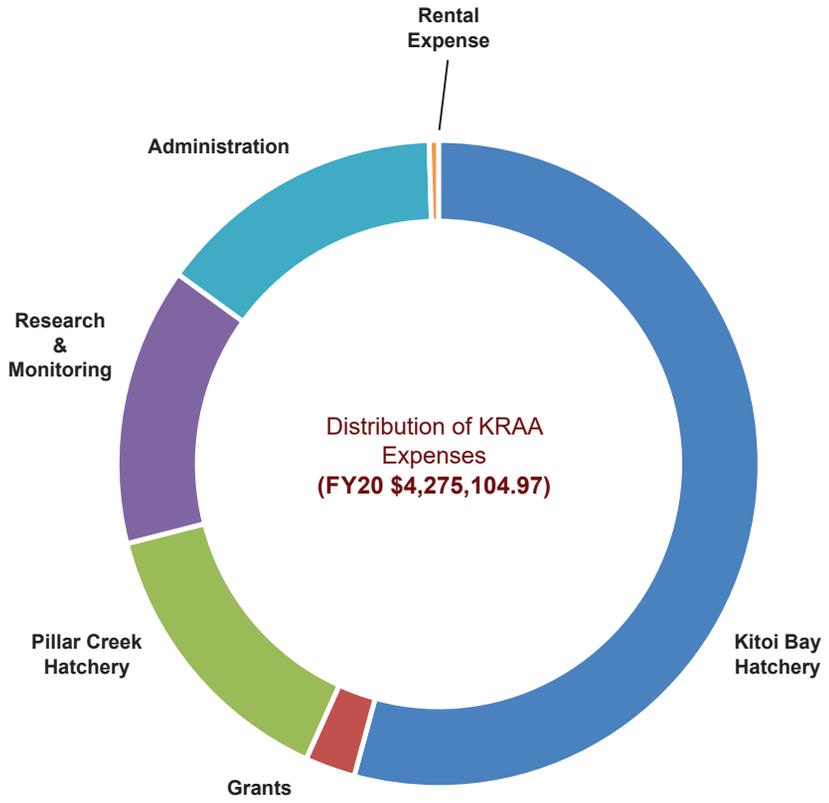
The data is important in instances where sockeye returns begin to dwindle. The baseline limnology and zooplankton data can be used to attribute, or rule out, run failures caused by unfavorable juvenile rearing conditions.

KRAA also collects and analyzes the effluent from both hatchery facilities. Per the

ADEC general permit for Alaskan Hatchery discharge, KRAA personnel collect samples on each month and analyze them at the KRAA laboratory on near island. The results are compiled and reported to the ADEC each March. The five-year permit will need renewal in 2022.

FINANCIAL INFORMATION





KRAA BOARD OF DIRECTORS



Top Row: Oliver Holm, Wallace Fields, Nate Rose, Melissa Berns-Svoboda, Bryan Horn,
Second Row: Marko Patitucci, Matt Moir, Rick Berns, Dave Hilty, Jeff Stephen
Third Row: Steven Horn, Adam Wischer, Harvey Goodell
Not Pictured: Theresa Peterson, Nicholas Hoffman

KRAA STAFF

ADMINISTRATION

Tina Fairbanks

Executive Director

Tammy Hulsey

Administrative Office Manager

Megan Holland

Administrative Assistant

Trenten Dodson

Production and Operations

PILLAR CREEK HATCHERY

Al Seale

Manager

James “Hawk” Turman

Assistant Manager

Nick Allen

Fish Culturist

RESEARCH & MONITORING

Nathan Weber

Manager

Kenny Matson

Biologist

Marina Thomas

Biologist

Takoda Edlund

Lab Technician

KITOI BAY HATCHERY

Mike Wachter

Manager

Lauren Deal

Assistant Manager

John Vinci

Fish Culturist

Adam Ruyle

Fish Culturist

Kayla Hensch

Fish Culturist

Niq Medina

Fish Culturist

Mike Fairbanks

Maintenance Manager

Nate Vreeland

Assistant Maintenance Manager

Lauren Deal transferred to KBH following the departure of Chet Thomas. Nick Allen moved to PCH to fill the vacancy left by Lauren and Niq Medina was hired on at KBH to after Nick left for PCH.





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