**ALASKA STATE LEGISLATURE**
**HOUSE SPECIAL COMMITTEE ON FISHERIES**
February 6, 2024
10:05 a.m.

**MEMBERS PRESENT**

Representative Sarah Vance, Chair
Representative Kevin McCabe
Representative Ben Carpenter
Representative Craig Johnson
Representative Louise Stutes
Representative Rebecca Himschoot

**MEMBERS ABSENT**

Representative CJ McCormick

**COMMITTEE CALENDAR**

HOUSE BILL NO. 195
"An Act relating to the powers of the Alaska Commercial Fisheries Entry Commission; relating to administrative areas for regulation of certain commercial set net entry permits; establishing a buy-back program for certain set net entry permits; providing for the termination of state set net tract leases under the buy-back program; closing certain water to commercial fishing; and providing for an effective date."

- HEARD & HELD

PRESENTATION (S): ALASKA'S HATCHERIES UPDATE

HOUSE BILL NO. 295
"An Act relating to salmon hatchery permits; and authorizing the sale of salmon to permitted persons for stocking lakes."

- SCHEDULED BUT NOT HEARD

**PREVIOUS COMMITTEE ACTION**

BILL: HB 195
SHORT TITLE: COOK INLET: NEW ADMIN AREA;PERMIT BUYBACK
SPONSOR(s): REPRESENTATIVE(s) RUFFRIDGE

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|---|---|---|
| 05/08/23 | (H) | READ THE FIRST TIME - REFERRALS |
| 05/08/23 | (H) | FSH, RES |

02/06/24 (H) FSH AT 10:00 AM GRUENBERG 120

**WITNESS REGISTER**

REPRESENTATIVE JUSTIN RUFFRIDGE
Alaska State Legislature
Juneau, Alaska
**POSITION STATEMENT:** As prime sponsor, introduced HB 195.

SABINA BRAUN, Staff
Representative Justin Ruffridge
Alaska State Legislature
Juneau, Alaska
**POSITION STATEMENT:** On behalf of the prime sponsor, Representative Ruffridge, presented the sectional analysis for HB 195.

GLENN HAIGHT, Commissioner
Commercial Fisheries Entry Commission (CFEC)
Alaska Department of Fish & Game
Juneau, Alaska
**POSITION STATEMENT:** Provided background on HB 195.

KEN COLEMAN, Member
Eastside Consolidation Association
Kenai, Alaska
**POSITION STATEMENT:** Gave a PowerPoint presentation regarding HB 195.

LORNA WILSON, Assistant Private Non-Profit (PNP) Coordinator
Division of Commercial Fisheries
Alaska Department of Fish and Game
Juneau, Alaska
**POSITION STATEMENT:** CO-offered the Alaska's Hatcheries Update presentation.

BILL TEMPLIN, PhD, Chief of Research for Anadromous Fisheries
Division of Commercial Fisheries
Alaska Department of Fish and Game (ADF&G)
Anchorage, Alaska
**POSITION STATEMENT:** Co-offered the Alaska Hatcheries Update presentation.

KATIE HOWARD, PhD, Lead Scientist
Salmon Ocean Ecology Program
Alaska Department of Fish and Game
Anchorage, Alaska

**POSITION STATEMENT:** Co-offered the Alaska Hatcheries Update presentation.

**ACTION NARRATIVE**

10:05:17 AM

**CHAIR SARAH VANCE** called the House Special Committee on Fisheries meeting to order at 10:05 a.m. Representatives McCabe, Carpenter, Johnson, Stutes, and Vance were present at the call to order. Representative Himschoot arrived as the meeting was in progress.

## HB 195-COOK INLET: NEW ADMIN AREA;PERMIT BUYBACK

10:06:32 AM

CHAIR VANCE announced that the first order of business would be HOUSE BILL NO. 195, "An Act relating to the powers of the Alaska Commercial Fisheries Entry Commission; relating to administrative areas for regulation of certain commercial set net entry permits; establishing a buy-back program for certain set net entry permits; providing for the termination of state set net tract leases under the buy-back program; closing certain water to commercial fishing; and providing for an effective date."

10:07:02 AM

REPRESENTATIVE JUSTIN RUFFRIDGE, Alaska State Legislature, as prime sponsor, introduced HB 195. He explained that fishing, commercial fishing, and subsistence fishing are a part of an Alaskan way of life. In his area there is a significant issue that is starting to be mirrored in other areas of the state. Decisions are being made to prioritize certain types of fish, species of fish, or type of fishery. This has been seen in the Kenai River and other tributaries on the Kenai Peninsula where the large king salmon run is prioritized, and the set net fishery has taken a hit. For example, last year the sockeye run was completely closed to the set netters. There is certainly a management decision involved, but another component is that there are a lot of permits that have been issued over the course of the years, so there are now hundreds of permits. This brings about the question of how to reduce the number of permits and nets in the water, and how permit holders can be encouraged to hand permits back. Waters would then be closed, and those permits would not be issued again. This would potentially

increase the fish in the river and reduce the bycatch. Versions of this bill have been seen in the legislature before, but changes have been made. Previous versions included obligations for state general funds for the buyback, but this bill is not intended to cost the state any money.

10:10:25 AM

SABINA BRAUN, Staff, Representative Justin Ruffridge, Alaska State Legislature, on behalf of Representative Ruffridge, prime sponsor, presented the sectional analysis for HB 195 [included in the committee packet], which read as follows [original punctuation provided]:

> Section 1 Amends the uncodified law of the State of Alaska by adding a new section which establishes that this legislation may be known as the East Side of Cook Inlet Set Net Fleet Reduction Act.
>
> Section 2 Amends the uncodified law of the State of Alaska by adding new Legislative findings and intent relating to the bill.
>
> Section 3 Amends AS 16.43.200 by adding 2 new subsections:
>
> (c) Establishes an area of the Upper Subdistrict of the Cook Inlet Central District as a distinct administrative area separate from the Cook Inlet Central District on December 31, 2023. This area is made up of the statistical areas identified on January 1, 2023, as 244-21, 244- 22, 244-31, 244-32, 244-41 and 244-42.
> (d) Provides that an individual who has a set net permit for the Cook Inlet Central District on December 31, 2023, is not entitled to set net in the administrative area created under this section as of January 1, 2023, unless the permit has been reassigned to that new administrative area.
>
> Section 4 Amends the uncodified law of the State of Alaska by adding a new section which provides how the commission will determine whether an individual who holds a set net entry permit in the Cook Inlet Central District on January 1, 2024 is reassigned an entry permit for the administrative area established under AS 16.43.200(c) (added by sec. 3 of the bill) or the

portion of the Cook Inlet Central District that was not assigned into the administrative area established under AS 16.43.200(c).

Section 5 Amends the uncodified law of the State of Alaska by adding a new section which defines the appeals process in the new administrative area. This section provides that a provisional license will be issued pending resolution of an appeal, and the provisional permit holder may cast a provisional ballot in the election established under section 6.

Section 6 Amends the uncodified law of the State of Alaska by adding a new section which requires on April 1, 2024, an election be conducted by the commission among persons holding permits in the new administrative area, to affirm support or opposition to a buy-back program. Requires the commission provide public notice of the election, hold public meetings concerning the election, and clarify the details of the buy-back program to those participating in the election.

Section 7 Amends the uncodified law of the State of Alaska by adding a new section which establishes the set net entry permit buy-back program for certain permits fished in the administrative area established under AS 16.43.200(c) (added by sec. 3 of the bill). This section will only take effect if approved in an election by the set net entry permit holders in the administrative area established under AS 16.43.200(c). If it is approved, the buyback program will become law 30 days following notification of the Lt. Governor (see secs. 9 and 11). Sets qualifications for participation in the program, provides the buy-back price for permits, requires that the purchased permits be cancelled and not re-issued, provides that certain waters that were fished with permits purchased under the program will be closed to future commercial salmon fishing, and specifies other details of the buy-back program.

Section 8 Amends the uncodified law of the State of Alaska by adding a new section which requires the commission to provide a written report to the

Legislature on the status of the program not later than January 15, 2030.

Section 9 Amends the uncodified law of the State of Alaska by adding a new section which requires the chair of the commission to notify the Lieutenant Governor and the Revisor of Statutes of the outcome of the election held under section 6.

Section 10 Repeals sections 1, 2, 7 and 8 on June 30, 2030.

Section 11 Amends the uncodified law of the State of Alaska by adding a new section which provides that secs. 1, 2, 7, and 8 take effect only if notice is provided under section 9 that the buy-back program established under section 7 was approved.

Section 12 Effective Date Clause. Section 4 of the bill takes effect January 1, 2024.

Section 13 Effective Date Clause. Provides if sections 1, 2, 7 and, 8, take effect under section 11, they take effect 30 days following the date of the notice provided in section 9 that the buy-back program was approved. Rep.justin.ruffridge@akleg.gov

Section 14 Effective Date Clause. Except as provided in sections 12 and 13, the bill takes effect July 1, 2023.

10:15:12 AM

MS. BRAUN began a PowerPoint presentation, titled "HB 195: East Side of Cook Inlet Set Net Fleet Reduction Act." Slide 1 shows a map of the Upper Cook Inlet Management Area. She explained that the Upper Cook Inlet Management Area consists of five districts, but HB 195 would address only the upper eastside district. She explained that slides 2 and 3 describe how the program would work. Permit holders could voluntarily apply for the program, and 200 permits would be drawn at random to retire the permit. Those permits would be bought back at $260,000 per permit. Funding sources the Commercial Fishery Entry Commission (CFEC) might designate could include federal grants, the NOAA fishing capacity reduction program, and private sourcing, but they would not come from general funds.

MS. BRAUN moved to slides 3 and 4, which compared the current number of permits and nets in the water to the resultant permits and nets and described how CFEC would manage the buyback. When a permit is retired, neither the permit nor the waters of the permit area would be available in the future.

MS. BRAUN presented slide 5 which summarized the buyback program. She stated that HB 195 would create an optional program designed to alleviate tension between fisher groups; preserve Alaska's abundance of salmon; and provide set netters with flexibility and opportunity.

10:18:38 AM

GLENN HAIGHT, Commissioner, Commercial Fisheries Entry Commission (CFEC), Alaska Department of Fish & Game, described the history of HB 195 beginning in 2018. He explained that implementing the program described in the bill takes away a lot of the risk because the CFEC would not have to determine the number of limited entry permits, pick the qualifying years, or develop a scoring system. In the past, a buyback would be paid for by a tax on permit holders because external funds would be used for the buyback. There have been two previous buybacks: the Southeast salmon purse seine and the Bering Sea and Aleutian Island crab buybacks. This does create a new administrative area as per the CFEC statutes, so there is precedent in the Alaska Department of Fish & Game (ADF&G), although this would create a new subset in the administrative area.

10:22:25 AM

KEN COLEMAN, Member, Eastside Consolidation Association, gave a PowerPoint presentation related to HB 195, [hardcopy included in the committee packet], titled "Eastside Consolidation Association." He said that he has been a set netter for 54 years, and on behalf of the Eastside Consolidation Association, he requested assistance in moving into the future in a very difficult situation. The set netters have been fishing Southcentral Alaska since 1878 and now find themselves in a larger, more complex user community. The association would like to reduce the number of nets and permits on Eastside Cook Inlet.

MR. COLEMAN said the association is committed to sustainable escapement in the rivers, particularly with Chinook salmon. Its members believe there should be reasonable opportunity for all the user groups including guided sport fishing, dip net fishing, sport fishing, and setnetting. The set netters are trying to

find a way to coexist and collaborate regarding the issues for a sustainable future. Over time the attempts to settle differences have been referred to as "the fish wars."

MR. COLEMAN explained that the Eastside Consolidation Association came about in an attempt to ensure all user groups had a fair and equitable share in the fisheries. The number of setnet permits increased a number of years ago because of larger salmon runs, but there are now fewer sockeye in Upper Cook Inlet, and there are too many permits and user groups. Currently, the number of fish per permit has been reduced, so it is no longer sustainable or economically viable. He explained how the CFEC system for reducing the number of setnet permits is not applicable in the current situation. Taking out 300 permits, however, would get the eastsiders back to an economically viable place.

10:29:10 AM

MR. COLEMAN explained the mechanism outlined in HB 195 for a voluntary fleet reduction and noted that it is widely supported in the setnet community. As a setnet permit is retired, three nets would be permanently removed from the eastside waters of Cook Inlet. The proposed value of the $260,000 permit buyback was determined by estimating the earnings of a setnet permit each year over 10 years at $20,000 per year. Eastside fishermen have been limited to one or two days of fishing for the last several years. This is a proactive solution for a currently unsustainable situation. This bill would give a choice to the set netters and allow a viable fishery for those who choose to retain their permits.

10:40:58 AM

REPRESENTATIVE RUFFRIDGE stated that the issue concerns what people or groups in Alaska have access to fish and how many fish can be caught. The state of Alaska management practices have prioritized one species of fish, and as a result, the Cook Inlet eastsiders are being shut out. There is a real need to recognize the issue and move forward with a solution-oriented approach rather than simply consider the eastsiders some sort of relic of the past and have them go away.

10:42:52 AM

CHAIR VANCE announced that HB 195 was held over.

10:43:16 AM

The committee took an at-ease from 10:43 a.m. to 10:45 a.m.

## Alaska's Hatcheries Updates

10:45:30 AM

CHAIR VANCE announced that the final order of business would be the Alaska Hatcheries Update presentation.

10:45:58 AM

LORNA WILSON, Assistant Private Non-Profit (PNP) Coordinator, Division of Commercial Fisheries, Alaska Department of Fish and Game (ADF&G), co-offered the Alaska's Hatcheries Update presentation. She began a PowerPoint presentation, titled "Literature on Hatcheries & Alaska's Hatchery Program." She quoted recent peer-reviewed research by John R. McMillan which said there is a "preponderance of adverse effects across time, space, and species" on wild stocks. She sought to clear up a misconception that 3 percent of hatcheries globally were found to benefit wild populations. She said that McMillan's work reviews scientific literature, not hatcheries as a whole.

MS. WILSON quoted a scientific article, titled "From diatoms to killer whales: impacts of pink salmon on North Pacific ecosystems," which read: "Large-scale hatchery production (~40% of the total adult and immature salmon biomass) likely has unintended consequences for wild salmon." She said that this quote leads the reader to a false logic that hatchery pink salmon are 40 percent of the total salmon biomass. She explained that this paper has been cited in proposals to the Alaska Board of Fisheries to cut Alaska hatchery pink salmon permit capacity. She explained that the biomass of pink salmon in the North Pacific, hatchery and wild, will be clarified by the next presenter.

MS. WILSON stated that in 1971, the legislature created the Fisheries Rehabilitation, Enhancement and Development (FRED) Division and in 1974 passed the Private Nonprofit Hatchery Act, which authorized the private ownership of salmon hatcheries by qualified nonprofit corporations for the purpose of contributing by artificial means to the rehabilitation of the state's depleted and depressed salmon fishery. The program was intended to operate without adversely affecting natural stocks of fish in the state and under a policy of management that allows

reasonable segregation of returning hatchery-reared salmon from naturally occurring stocks.

MS. WILSON explained that fisheries management includes the establishment of terminal areas where returns have reasonable segregation from wild stocks, which allows fisheries managers to target fisheries and achieve wild stock escapement goals. She described genetic and fish health policies under fisheries management.

10:49:16 AM

MS. WILSON explained that Alaska's salmon hatchery production is meant to supplement fisheries, not replace wild stock production, and could be thought of as fisheries enhancement. She exemplified the Hidden Falls Hatchery. She explained that the purpose of hatcheries in the Lower 48 and Canada are to compensate for lost spawning areas and reestablish lost populations. She provided a map that showed the spawning areas along the West Coast of California which have been lost to dams. Another map showed the Coleman National Fish Hatchery (CNFH) in the upper Sacramento River in California. She explained that in 2022, the CNFH had the highest number of Chinook Salmon released, 12 million.

10:50:31 AM

MS. WILSON moved to slide 9, which showed bar graphs comparing hatchery releases in 2022 for Alaska, British Columbia, and Pacific Northwest states, including Washington, Oregon, Idaho, and California. She said that most of Alaska's releases were of pink and chum salmon into salt water. In contrast to Alaska, British Columbia released mostly into freshwater rivers and lakes and utilized mostly sockeye salmon. Similar to British Columbia, releases in Washington, Oregon, Idaho, and California were into lakes and rivers, and were made up in large part by chinook salmon. She explained that Alaska's hatchery program is unique, and policies are in place that ensure fish are released in terminal areas where marine fisheries can target returns.

MS. WILSON described a literature review project through the North Pacific Anadromous Fish Commission that she is involved with that seeks to synthesize recent knowledge about stocking and hatchery programs for wild salmon in the Pacific and Atlantic basins. The project is titled, "Hatching Plans," and the key research question read as follows: "In the context of climate and the Anthropocene, what role will hatcheries play in

conserving wild populations and supporting fisheries?" She compared McMillan's literature review methods to the goals of Hatching Plans. She noted that Hatching Plans covers a shorter time span, excludes resident salmon and trout, and covers more literature databases. She noted the different research questions and stated that McMillan's question was, "What proportion of publications report adverse effects on wild salmonids?"

10:55:13 AM

MS. WILSON detailed the rebuttals to McMillan's analysis. She explained that asking whether hatcheries benefit wild populations is unfair in Alaska because hatchery releases and returns are segregated from wild populations. She provided critiques to McMillan's review as it pertains to Alaska salmon hatcheries. She explained that McMillan's review may be more useful outside of Alaska; it is an accounting of papers and not an analysis of the risks that hatcheries pose to wild stocks; it includes fish in the review that are not utilized in Alaska hatcheries, such as trout.

MS. WILSON provided a quote from McMillan, who wrote that "despite an overwhelming body of research showing most hatcheries programs hurt wild fish populations, it's often controversial to criticize such programs." She provided a response to McMillan's assertions on slide 15, which read as follows [original punctuation provided]:

> It is problematic to criticize all hatchery programs as one because of the many approaches to managing hatcheries, let alone understand implications of results given the complex interactions between salmon and their environments, such as in ocean ecology.
>
> Alaska's statutes and policies are safeguards. Critical oversight of Alaska's hatcheries ensures protection of wild-stock salmon populations into the future. ADF&G is continuously critical of hatchery programs.
>
> Also, Alaska is investing in research to better understand salmon ocean ecology.

10:59:57 AM

MS. WILSON, in response to Representative Stutes, said that John McMillan is located in Washington state and works for Trout Unlimited. She explained that there were other authors who collaborated on the review alongside Mr. McMillan.

11:01:40 AM

BILL TEMPLIN, PhD, Chief of Research for Anadromous Fisheries, Division of Commercial Fisheries, Alaska Department of Fish and Game, continued the Alaska Hatcheries Update presentation. He described the various labs and study programs under the division. He explained that the Salmon Ocean Ecology program is new and driven by questions about competition at sea. He noted the lower productivity of Alaska's salmon stocks.

11:03:09 AM

KATIE HOWARD, PhD, Lead Scientist, Salmon Ocean Ecology Program, Alaska Department of Fish and Game, began her portion of the Alaska Hatcheries update presentation. She introduced a PowerPoint presentation, titled "Understanding Potential Contribution of Alaska Salmon Hatchery Production to Competition at Sea," outlining the three sections that would be covered.

DR. HOWARD stepped in to explain that the topic of salmon competition at sea lacks clear scientific advice because of the many diverse perspectives throughout the scientific community and literature. She made note of polarized opinions on the topic. Evidence for interspecific salmon competition at sea falls into four categories: diet overlap and shifts; species abundance reactions; competitor abundance associated with growth patterns; and competitor abundance associated with age at return.

DR. HOWARD said that the primary arguments on both sides of the debate are scientifically backed. Those who are convinced that the observed patterns seen in Pacific salmon abundance, survival, and size are due to competition at sea between salmon species argue that indirect assessments or experimental studies of large marine ecosystems are difficult and so indirect evidence is necessary and can be considered sufficient. She noted the emphasis on pink salmon due to its life history. She also said that the scientific interpretations are based on research written in English and mentioned that there are Japanese and Russian scientists who research the same topic. Those who are not convinced that research successfully demonstrates that observed patterns of Pacific salmon are caused

by competition at sea between salmon species point to the reliance on indirect evidence as a weakness. She commented that evidence of a lack of relationship is often ignored and not published. She made note of confirmation bias. She explained that those who are not convinced argue that more should be done to rule out alternative explanations for the observed correlation.

11:12:46 AM

DR. HOWARD, in response to Representative Himschoot, confirmed that Russian and Japanese studies are published in peer reviewed journals. She said that some abstracts are translated into English and made available to ADF&G. She explained that scientists from Russia and Japan take a different approach to understanding competition at sea. She said that because North American countries lack long-term ecological studies, scientists tend to rely on modeling indirect evidence based on estimated abundances of fish. She explained that there has been more investment in freshwater monitoring for salmon in North America relative to the other side of the Pacific. More investments in marine research have been initiated by the National Oceanic and Atmospheric Administration (NOAA) as well as ADF&G to understand salmon stocks.

11:17:51 AM

DR. HOWARD stated that the reliance on different kinds of information has led to different interpretations and perspectives throughout the scientific community. She said that correlative evidence is strongest when correlation is high, found consistently across multiple situations, with no competing explanations, and the correlation is consistent with mechanistic explanations that can be supported by experimental evidence.

DR. HOWARD provided a proposed rationale for a decline in wild salmon stocks. She suggested mechanistic studies to support that the conclusions are an appropriate interpretation of the observations. Mechanistic studies help to show that correlations are indicative of a causative effect. Mechanistic evidence is necessary to advance the understanding of relationships.

11:24:13 AM

DR. HOWARD, in response to Representative Vance, said that to answer mechanistic questions, support for the continuation of

data collection throughout the department is essential. Time, money, and effort are important.

11:27:33 AM

DR. HOWARD explained that the idea that hatchery fish are responsible for problems seen in wild salmon stocks is a polarizing issue, even among scientists. There are several considerations to understand to reduce impacts to wild salmon. Identifying the intended outcome is important to measure success. She asked if the intended outcome is to reduce competition for food on the high seas where many species and stocks are co-mingling or reduce competitive interactions between wild and hatchery stocks in local areas where hatchery fish are concentrated. She discussed the importance of understanding the costs and benefits.

DR. HOWARD described a study which is the foundation of analysis that is the most comprehensive assessment of available data.

11:32:03 AM

REPRESENTATIVE HIMSCHOOT asked about the impact of warming oceans and whether it is an area of investigation for the department.

DR. HOWARD confirmed that warming oceans are a necessary component to understand wild salmon and hatchery salmon. She said that scientists have different interpretations. She noted major changes due to marine heat waves.

11:34:36 AM

CHAIR VANCE noted that the data on the next few slides is dated and asked why more recent data is not available for salmon biomass.

DR. HOWARD answered that the data has been compiled from other countries and is a significant undertaking. She discussed how a working group compiled of member countries is working on keeping estimates updated every year through the North Pacific Anadromous Fish Commission (NPAFC).

CHAIR VANCE asked about an estimate timeline of when newer information will be made available. She made note of the significant changes that have occurred in the last nine years for the fishery.

DR. HOWARD suspected that action moves slowly when interacting in an international arena.

DR. TEMPLIN explained the difficulties in acquiring recent accurate estimates about the fishery because thus far, no government agency has taken on the task. Extrapolations have been utilized based on the data from 2015, and those become less accurate over time. The NPAFC is made up of five salmon-producing nations: Japan, Korea, Canada, Russia, and the United States.

11:40:11 AM

CHAIR VANCE asked if the current data is available to managers to make decisions.

DR. TEMPLIN explained that best estimates for numbers and biomass are presented in the 2015 paper. Other data that is collected through surveys is made available to the public as projects are completed.

11:41:44 AM

REPRESENTATIVE CARPENTER asked if the State of Alaska scientists have a recommendation for policy makers to work toward improving wild salmon stocks. He emphasized that there are Alaskans who rely on salmon and don't have years to wait for a scientific consensus.

11:43:29 AM

DR. TEMPLIN explained that ADF&G has a constitutional responsibility to manage resources for the benefit of Alaskans. He emphasized the care with which data is collected, interpreted, and communicated. He demonstrated his understanding that data collected by ADF&G is urgent for Alaskans. The department travels to communities to provide the latest information.

11:46:27 AM

DR. HOWARD described different hatchery and wild measurements on slide 10. She explained that 2.1 percent of total biomass of pink, chum, and sockeye salmon is Alaska hatchery pink salmon.

11:53:29 AM

DR. HOWARD, in response to Representative McCabe, explained that hatcheries, marine harvest, bycatch, and illegal and unreported fisheries in the high seas are other levels to consider.

REPRESENTATIVE MCCABE asserted that the Alaska State Legislature does not have the authority to impact what happens on the high seas. He said that many are focused less on the resources and more on the stakeholders.

11:56:31 AM

DR. HOWARD, in response to Representative Carpenter, answered that the diet of salmon at sea depends on the species, life stage, and habitat they are in. She explained that they are generalist predators. Juvenile chinook and coho eat small and larval fish. Pink chum and sockeye eat a lot of zooplankton. As salmon mature, coho and chinook feed on fish and squid. Pink, chum, and sockeye have diverse diets. She noted that prey availability changed as a result of marine heat waves. Dr. Howard said that according to scientific studies, the Western North Pacific has abundant prey for salmon. The Eastern North Pacific lacks compatible detailed studies. Food availability and survivability of young salmon is heavily influenced by oceanographic conditions, such as a marine heat wave.

REPRESENTATIVE CARPENTER stated that studying salmon is complex and not completely understood. He asked for an understanding of whether state funded research is accomplishing the goal of eliminating various factors that impact salmon.

12:03:30 PM

CHAIR VANCE discussed research presentations from the previous year. She made note of the lack of expediency of the scientific process. She thanked the presenters.

12:05:26 PM

**ADJOURNMENT**

There being no further business before the committee, the House Special Committee on Fisheries meeting was adjourned at 12:05 p.m.