

Yukon River Drainage Fisheries Association



A United Voice for Yukon River Fishers

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YRDFA reserves the right to include or omit any submissions to the Yukon Fisheries News. The views expressed in this newsletter are those of the author and may not necessarily reflect the views of YRDFA.

## Pre-Season Planning Meetings Attract Many Attendees, Much Input

SUCCESS STORY

BY JASON HALE, COMMUNICATIONS DIRECTOR

The people of the Yukon River have depended on salmon for thousands of years. In years of poor fish returns, they faced starvation. Salmon are an integral part of their culture, diet, and lifestyle. It comes as no surprise that as the run sizes decrease in recent years, more and more people are coming to meetings, expressing their needs and ideas, and working to have their voices heard for the good of their families, their people.

This spring YRDFA hosted a pre-season planning process in Alaska for the third year in a row. The goal was to bring representatives from throughout the Alaskan portion of the Yukon River drainage together to give state and federal fisheries managers input on how to manage the run, and to share ideas and build understanding between all users and managers of the resource.

The process has evolved to meet the needs of stakeholders in a given year, and this year that need was to bring as many people together as possible to share views and build understanding. Four meetings were scheduled: 1 riverwide (within Alaska) and 3 regional. People flocked in and spoke up.

#### **Riverwide Meeting**

On April 13, representatives from 36 Tribes, 3 Regional Advisory Councils, a processor, the Yukon River Panel, YRDFA, and other concerned fishers gathered with agency staff in Anchorage to hear the pre-season outlook for king salmon



Fishers gathered in St. Mary's raise their hands to show importance of commercial fishing to support subsistence activities.

and talk about how the run should be managed. They talked in detail about pulse



A Nulato fisherman shares his thoughts on management.

closures, management approaches, and commercial fishing. They attended workshops on enforcement, Canadian management, and sonar. In the end, the 85 participants were presented with a pre-season management plan (see page 10) that was developed with their input. Not everyone agreed on every point, but everybody provided input and shared their views on each issue.

#### **Regional Meetings**

As a new addition to this process, YRDFA scheduled three meetings in villages on the Yukon in May: St. Mary's, Nulato, and Ft. Yukon. The aim was to inform active fishers in different regions about the fisheries outlook and pre-season plan,

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#### EMPLOYEE DIRECTORY

JILL KLEIN, Executive Director Phone: 907-272-3141, ext. 102 Email: jill@yukonsalmon.org

**BECCA ROBBINS GISCLAIR**, Policy Director Phone: 907-272-3141 ext. 106 Email: becca@yukonsalmon.org

RICHELL CARMICHAEL, Finance Manager Phone: 907-272-3141 ext. 104 Email: richell@yukonsalmon.org

**CATHERINE MONCRIEFF**, Anthropologist Phone: 907-272-3141 ext. 107 Email: catherine@yukonsalmon.org

**TEDDY WILLOYA**, Program Assistant Phone: 907-272-3141 ext. 108 Email: Twilloya@yukonsalmon.org

**BOB MASSENGALE**, Habitat Coordinator Phone: 907-272-3141 ext. 107 Email: bmassengale@yukonsalmon.org

JASON HALE, Communications Director Phone: 907-272-3141 ext. 105 Email: jason@yukonsalmon.org

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### **A Message From the Director**

BY JILL KLEIN, EXECUTIVE DIRECTOR



The Yukon River Drainage Fisheries Association (YRDFA) hit a milestone recently by moving through its 20th year in operation. YRDFA

was created for two main reasons—to bridge communications and to work towards healthy fish stocks.

YRDFA, as well as other groups, has successfully bridged communications among many people along the Yukon River, and this is continually evolving. From the first riverwide meetings and newsletters to the internet and social media, we are still working to improve how people along the Yukon River are informed and involved in fisheries management.

Unfortunately, the fish runs have been declining the past 20 years and there is much work to be done to ensure healthy fish stocks. There are various communications structures in place along the Yukon River, and we need to work within these structures to address the declining salmon runs and how to handle conflict over how to share and use natural resources. This is not a new problem in the world, and it will be no easier for people along the Yukon River to adapt to the changing environment we are seeing today. Many people depend on the salmon for their food, their income, and their family traditions and cultures; many of you reading this are amongst the people I am talking about.

We recently updated the YRDFA mission statement to reflect today's situation—the need to protect and promote all healthy wild fisheries and all the cultures along the Yukon River. YRDFA is working to keep people fishing, which is directly related to the health and well-being of families in rural Alaska. By working with fishers, YRDFA has had the continuity of knowledge from the river, about the river, for the river. YRDFA has also expanded who we work with to ensure that all Tribal governments are involved in fisheries decision-making, and our efforts to learn from the Elders can help guide the younger generations by using their knowledge, values, and traditions.

YRDFA elections are currently underway and the YRDFA board has offered one free vote to every Tribal Council to try to bring more voices to the table when selecting board

members. We ask you to take the time to discuss representation on the YRDFA board at your upcoming Tribal Council meetings in June and to share this with us. Keep your eyes open for incoming mail to your council offices.

While the biggest challenge facing the fishery and the people that depend on it is the declining Chinook salmon run, another issue being faced at YRDFA is the transition off of federal appropriations that have supported the organization for

so long. The YRDFA staff, board, and others are working hard to see how we can transition not only our funding sources to a diversified, traditional non-profit development model, but also how can we transition our programs and our board members involvement in the fishery to be most effective 21 years after the organization was formed.

We recently updated the YRDFA mission statement to reflect today's situation the need to protect and promote all healthy wild fisheries and all the cultures along the Yukon River

There are changes taking place, besides the obvious ones to the natural environment, but also in the decision-making and communications processes that exist along the Yukon River. There are complex conversations that need to take place, first to fully understand the fishery and then to work together to make decisions for the river, the salmon, and the people. While there are potential short-term hardships, let's work together to minimize them as best we can by exploring new avenues, taking advantage of opportunities, and getting

the support we need to move through this transition as best we can.  $\leq$ 

## Yukon River Fisheries Meetings Calendar

| DATE                               | MEETING  | LOCATION  |
|------------------------------------|--|-----------|
| June 6 – 14                        | North Pacific Fishery Management Council                                       | Nome      |
| June 7 – Aug 30<br>(every Tuesday) | Yukon River In-Season Management Teleconferences<br>800-315-6338, code: YUKON# |           |
| June 8                             | World Ocean Day  |           |
| Aug 4 – 6                          | Yukon River Inter-Tribal Watershed Council<br>Biennial Summit                  | Ruby      |
| Sept 4 – 8                         | American Fisheries Society Annual Meeting                                      | Seattle   |
| Sept 14 – 17                       | Wakefield Symposium: Fishing People of the North                               | Anchorage |
| Sept 27 – Oct 5                    | North Pacific Fishery Management Council                                       | Unalaska  |

### **Chinook Salmon Runs Down by Half**

BY HEATHER LEBA, FISHERY BIOLOGIST, ALASKA DEPARTMENT OF FISH & GAME

The average run from 1982–1997 was approximately 307,000 Chinook salmon. In recent years, from 2007–2010, we have seen runs totaling about half of what has returned historically, averaging about 150,000 salmon. Several factors could contribute to this pattern, such as marine and freshwater environmental factors, and decreased ocean productivity.

Maintaining a balance of meeting escapement goals while providing opportunity for fishers to fulfill their subsistence needs is complicated by these smaller run sizes. Everyone on the river is affected by these smaller runs, Alaskans and Canadians alike. Therefore, it is important that we come together to be good stewards of the Chinook salmon resource throughout the Yukon River drainage, share the harvest, and conserve where we can. *Section* 



## Border Crossings: How Many Chinook Salmon Need to Reach Canada?

BY HEATHER LEBA, FISHERY BIOLOGIST, ALASKA DEPARTMENT OF FISH & GAME

At the most recent Yukon River Panel meeting, held March 21-24, the U.S. and Canadian Panel members agreed to a one year Interim Management Escapement Goal (IMEG) range of 42,500 to 55,000 Chinook salmon. This is the number of Chinook salmon that both nations agreed should reach the spawning grounds in Canada.

In addition to this escapement goal objective, Alaskan managers will aim to pass approximately 5,000 Chinook salmon into Canada to fulfill the second part of the U.S./Canada agreement-harvest share. These additional salmon provide harvest opportunities for Canadians. It is unusual for all of these "shared" fish to be harvested. In fact, most of the fish that cross the border reach the spawning grounds, and the majority of the Canadian harvest occurs in First Nation subsistence fisheries.

Only 2,647 Chinook salmon were harvested in Canada in 2010, and all but one fish was taken in First Nation harvests. Last year many First Nations chose to voluntarily restrict their harvest or not to fish at all to allow even more Chinook salmon to reach the spawning grounds, in hopes that their sacrifice will improve runs in the future.

Yukon River Chinook salmon runs are smaller now than in the past, creating hardships for everyone. With that knowledge, it is even more important to make our escapement goals and provide for subsistence harvest opportunity in Alaska and Canada so that people all along the Yukon River can fish, now and in future generations.

Voices from the River

## "There will be subsistence restrictions on king salmon fishing again this summer. How do you think state and federal troopers should handle enforcement?"

In the spring of 2011, Teddy Willoya asked this question of fishers up and down the Yukon River. Here are their thoughts:



DISTRICT 2

POLLOCK SIMON, SR., ALLAKAKET They should have Fish & Game agents checking on fishermen.

> JAN WOODRUFF, EAGLE They need to issue warnings and emphasize the importance of why the restrictions are in place to the fishermen.

DISTRICT 6

DISTRICT

FRED ALEXIE, SR., KALTAG They should be checking on fishermen by boat to make sure people are in compliance with net regulations.

MIKE PETERS, Marshall They need to treat everybody the same along

DISTRICT 3

DISTRICT 4

the river.

WWW.YUKONSALMON.ORG

## Time to Take Action on Chum Salmon Bycatch in the Bering Sea Pollock Fishery

BY BECCA ROBBINS GISCLAIR, POLICY DIRECTOR

#### Council reviews options in Nome June 7-14!

The North Pacific Fishery Management Council (the Council) is revising management measures to reduce chum salmon bycatch in the Bering Sea pollock fishery. This presents an opportunity to get measures beyond the current rolling hot spot system in place to reduce chum salmon bycatch and protect Yukon River and other Western Alaska salmon.

The Council has an "initial review" of chum salmon bycatch measures scheduled for their upcoming meeting in Nome June 7-14. This means the Council will have their first opportunity to review a full environmental assessment and regulatory impact review. After reviewing this analysis the Council may make changes to the alternatives for management measures

If you're planning on attending the meeting it is most important to be there Friday, June 10 through Sunday, June 12

and may select a preliminary preferred alternative. The analysis should be out by the time we go to press, and will be posted on the Council's website at: http://www.fakr.noaa.gov/ npfmc/.

The Nome meeting is an important opportunity for Western Alaska. This is the first time the Council has meet in a Western Alaska community, and they are considering an issue of great importance to Western Alaska while they are there! Many people from the Norton Sound region will be attending the meeting, and other people from the Yukon River region and other parts of Western Alaska will be at the meeting, as well. If you're interested in providing testimony at the meeting to encourage the Council to reduce chum salmon bycatch please consider attending the meeting!

The agenda is out for the meeting and posted on the Council's website. Chum salmon bycatch is on the agenda for the Scientific and Statistical Committee and Advisory Panel from Tuesday, June 7 to Thursday, June 9. The Council itself is scheduled to discuss chum

> salmon bycatch from Friday, June 10 to Sunday, June 12. If you're planning on attending the meeting it is most important to be there for the meeting Friday, June 10 through Sunday, June 12 if you can only be there for part of the meeting.

YRDFA held a training session in Nome in May with Kawerak and the World Wildlife Fund to train local people about participating in the Council process, and the materials from this training, including sample letters and resolutions, are available on our website.

While the Nome meeting is

important, the Council won't take final action on this issue until its December meeting in Anchorage. If you have limited travel funds, the meeting at which they take

travel funds, the meeting at which they take final action is the most important one to attend.

#### What is the Council deciding on?

The Council is looking at a number of options for reducing chum salmon bycatch. The alternatives, or options, under consideration include a range of hard caps which would close the fishery when reached, and trigger caps, which would close a set area when reached. The alternatives also include an option for the fleet to participate in a rolling hot spot system and be exempt from the area closure in regulation; the fleet currently operates under this system.

The range of caps being considered are 50,000 to 353,000 for hard caps and 25,000 to 200,000 for trigger caps. The alternatives include options for allocating these caps amongst the different sectors of the fleet. There are several options for triggered area closures, including smaller and larger sets of closures which can be closed based on monthly caps. The option for a rolling hot spot system also includes the ability for the Council to revise the current system. A special closure area is associated with the rolling hot spot system: this large closure area encompasses 80 percent of the area where bycatch has occurred historically, and would be selected with the rolling hot spot system.

#### How to participate

- 1. Attend the meeting in Nome and provide public comments in person.
- Send written comments. See the next page for a sample letter. You can send written comments to:

North Pacific Fishery Management Council 605 West 4th Avenue, Suite 306 Anchorage, AK 99501-2252

- 3. Ask your Tribe to pass a resolution asking for chum salmon bycatch measures which will protect Yukon River salmon. See the next page for a sample resolution. Resolutions should also be sent to the Council at the address above.
- Support YRDFA's efforts to reduce salmon bycatch in the Bering Sea pollock fishery by making a donation to support this important work! Call the YRDFA office or visit our website to make your tax deductible donation. ≤

This article was prepared by YRDFA under grants from the Oak Foundation and the National Oceanic and Atmospheric Administration (NOAA). The statements, findings, conclusions, and recommendations are those of the author and do not necessarily reflect the views of the Oak Foundation or NOAA.

## Sample Letter – Yukon River

North Pacific Fishery Management Council 605 West 4th Avenue, Suite 306 Anchorage, AK 99501-2252 Fax: (907) 271-2817

#### Dear Mr. Olson and Council Members:

I am a [commercial or subsistence] fisherman/woman in [name of village]. I am writing to comment on chum salmon bycatch reduction measures in the Bering Sea pollock fishery. High chum salmon bycatch numbers may threaten our salmon and our way of life, and current regulations provide no limit on the number of chum salmon that may be taken as bycatch. Chum salmon serves an important cultural and economic role in my community and throughout Western Alaska, particularly in recent years when Chinook salmon runs have been low and harvests restricted. Chum salmon provides a critical source of food for us, and the commercial salmon harvest provides the only means of income for many who live in the remote villages of the Yukon River. Our salmon runs must be protected.

Fall chum salmon runs on the Yukon River have been below average in recent years. As a result, subsistence harvests of fall chum salmon have been restricted, and no directed commercial harvests of fall chum salmon have taken place on the Yukon River.

While bycatch is not the sole cause of these low runs, it is vital that we all bear the burden of sacrifice to protect our salmon runs. Therefore, I recommend that the Council adopt management measures that will effectively reduce and limit chum salmon bycatch and adequately protect Western Alaska chum salmon runs at a biologically acceptable level.

Sincerely, [Name] [Tribe and/or Village]

### **Chinook Salmon Bycatch Update**

Amendment 91 has been in effect for five months now, and Chinook salmon bycatch in the Bering Sea pollock fishery continues to be low. As of April 30, 7,114 Chinook salmon have been taken as bycatch in the Bering Sea pollock fishery.

You can see updated details throughout the season about how many salmon each sector and co-op has caught at: http://www.fakr.noaa.gov/2011/car180\_ bs\_with\_cdq.pdf. As always, YRDFA is monitoring progress under Amendment 91 and the incentive programs. Look for more information about Chinook salmon bycatch in the future as we see how these new programs are working.  $\leq$ 

### Sample Resolution: Yukon River

#### Resolution: Chum Salmon Bycatch in the Bering Sea Pollock Fishery

WHEREAS chum salmon are a vital subsistence fishery and cultural resource and provide an essential source of food and income for the people of the Yukon River region; and

WHEREAS subsistence harvests of fall chum salmon have been restricted in recent years, and no directed commercial harvests of fall chum salmon have taken place on the Yukon River; and

WHEREAS the Bering Sea pollock fishery catches these same salmon as bycatch; catching over 700,000 chum salmon in 2005 and most of these salmon are discarded overboard—dead after hours in a trawl net; and

WHEREAS according to the best available scientific information a portion of the chum salmon taken as bycatch are of Western Alaska origin, including the Yukon River; and

WHEREAS extremely high bycatch numbers have been reached under the current management measures, and although chum salmon bycatch has been low in the last few years there is nothing in regulation to prevent extremely high bycatch from occurring again and it is therefore prudent to adopt new management measures; and

WHEREAS the North Pacific Fishery Management Council is in the process of developing regulations intended to minimize chum salmon bycatch;

THEREFORE BE IT RESOLVED that

requests that the North Pacific Fishery Management Council adopt management measures that will effectively reduce and limit chum salmon bycatch and adequately protect Western Alaska chum salmon runs at a biologically acceptable level.

Adopted this \_\_ of \_\_\_\_\_ 2011 at \_\_\_\_\_, Alaska.

## How Does Fisheries Management Work in the U.S. Portion of the Yukon River Drainage?

BY GERALD MASCHMANN, U.S. FISH AND WILDLIFE SERVICE, AND AMANDA WIESE, ALASKA DEPARTMENT OF FISH & GAME

As the ice breaks up, swallows return, and the grass turns green, people's minds usually turn to salmon. Managers and researchers have been thinking about them all winter long. During the winter, Alaska Department of Fish & Game and U.S. Fish & Wildlife fishery biologists are busy reviewing the management actions taken in the previous season and their possible effects on escapement, subsistence use, and commercial harvests not only for this season but for future years. To understand how management works, we'll look at what happens pre-season, before the salmon enter the river; what happens in-season, when the salmon are in the river; and what happens post-season, after the salmon have reached the spawning grounds. Fisheries managers are always striving to meet three objectives in maintaining healthy and sustained fish populations:

- Meeting established escapement goals in Alaska and Canada.
- 2. Provide for subsistence uses in Alaska and Canadian harvest share.
- 3. When additional surplus is available, provide for commercial, recreational, and personal use harvests in Alaska.

#### Pre-season

Management of Yukon River salmon starts during the winter well before the fish enter the river. We update our archives with salmon run information from the previous year, which are then used in mathematical models to calculate a run estimate for the coming season. This estimate is compared to recent and historical trends to come up with a preseason run projection, which our managers use to formulate a preliminary run outlook and management strategies for the coming season.

Sharing information is important for successful salmon management on the Yukon River. The run projection, preliminary management strategies, and outlook is shared between agencies and fishers at the YRDFA annual meeting, Regional Advisory Council meetings, Advisory Committee meetings, Yukon River Panel meetings, and recently at the YRDFA hosted Pre-season Planning meetings. At these meetings fishers have the opportunity to ask managers and

researchers questions and provide feedback on run outlooks and management strategies, allowing us to make adjustments to the management strategies in ways that work best for the fishers while also fulfilling management objectives.

A final management strategy for the coming season's salmon runs is then developed. The outlook and management stratagies is then shared with fishers and other interested parties through mailings, news

meetings.

In-season

releases, YRDFA newsletters, and preseason

Salmon begin entering the Yukon River

in late May or early June. At this time our

strategies agreed to during the pre-season

meetings, such as beginning the regulatory

windows subsistence fishing schedule, which

is intended to reduce harvest impacts during

years of low salmon runs on any particular run

component and to spread subsistence harvest

Assessment projects have been set up

throughout the drainage to track the strength

projects include the lower Yukon set and drift

and timing of the runs. Examples of these

test fisheries, Pilot Station sonar, Rapids

test fishwheel, and Eagle sonar. Although

opportunity among users.

managers implement the management

to focus on the Pilot Station numbers, it's important to realize that we use a combination of sonar, test fishery, and fishers reports to assess the run in-season

Although fishers tend

these projects provide daily information, the projects need time to gather data before we can use them to assess the runs. Until then, we make decisions based upon the pre-season outlook. As the runs develop and assessment

> project information materializes, we begin to rely upon this information more than the pre-season outlook to formulate an inseason run projection. This typically occurs sometime between the quarter point and midpoint of the run.

The in-season run projection is updated daily as assessment project information is reported. If the assessment projects indicate a worse run than expected, unfortunately, conservation measures

may be adjusted as nessesary to meet escapement and spread the available salmon to subsistence users along the entire river. And if assessment indicates a better run, we may not need to reduce fishing time and may be able to further liberalize fishing to take advantage of any available surplus of fish.

Although fishers tend to focus on the Pilot Station numbers, it's important to realize that we use a combination of sonar, test fishery, and fishers reports to assess the run in-season. Water levels, debris, silt, and weather can affect each project in different ways. We take these factors into consideration when applying the information that each project provides to our management decisions.

In-season information sharing and feedback is important to us. Run assessment information, management strategy implementation, and fishers' success throughout the drainage is shared through news releases and the weekly YRDFA teleconferences. In addition to the run assessment projects, our managers frequently contact local fishermen and leaders in villages throughout the drainage to assess how fishers are doing, what affect management strategies are having on fishing success, and how the strategies might be changed to help meet the three main management objectives.

#### Post-season

Our first objective is to provide for healthy fish populations and sustained yields within established escapement goals. This means putting a certain number of fish on the spawning grounds. So, in addition to the run assessment projects, we also monitor escapement projects.

Escapement projects, such as the East Fork Andreafsky River weir and the Chena River tower, estimate the number of salmon that have reached the spawning grounds. Although these projects can provide some late in-season indication of run strength, we typically use them post-season as a sort of "report card" for the season's management actions because these projects finish well after the fisheries. Many of these projects have associated escapement goals that we attempt to meet. Coming in below or above the escapement goal might indicate that additional management actions—either reducing harvests or allowing additional harvests—may have needed to be taken to meet the goal.

After the season is over, we evaluate information from assessment projects, escapement information, subsistence survey information, and the effectiveness of the management actions on our objectives, including our obligations to Canada to see where we should make adjustments in the future.

As with pre-season and in-season management, information sharing and feedback occurs after the salmon have reached their spawning grounds. Escapement information is shared between agencies as well as with fishers through news releases and meetings. Managers receive feedback from the fishers on their fishing success and how the management strategies affected them. We also report if the management actions taken during the season resulted in management objectives being met and how they might improve in the future.

As the water freezes, swallows disappear, and grass turns brown, people's minds usually turn to moose. But we're still thinking of salmon. As the fall turns to winter, the process will start again. S



Fred Bue, fisheries manager with USFWS, shares this year's management plan at a regional meeting in Nulato.

### Where Do Salmon Swim? Tagging Study Aims to Hone In-River Salmon Migration Knowledge

BY PATRICE KOHL, SONAR OUTREACH AND EDUCATION PROJECT COORDINATING AUTHOR

Bells might not save salmon from bears, but a new sort of high tech fish-bell could provide biologists with valuable details about salmon migration in the Yukon River. Biologists know salmon swim close to banks to avoid strong currents in the middle of the river, but a project being launched this summer will provide species-specific details about where salmon are in the river.

Starting in early June, Alaska Department of Fish and Game biologists will capture, tag, and release approximately 150 Chinook and 150 summer chum salmon between Mountain Village and St. Mary's. The tags won't jingle, but will emit high-pitched pings. Ten to 12 underwater microphones installed in the Yukon River at the Pilot Station sonar site will listen for the pings and will allow biologists to more precisely locate where in the river channel Chinook and chum salmon swim past. Biologists will document coordinates for each pinging salmon that passes within range of at least three microphones. Additionally, each tag will ping to a unique tune. By analyzing the tune, biologists will be able to identify the individual salmon and how deep it's swimming.

... will allow biologists to more precisely locate where in the river channel Chinook and chum salmon swim past The two-year project will contribute to what biologists have learned about salmon migration at the site with sonar. Sonar shows salmon prefer to swim close to the river's banks. This is good news for the Pilot Station

sonar site, where a 550-meter area in the middle of the 1,000-meter wide Yukon is beyond sonar reach. Ninety-seven percent of sonardetected fish swim within 150 meters or closer to shore. Between 150 meters and the end of the sonar range there are few fish and at the outermost end of the sonar range there are almost none.

Sonar does not identify fish by species, so biologists use test gillnet catches at the site to separate sonar-detected fish by species. Except within the densest portion of the bank crowd, biologists believe (and test gillnets suggest) Chinook and chum salmon are represented in consistent proportions in the areas where sonar detects fish. With the more detailed migration information provided by the tagging project, biologists can either validate this assumption and how test gillnets are performing or reconsider their methods to improve Chinook salmon run estimates. Solution



## 2011 Yukon River Salmon Fisheries Outlook and U.S. Management Strategies



This information sheet describes the anticipated management strategies for the 2011 season after discussing options with fishers during several preseason meetings.

#### RUN AND HARVEST OUTLOOK

| CHINOOK SALMON   | CHUM SALMON  | COHO SALMON  |
|--|--|--|
| Poor to below average run is projected.  | Average to below average runs<br>are projected to provide for<br>escapement and subsistence<br>uses. | Average run is projected to<br>provide for escapement and<br>subsistence uses. |
| Subsistence conservation<br>measures are required to<br>share the anticipated available<br>subsistence harvest and meet<br>escapement goals. | Summer chum commercial<br>surplus is anticipated to be<br>300,000 to 600,000 fish.                   |  |
| No directed commercial fishery is anticipated.   | Fall chum commercial harvest<br>is anticipated to be 50,000 to<br>300,000 fish.                      | Commercial harvest is<br>anticipated to be 10,000 to<br>70,000 fish.           |

#### MANAGEMENT STRATEGIES

- Initial management will be based on preseason projections and shift to inseason run assessment as runs develop.
- Because of the poor Chinook salmon outlook for 2011, no directed Chinook salmon commercial openings are anticipated.
- The regulatory windowed subsistence salmon fishing schedule will begin June 6 in Y-1 and implemented chronologically with the upriver migration.
- To conserve the greatest number of Chinook salmon, fishing time on the first pulse of Chinook salmon will be reduced. Beginning in Y-1, one fishing period will be closed (approximately 5-day closure) and similarly implemented in upriver fishing districts and subdistricts based on migratory timing.
- If inseason assessment indicates Chinook salmon run strength continues to be poor after closing the first period an additional period may be closed or subsistence fishing time may be reduced.
- In the sport fishery for Chinook salmon, the bag and possession limit in Yukon River tributaries (excluding the Tanana River drainage) will be reduced from three to one fish. No retention of Chinook salmon will be permitted in the mainstem Yukon River.
- All Tanana River fisheries will be managed to meet Chinook salmon escapement objectives for the Chena and Salcha rivers.
- A surplus of summer chum salmon is anticipated above escapement and subsistence needs. However, the extent of a directed chum salmon commercial fishery will be dependent upon the strength of the Chinook salmon run.

The US/Canada Yukon River Panel agreed to one year Interim Management Escapement Goal (IMEG) ranges of 42,500-55,000 Chinook salmon and 70,000-104,000 fall chum salmon based on the Eagle sonar program. In addition to the required escapement goals, Alaska is obligated to pass approximately 5,000 Chinook and 10,000 fall chum salmon or more, across the Border, dependent on run strength to fulfill harvest sharing commitments specified in the Yukon River Agreement. The IMEG for the Fishing Branch River of 22,000 to 49,000 fall chum salmon based on the Fishing Branch River weir count will continue through 2011.

Even though parent year Chinook salmon escapements appeared to be good, returns since 2007 have been much lower than expected from similar escapement levels prior to 1998. Consequently, management of the 2011 season will proceed cautiously. The windowed subsistence salmon fishing schedule will be in place early in the season until the salmon run size is projected to be of sufficient strength to warrant relaxing or additional conservation measures appear necessary. However, one subsistence fishing period will be closed on the first pulse and additional periods may be closed or restricted as necessary to assure safe passage of Chinook salmon migration if the run develops below expectations. Note: this schedule is subject to change depending on run strength.

| AREA                     | REDUCED REGULATORY<br>SUBSISTENCE FISHING<br>PERIODS | APPROXIMATE<br>Schedule<br>To Begin                   | DAYS OF THE WEEK                                |  |
|--------------------------|--|---|---|--|
| Coastal District         | 7 days/week  | All Season  | All Season M/T/W/TH/F/SA/SU – 24 hours          |  |
| District Y-1             | Two 36-hour periods/week                             | June 6 Mon. 8 pm to Wed. 8 am /Thu. 8 pm to Sat. 8 ar |   |  |
| District Y-2             | Two 36-hour periods/week                             | June 8  | Wed. 8 pm to Fri. 8 am / Sun. 8 pm to Tue. 8 am |  |
| District Y-3             | Two 36-hour periods/week                             | June 12   | Wed. 8 pm to Fri. 8 am / Sun. 8 pm to Tue. 8 am |  |
| Subdistrict Y-4-A        | Two 48-hour periods/week                             | June 15   | Sun. 6 pm to Tue. 6 pm / Wed. 6 pm to Fri. 6 pm |  |
| Subdistricts Y-4-B, C    | Two 48-hour periods/week                             | June 22   | Sun. 6 pm to Tue. 6 pm / Wed. 6 pm to Fri. 6 pm |  |
| Koyukuk & Innoko Rivers  | 7 days/week  | All Season  | M/T/W/TH/F/SA/SU — 24 hours                     |  |
| Subdistricts Y-5-A, B, C | Two 48-hour periods/week                             | June 28   | Tue. 6 pm to Thu. 6 pm /Fri. 6 pm to Sun. 6 pm  |  |
| Subdistrict Y-5-D        | 7 days/week  | All Season  | M/T/W/TH/F/SA/SU — 24 hours                     |  |
| District Y-6             | Two 42-hour periods/week                             | All Season  | Mon. 6 pm to Wed. Noon /Fri. 6 pm to Sun. Noon  |  |
| Old Minto Area           | 5 days/week  | All Season  | Friday 6 pm to Wednesday 6 pm                   |  |

#### For additional information:

- ADF&G Steve Hayes in Anchorage 907-267-2383; Jeff Estensen, Fairbanks 907-459-7217; or Emmonak 907-949-1320
- Subsistence fishing schedule: 1-866-479-7387 (toll free outside of Fairbanks); in Fairbanks, call 907-459-7387
- USFWS: Fred Bue in Fairbanks 907-455-1849 or 1-800-267-3997; or in Emmonak 907-949-1798

## **Canadian Management Strategies**



The Department of Fisheries and Oceans Canada (DFO) is responsible for the conservation and sustainable use of Canada's fisheries resources and is the management authority for Yukon River salmon in Canada.

What follows is a brief overview of the 2011 outlooks for the Canadian portion of the Yukon River fisheries, together with the corresponding proposed management plans.

#### Upper Yukon River Chinook Salmon

- The 2011 Canadian-origin upper Yukon Chinook salmon run is expected to be poor to below average, with a precautionary outlook of 65,000-89,000 salmon.
- The lower range is based on recent experience where runs have returned much lower than pre-season outlooks have projected.
- In addition, the models do not account for environmental factors, bycatch, reductions in productivity, and other phenomena.
- This year's Interim Management Escapement Goal is 42,500-55,000.

#### Upper Yukon River Fall Chum Salmon

- The 2011 Canadian-origin upper Yukon chum salmon run is projected to be a below average to average, with a run size of 151,000-217,000 salmon.
- This is based on the expectation that 25% of the Alaska Department of Fish & Game drainage wide outlook of 605,000-870,000 salmon will be upper Yukon River fall chum salmon.
- This year's Interim Management Escapement Goal is 70,000-104,000.

#### Fishing Branch Fall Chum Salmon

- The 2011 Fishing Branch River chum salmon run is projected to be 30,250-43,500 salmon.
- This is based on the assumption that 5% of the drainage wide outlook range of 605,000-870,000 will be Fishing Branch River fall chum salmon.
- This year's Interim Management Escapement Goal is 22,000-49,000.

#### **Management Strategies**

The Eagle Sonar will be used to determine escapement into Canada. Canadian fishers should enter the 2011 season with the expectation that **conservation measures may be required**. With that in mind, fishing opportunities in recreational, commercial, and domestic fisheries are expected to be limited in 2011.

Restrictions are not expected to be required in First Nation fisheries *unless* run abundance is weaker than the lower end of the outlook range.

In-season Canadian management actions are outlined in the *Yukon River Chinook and Fall Chum Salmon Integrated Fisheries Management Plan* (the "Management Plan"). This Management Plan is revised and approved annually after the conclusion of yearly meetings with Yukon First Nations, the Public, the Yukon Salmon Sub-Committee, and other stakeholders.

Decision guidelines have been a feature of the Management Plan for some years now. Decision guidelines are reviewed and modified annually, if necessary, to reflect new considerations and changing escapement goals.

Management actions outlined in this plan are subject to change in response to in-season variables such as salmon migration timing, abundance, and environmental conditions. While fishing opportunities outlined in this plan are anticipated based on pre-season information, they are not guaranteed. DFO will consult with First Nations, commercial, domestic and recreational fishers throughout the season regarding detailed fishing plans, particularly when in-season revisions are required to address specific conservation concerns or when observed in-season conditions are not covered in the decision guidelines.

The Management Plan will be available online at: http://www-ops2. pac.dfo-mpo.gc.ca/xnet/content/mplans/mplans.htm.

For more information, please contact Steve Smith, Area Chief of Resource Management, at 867-393-6724 or by e-mail at Steve.J.Smith@dfo-mpo.gc.ca.

## **Spotlight on Teslin**

The community of Teslin sits at the idyllic headwaters of the mighty Yukon River. Several local residents chimed in as to why they love living there.

"I was born and raised here as well as my parents. The freedom is what I like and getting our own native food. We have a lot of space, can build a garden without people telling us what to do. The lake, the berries, camping, drinking the water anywhere... freedom. It's home."

— Jane Smarch (Elder)

"Access to the land, traditional pursuits and within the blink of an eye you can be in the wilderness." — Marion Sheldon

"The land, the environment in general and family. Why 1 stay?... to preserve and protect our traditional way of life. Because 1



### How Much Life Can the Bering Sea Support?

BY SHELLEY WOODS, SCIENCE REPRESENTATIVE

#### **Carrying Capacity**

The Bering Sea is a large expanse of water with billions of organisms, of which salmon make up a small portion. Although it seems boundless the ocean can only support a certain number of organisms. Carrying capacity is the maximum number of organisms that a certain area or ecosystem can support. It is important to understand carrying capacity when thinking about salmon fisheries because the returns of salmon are dependent upon many factors such as winter survival, genetic stock structure, bycatch, and ocean carrying capacity. There are many factors that influence the carrying capacity, whether they be natural or as a result of human activity.

#### **Pacific Decadal Oscillation**

An important natural influence on carrying capacity is the Pacific Decadal Oscillation (PDO). The PDO is an index of sea surface temperature and winds. The PDO is either in positive or negative phase, where the positive phase is related to increase in salmon growth and abundance and negative is related to a decrease in salmon growth and abundance. When the PDO switches from positive to negative, or vice versa, a regime shift occurs. A regime shift is a rapid change in environmental conditions that has dramatic results for the ecosystem. Figure 1 shows positive and negative shifts in the PDO and abundance of salmon species in the Bering Sea. Regime shifts are indicated with corresponding arrows and bars. Catches of Pacific salmon in the North Pacific can be correlated to the PDO regime. As mentioned before, many factors influence salmon abundance. The PDO has a dramatic influence on the temperature and available food sources, thus influences the rate of growth and overall fitness of salmon.



Figure 1: The PDO index and Pacific Salmon catches with bars and arrows to indicate regime shifts.1

#### Top-down or bottom-up?

There is always a debate as to whether human activity or natural processes have a larger impact on the carrying capacity of salmon in the Bering Sea. One theory is that human activity such as fishing provides population control which limits

the salmon survival and reproduction. This humaninfluenced theory is a topdown theory. Top-down control would mean that humans are controlling the threshold limit of the species. Humans are a top predator and our populations are small so we sit on top of an ecosystem triangle. Salmon and other fishes are below us in the triangle because we feed on them and their populations are larger than ours. Below salmon are their food sources such as zooplankton, other small fish, and invertebrates such as jelly fish.

Thinking about the ecosystem food web

triangle, there is a bottom-up theory in which the environment and food sources are the factors that limit the population of salmon. This theory is called bottom-up because the factors that set the threshold are larger and found at the bottom of the triangle. A third theory is density-dependent control, in which interspecific competition has a large influence on the abundance. It is almost impossible to say for sure whether one of these theories is true. All three things are important to determining what influences the carrying capacity and the ecosystem threshold for a certain species. Human activity, the phase of the PDO, and the amount of salmon that return to the Bering Sea determine how many salmon will survive, their fitness and condition, and how likely they will be to spawn and pass their genetics to the next year class.

#### **Hatchery Increases**

As human population increases there is an increase for healthy protein sources. Salmon in particular have a high omega-3 fat content which benefits heart, brain, and joint health. With the market for salmon increasing there has been a dramatic increase in farmed salmon and hatchery salmon. Hatcheries have been more economical because the salmon only have to be raised for a year or two in ponds and can be released into the ocean to feed and grow. The salmon return to the hatchery site as healthy adults to be harvested

The influence of a negative PDO and increased hatchery salmon may mean that fish in the Bering Sea have more competition for a less available food and may return smaller and in less fit condition. and sold. Since the 1970s billions of hatchery raised salmon have been released, and that number continues to climb. Hatcheries can be controversial as they have both positive and negative influences on fisheries. The positive influence is that fishers can take less wild fish to meet the global demand for salmon, so the fishing pressure on wild stocks can be lessened, the hatchery operations are relatively inexpensive, and returns to hatcheries are predictable and can be controlled. Negative impacts on the fishery are that hatchery fish can compete for wild fish for food, strays can mate with wild

stocks and disrupt natural genetics, and hatchery products can compete with wild fish products in the global market.

#### **Closing Thoughts**

Top-down, bottom-up and interspecific competition influences the threshold of salmon abundance. The carrying capacity of salmon in the Bering Sea is correlated to the phase of the PDO. Hatchery fish have been released at increasing levels since the 1970s and the trend will probably continue upward. The PDO appears to be in a negative phase based on the charts in Figure 1. The influence of a negative PDO and increased hatchery salmon may mean that fish in the Bering Sea have more competition for a less available food and may return smaller and in less fit condition.

#### Work Cited

Kaeriyama, M., H. Seo, and H. Kudo. 2009. Trends in run size and carrying capacity of Pacific salmon in the North Pacific Ocean. North Pacific Anadromous Fish Commission Bulletin 5: 293–302.

## Invasive Species 101: Which Invasive Species Are of Greatest Concern?

BY DR. MARK WIPFLI, USGS ALASKA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT, UNIVERSITY OF ALASKA FAIRBANKS; DR. NICHOLAS LISUZZO, USDA FOREST SERVICE, FAIRBANKS; TAMMY DAVIS, ADF&G; JAMES KRUSE, USDA FOREST SERVICE, FAIRBANKS; DAVID ROON, UNIVERSITY OF ALASKA FAIRBANKS

#### Invasive species refresher

As discussed in two previous articles, invasive species are microbes, plants, or animals that do not naturally occur in an area and can negatively affect the environment, economy, subsistence, recreation, and/or human health. Alaska has been historically less susceptible to invasive species introductions than other places in the U.S. because

of its remote geography, which provides fewer avenues for transfer of non-native species into the state. However, this is changing as commerce continues to expand, with more domestic and international cargo shipments (air, land, and sea freight) entering Alaska, more tourists visiting, and Alaskans traveling to other places.

#### What's here now?

There are several invasive species that have gotten a foothold in Alaska, including the Yukon River basin:

NORTHERN PIKE (Esox lucius) • – Pike are native to most of Alaska, including the Yukon River basin. However, where pike have been illegally introduced, such as south central Alaska, pike are invasive species. Pike prey upon many other fish, such as whitefish, sheefish, suckers, Alaska blackfish, stickleback, char, and salmon. In their native range, pike are part of the natural fish community, but climate change and the actions of humans can result in the further spread of this predator, potentially threatening salmon and other fish populations at a much broader scale.

WATERWEED (*Elodea spp.*) • Like other common aquarium plants sold in pet stores, Elodea spp. is partly prized for its easy establishment, thanks to rapid and hardy growth. Though some species of Elodea are native to much of North America, established populations have not previously been found in Alaska or the Yukon Territory. In 2010, extremely large and dense mats were found in a slough of the Chena River. Efforts to pull this plant out of an infested river often make a bigger problem, as tiny pieces that escape can grow into new infestations any place downstream. This plant may affect salmon spawning and rearing habitats.

EUROPEAN BIRD CHERRY (*Prunus padus*) **③** – This ornamental shrub is sold in nurseries for its showy flowers, but it is currently invading riparian habitats along salmon streams in some of the urban areas of the state, including Anchorage and Fairbanks. Studies indicate that this species may be displacing native trees (e.g., alder) in riparian forests and reducing food resources for stream fishes and other invertebrateeating riparian animals where it occurs in high densities.

<u>GREEN ALDER SAWFLY</u> (*Monsoma pulveratum*) **④** – This insect apparently moved to Alaska through commerce traffic, but is also spread through firewood. It defoliates riparian alders, destroying stream bank cover and interfering with nitrogen fixation important in plant succession, likely also increasing stream temperatures, disrupting food webs that support fish and other aquatic species, and increasing stream sedimentation and turbidity. It has been detected throughout much of south central Alaska in very high numbers in places, and is spreading quickly. It has great potential to spread throughout the state in areas containing alder species.

<u>WHITE SWEETCLOVER</u> (*Melilotus alba*) **9** – This is an aggressive herbaceous plant spreading along several major rivers. White sweetclover is widely distributed within

Alaska, from Southeast to north of Fairbanks in the interior, including the Kenai Peninsula, as well as within the Yukon Territory. In addition it has escaped beyond the human footprint and is spreading down river corridors including the Matanuska and Nenana rivers. Populations are common along motorized vehicle corridors are found near most of Alaska's primary highways. It could displace willows and other vegetation.

The value of sweetclover as food for wildlife such as moose is largely unknown.

<u>REED CANARY GRASS</u> (*Phalaris arundinacea*) G – This monoculture forming grass constricts streams and can even grow mid-channel. Like white sweetclover, reed canarygrass was planted because of its beneficial qualities, specifically for bank stabilization.
With extensive populations in Southeast, reed canarygrass is also found on Kodiak and Afognak Islands, on the Kenai Peninsula around Anchorage, and in the Yukon Territory. Generally, it is found near streams and rivers. It can choke

Reed Canary Grass growing mid-stream in the North Fork Anchor River, Kenai Pennisula.

invasive insect killed the majority of the native larch in the state in the late 1990s. It is still around but was so successful that there are not many larch remaining

LARCH SAWFLY (Pristiphora erichsonii) 🛛 – This

streams and impede fish passage.

White Sweetclover growing along the banks of the Tanana River. within the state, so populations are currently low. This sawfly can be found everywhere that larch are found growing in the state, and has attacked most of the mature trees of this

species. It remains to be seen if the young larch that survived will recover and remain a component of Alaska's forests.

#### What we can do

- 1. Do not release any plants or animals from one place to another.
- 2. Avoid planting non-native plant species that are likely to spread and cause harm in gardens and yards.
- 3. Adequately inspect boats, trailers, and fishing gear when moving from one area to another.
- Report suspected invasive species to Alaska Department of Fish and Game 1-877-INVASIV (877-468-2748) or the Cooperative Extension Service (907-786-6315).

#### How can I learn more?

There are several agency reports published by USDA Forest Service (http://www. fs.fed.us/r10/spf/fhp/), U.S. Fish & Wildlife Service (http://www.fws.gov/invasives/), Alaska Department of Fish & Game (http://www.adfg.state.ak.us/special/invasive/ invasive.php), and the University of Alaska Cooperative Extension Service (http://www. uaf.edu/ces/aiswg/).

Alaskans can also visit or phone the Alaska Department of Fish and Game (877-468-2748) or the Cooperative Extension Service (907-786-6315).

#### Sources of information for this report:

http://www.uaf.edu/ces/aiswg/ http://www.adfg.state.ak.us/special/invasive/invasive.php http://www.fs.fed.us/r10/spf/fhp/



### Yukon River Panel Discussion Focused On Expected Low Return of Canadian-origin Chinook Salmon in 2011

The Yukon River Panel, established by the US/Canada Yukon River Salmon Agreement, met in Whitehorse from March 21 through 24 to discuss 2011 salmon run outlooks and review interim escapement goals for Canadian origin Chinook and fall chum salmon. The Panel agreed to continue an interim Canadian escapement goal range adopted in 2010 of 42,500 to 55,000 Chinook salmon as evaluated by Eagle sonar. The Panel also agreed to continue an interim mainstem Canadian escapement goal range of 70,000 to 104,000 upper Yukon fall chum salmon. For the Fishing Branch River, a tributary of the Porcupine River, the Panel agreed to an interim escapement goal of 22,000-49,000 fall chum salmon for the next 3 years. In addition to these escapement goals, there is a commitment to pass enough Chinook and fall chum salmon across the border to meet harvest share agreements.

The expected low return of Canadianorigin Chinook salmon in 2011 generated much discussion. Based on data compiled by the Panel's Joint Technical Committee, the 2011 Chinook salmon run is anticipated to be below average to poor. The Panel review of the Chinook salmon run outlook found that conservation of these salmon stocks will require very conservative management measures in 2011 to ensure an adequate return of Chinook salmon into Canada. Fishery managers in Alaska are gathering input from local fishers regarding salmon management strategies and options to assist in getting adequate numbers of Canadianorigin Chinook salmon to the spawning grounds. This is a challenging endeavor which is extremely important for sustaining future runs.

In addition to discussing biological and management issues, the Panel allocated over \$US 1 million for salmon and habitat Restoration and Enhancement Fund projects in both Alaska and the Yukon Territory. The Panel has allocated over \$US 8 million since 2002 to community-based projects, including stewardship projects, directly supporting the management and recovery of Yukon River salmon stocks originating in Canada. In 2011, these projects included test fisheries and population monitoring projects in Mountain Village, Rampart-Rapids, and Eagle in Alaska; and in communities within the Yukon drainage in Yukon Territory, both along the Yukon River Mainstem and tributaries, such as the Porcupine River. These communities include Dawson, Mayo, Old Crow, Teslin and Whitehorse.

Other restoration and enhancement projects involve the application of technologies to support fishery management. These projects include advanced genetic stock identification technology and salmon run counting techniques using sonar stations at the US-Canada border and within the Canadian portion of the system. All have assisted with monitoring escapement objectives set by the Panel.

A long range plan for guiding the R & E Fund was approved, following lengthy discussion. The Pacific Salmon Commission was selected as the administrator of the Yukon River Panel's R & E fund. The Pacific Salmon Commission currently administers the Northern and Southern funds of the Pacific Salmon Treaty.

Since signing of the Yukon Agreement in 2002, the Panel has set an example for cooperation in the sharing and management of international salmon stocks. The Panel, which operates under the umbrella of the Pacific Salmon Treaty, consists of 12 Alaska and Yukon Territory residents from throughout the Yukon River system, and is supported by regional advisors and scientists and managers from Canadian and United States agencies.

At its winter meeting in December, the Panel will review the status of the 2011 salmon runs and the management actions utilized in 2011. The Panel will also consider research proposals for 2012.

Contact: Craig Fleener 907-267-2228; Frank Quinn 867-393-6719 *S* 

### "PRE-SEASON MEETING..." continued from front page

and to share viewpoints amongst fishers and managers. As I write this, the St. Mary's and Nulato meetings have been held, and Ft. Yukon will be done by the time you read this.

Active fishers from surrounding villages were flown in to each meeting, and a number of locals in the host villages also came out. The first two meetings attracted 40-60 people each. In St. Mary's, equity in management and harvest throughout the river was by far the greatest concern, followed by sale of incidentally harvested king salmon, enforcement of the new mesh size, elimination of the fishing windows schedule, and concerns regarding Canada. In Nulato, the most repeated points involved salmon bycatch in the Bering Sea pollock fishery, the net exchange, customary trade, and the need for people up and down the river to work together.

On behalf of YRDFA I would like to sincerely thank the communities and Tribes that hosted these meetings, as well as all participants in this process who took their valuable time to come out, voice their ideas, and listen to others. If anyone has feedback on how to improve this process, please call me at 877-999-8566 ext. 105 or email jason@ yukonsalmon.org.

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### Yukon River Panel 2011 Restoration & Enhancement Projects Funded

| COUNTRY | PROJECT TITLE  | PROJECT PROPONENT                 |
|---------|--|-----------------------------------|
| US      | Technical Assistance, Development & Support – Fish Wheel Video | USFWS                             |
| US      | Rampart-Rapids Full Season Video Monitoring                    | Stan Zuray                        |
| US      | Eagle Sonar Operations   | ADF&G                             |
| US      | Mountain Village Coop Chinook Drift Test Fishery               | YDFDA                             |
| US      | Temperature Monitoring Select Yt R Tributaries (3 years)       | ADF&G                             |
| CA      | Mainstem Teslin River Sonar Project                            | B. Mercer                         |
| CA      | Spawning and Rearing Access Restoration                        | Dawson District RRC               |
| CA      | First Fish Youth Camp  | Tr'ondek Hwech'in FN              |
| CA      | Tr'ondek Hwech'in Student Steward                              | Tr'ondek Hwech'in FN              |
| CA      | Yukon First Nations Salmon Stewards Summit                     | Council of Yukon First<br>Nations |
| CA      | Klondike River Chinook Sonar                                   | B. Mercer                         |
| CA      | Blind Creek Chinook Salmon Enumeration Weir                    | Jane Wilson & Assoc.              |
| CA      | Chinook Sonar Enumeration Big Salmon River                     | Jane Wilson & Assoc.              |
| CA      | KDFN Michie Cr Salmon & Habitat Monitoring Project             | Kwanlin Dun FN                    |
| CA      | Ta'an Kwach'an Council Community Steward                       | Ta'an Kwach'an<br>Council         |
| CA      | Whitehorse Rapids Hatchery Coded Wire Tagging                  | YF&G Association                  |
| CA      | McIntyre Creek Salmon Incubation Project                       | NRI Yukon College                 |
| CA      | Yukon Schools Fry Releases & Habitat studies                   | Streamkeepers Nor<br>Soc          |
| CA      | Collection of DNA Baseline Samples                             | DFO and ADF&G                     |
| CA      | Stock ID Microsatellite Variation—Chinook & Chum Salmon        | DFO                               |
| CA      | Porcupine River Sonar Program–Chinook & Chum Salmon            | Vuntut Gwitchin Gov               |
| CA      | Ta'an Kwach'an Council Family Fish Camp                        | Ta'an Kwach'an<br>Council         |
| CA      | NND Youth Steward  | Na Cho Nyak Dun FN                |
| CA      | Yukon Fisheries Field Assistant Program (over 3 yrs)           | Yukon College                     |
| CA      | Chinook ASL Collection & Comparison                            | Gaetan Beaudet                    |
| CA      | Little Salmon Chinook Spawning Grounds Survey                  | G.Sandone                         |
| **      | Yukon River In-Season Management Teleconferences               | YRDFA                             |
| **      | Yukon River Educational Exchange                               | YRDFA                             |
| **      | Yukon River Summer Season Preparedness Process                 | YRDFA                             |
| **      | Science and Salmon Education Outreach Series                   | ADF&G                             |
| **      | Communications Projects  |                                   |
|         |  |                                   |

## Salmon Sign Jeopardy

A fun game to teach kids about traditional knowledge

BY BOB MASSENGALE, HABITAT COORDINATOR

A great way to keep kids entertained during a soggy spring day is to educate them about traditional ways of forecasting the salmon run by playing a few rounds of Salmon Sign Jeopardy.

This game is like the Jeopardy on TV, but it's more fun and affordable because you don't have to worry about finding a place for the TV host, Alex Trebeck, to stay, and the game questions are based on local knowledge that parents and grandparents have been teaching kids for years.

This activity can be done in classrooms, after school groups, camps, or at home with your children and their friends. The game needs a host and at least 3 teams of contestants to get going. A team size of 1 to 5 people works best. You can have as many teams as sanity will permit, but I've found things get pretty squirrelly after you have more than 5 teams.

#### Here's what you'll need to get started:

- Poster board or clear wall space to arrange questions and categories on (you could also write the categories and point values on a chalk board)
- Cards or paper for writing out questions
- A big marker
- Some tape to hang things up with
- A list of natural indicators from When Will the Salmon Come—create your own or contact YRDFA (optional)
- A 3 piece suit or fancy prom dress and nice hat for the game show host (optional)

#### This is how to set up the game:

1. The host will write questions on note cards or folded sheets of paper.

- 2. Turn the question card/paper over, and on the front of the card, write the point value of the question (100,200,300 or 400 points).
- 3.On the poster board, make several columns for the questions to be placed in. The columns can be given a specific theme, like "Insect Clues" for each type of insect related question, or they can just be given a generic column name like "Column B".
- 4. It's a good idea to have at least 20 questions about salmon and natural indicators. That way you can have 5 categories with four questions each. If you have more than 4 teams, or want to play a longer game, feel free to come up with more questions and categories.

#### Here's how to play:

The host will divide up the contestants after he or she has set up the Jeopardy board, or arranged the questions, point values, and categories in the room. Make sure that the host has the answer key before starting, or you won't have a leg to stand on when the kids argue with you for not giving them points for their wrong answer.

Once everything is set, the first team is called on to choose a question. They'll get together, decide on a category, and say something like "I'd like category B for 400 points, Mr. Host". Next, the card the first team selected is read aloud to the group. There's a time limit for groups to decide on the answer, usually about a minute, and the kids need to come to an agreement on what they all want to give as the answer. The host then checks the answer out, and if it's good, that team gets 400 points. The next team then gets a chance to select a question, and so on until the questions are all picked out. The team with the most points wins!

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