

YUKON RIVER RESTORATION AND ENHANCEMENT FUND  
**FINAL REPORT**

# Valued-Added Chum Products

NUMBER: CRE-124N-09



Submitted to: Yukon River Panel  
April 19, 2011

Prepared by: David Curtis  
P.O. Box 4, Dawson City, Yukon,  
(867) 993-3534, [uprivercf@gmail.com](mailto:uprivercf@gmail.com)

| <b>Table of Contents</b>                               | <b>Page</b> |
|--|-------------|
| <b>1. Abstract</b>                                     | <b>3</b>    |
| <b>2. Introduction</b>                                 | <b>4</b>    |
| <b>3. Objectives</b>                                   | <b>5</b>    |
| <b>4. Research</b>                                     | <b>6</b>    |
| <b>5. Training</b>                                     | <b>8</b>    |
| <b>6. Product Development</b>                          | <b>8</b>    |
| <b>7. Product Development &amp; Production Hurdles</b> | <b>14</b>   |
| <b>8. Marketing</b>                                    | <b>15</b>   |
| <b>9. Conclusions</b>                                  | <b>20</b>   |
| <b>10. Next Steps</b>                                  | <b>20</b>   |
| <b>11. List of Appendices</b>                          | <b>21</b>   |

## **1. Abstract**

The project's primary goal was to produce a sample array of value-added Chum Salmon products to demonstrate Chum's viability as a locally resourced table food.

Research and product development were undertaken; specialized equipment was purchased and food processing related training was completed. Two product brands were created - one for human food products, the other for pet food and treats. Chum salmon flesh was ground and used in custom developed recipes to make patties, jerky, sausages and "pepperoni sticks", while the processing by-product was used to make custom pet food and treats. These products were test marketed locally at a "Tasting Event". All this was undertaken in consultation with butchers, chefs and food health and safety officers. All processing, recipe development and packaging was completed in existing certified facilities in Dawson City and Whitehorse, Yukon.

Major project findings were that value-added Chum products could be successfully made and marketed regionally provided that:

1. A small dedicated fish processing plant is built in Dawson.
2. Stable Chum runs (allowing for at least a minimum of 1000 fish per commercial license) continue over the next three years.

The continuation of this project towards commercial viability primarily depends upon the harvest limits set by DFO over the coming years. These are based on observed run strength, which is of course variable.

## **2. Introduction**

This project arose because commercial openings for Yukon River Chinook have been rare occurrences in Canadian waters over the past 10 years. Commercial Fishers are, more often than not, only left with Chum salmon to catch and sell. Currently Chum is valued primarily as dog food and is considered less flavourful and visually attractive than Chinook. Many local salmon consumers don't even consider Chum edible. The need to change public perception of Chum as "table food" will require some effort; this report highlights efforts made via this project towards this goal.

Funding for the project was secured in 2009 and work commenced on the project in May of 2009.

Work was delayed in the fall of 2009 due to there only being one last minute four-day opening in October. This opening didn't provide a sufficient number of quality fish for the project to proceed as planned over the winter of 2009/10. Facilities and consultant scheduling issues also arose due to delays related to the lateness of the opening and so the bulk of the processing and production work had to be re-scheduled for the 2010/11 season.

Despite these set backs, progress was made in 2009/10 as is outlined in the report.

Work conducted throughout the project's duration included background research; product development and testing; equipment research and acquisitions; specialized training; fish processing facility tours; market research and ongoing dialogue with both Yukon and Federal authorities regarding health and safety issue.

The 2010 season provided better fishing opportunities and so I was able to complete my objectives over the 2010/11 winter as planned. A detailed account of this work is contained within the report.

I look forward to continuing to work on promoting Chum's value as a clean, nutritious, sustainably harvested, local food source; for the benefit of both my community and maintaining viable fisheries on the Yukon River. I appreciate the funding provided by the Yukon River Panel's R&E Fund and the support and understanding provided by both past and present DFO staff in Whitehorse.

### **3. Objectives**

- To explore the possibility of a viable Chum fishery in the Dawson region through the development of value-added products;

- Create a limited/ specialized trial product line of frozen raw Chum products;
- Establish a higher value for Chum as a table food source by demonstrating its culinary versatility;
- Develop a range of secondary value-added products from processing by-products
- Increase demand/interest in product in coming seasons;
- Explore the possibility of processing and manufacturing chum product locally using existing infrastructure;
- Explore an efficient and cost effective processing/manufacturing method;
- Research methodologies for processing by-products for other markets;
- Research existing value-added chum products from Alaska and BC and purchase sample product for quality analysis and marketing concepts.
- Research regional markets and establish baseline demand for value-added chum products.



Chum Fishing on Yukon River 2009

## 4. Research

Handling and Processing Procedures; Regulations; Equipment and Facilities, and Marketing

#### Internet research/online resources:

- The Canadian Council of Professional Fish Harvesters (CCPFH)
- Alaska Sea Grant Marine Advisory Program
- Alaska Seafood Marketing Institute
- BC Agri-food Knowledge Platform
- Canadian Food Inspection Agency
- Health Canada
- Sea Fisheries Institute of Gdynia Poland
- BC Centre For Disease Control
- Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations
- National Fisheries Institute
- Cornell Waste Management Institute

#### Site Tours:

- Santa's Smokehouse facilities in Fairbanks, Alaska.

Learned about small plant infrastructure, equipment, controls, workflows, environmental and processing monitoring, production procedures and plant safety. Owner/ operators Virgil and Miki Umphenour were very generous with both their time and knowledge. While their geographic location (Alaskan urban centre serving as a major transportation hub to the lower 48) provides them with immediate access to major markets, the marketing and distribution information they shared helped me better understand the limitations faced with being based in Dawson City.

- Icy Waters Processing facilities in Whitehorse, Yukon.

Plant Manager provided insights into small plant infrastructure and equipment requirements, plus workflow rationale and health and safety regulations.

#### Product Research:

- Online and retail outlets in Alaska and B.C. of value-added salmon products, including pet foods and treats, proved helpful in developing both recipes and marketing materials for both human and pet food products.

#### Composting Fish Waste Research:

- Internet research yielded a limited number of resources, but one helpful contact was Dr. Joe Regenstein, Cornell Professor of Food Science.
- Dr. Regenstein has researched and developed simple systems for fish waste composting for a range of operations from single person to large-scale

## Health and Safety Research:

- Health and Food Inspection Departments of Yukon and Federal Governments provided regulations and strategies for:
  - handling and processing procedures;
  - infrastructure and equipment;
  - labeling, packaging and shipping



Chum ready for processing – Yukon River

## 5. Training

- Summer, 2009 Level 1 Food Safe course.
- January 2010 Initial training in equipment maintenance and cleaning, meat processing and sausage making with Paul Derry.

- March 2011 continued training with Mr. Derry and covered custom sausage making, CFIA packaging requirements and options, safe handling and storage requirements for meat, shop cleaning and sanitizing procedures and techniques, etc.

## 6. Product Development

### Whole Head & Gutted (H&G) Fish and Fillets

Goal: Increase whole fish and fillet sales regionally.

Method:

- Offered fresh and frozen whole (H&G) Chum and limited number of fillets to local clients who regularly buy locally caught Chinook.

Challenges:

- Short opening at tail end of run in 2009 meant few quality fish were available for direct sales and for test products. The earlier Chum openings in 2010 provided for a greater number of “fresh” fish for direct sales.

Results:

- More and more people seem to have developed a preference for Chum over Chinook after having tried it.
- Absence of commercially available Chinook inadvertently increased sales of fresh and frozen Chum as table food by local consumers.

### Ground Product

Goal: To circulate ground product to local gourmets, cooks and members of the public to experiment with and promote as table food.

Method:

- Filleted and skinned select fish (firm fleshed); mince flesh in commercial grinder.
- Distributed 1 and 2 lbs frozen vacuum pack samples to testers.

Challenges:

- For some recipes excess moisture needed to be removed before use, which left meat tasting somewhat bland or non-descript.

Results:

- Product successfully used in recipes for: deep fried fish balls, crepe filling, pasta sauces and lasagna, meat loaf, burgers, chowders and soups.

- Worked well in recipes that used strong yet complimentary flavourings, example: zesty tomato sauce for pasta/ lasagna, cream sauce for crepes and spicy Thai-style salmon chowder. Fish flavour was present but not overwhelming, which appealed to people who prefer milder fish.
- Collected processing data that was used to calculate average percentages of flesh and waste products in relation to whole (H&G) fish (Appendix 01)

### Value-added Products

Goal: To develop a line of frozen value-added Chum products as table food (Appendix 02) .

### Patty/Burgers

Method:

- Experimented with various flavours to see what best complimented the salmon.
- Developed base recipes.
- Refined and created new recipes in consultation with Miche Genest and Antoinette Oliphant.

Results:

- Three initial recipes were developed in January 2011:
  - Spicy Thai Coconut Curry
  - Teriyaki Style
  - Lemon Dill
- February and March, 2011 worked with gourmet and culinary writer Miche Genest and developed a number of new “Northern” themed recipes:
  - Boreal (spruce tips, juniper berries, birch syrup)
  - Wild Sage and Almond
  - Morels, Blueberries and wine
  - Wild Mushrooms, Blueberries and Hazelnuts
  - “C” Cubed (Coconut, Coriander and Chillies)
- Expected ‘binding’ to be a challenge, but discovered that no binders (i.e. flour, breadcrumbs, etc.) were required.



Creating Recipes With Miche Genest – Fireweed Market Kitchen, Whitehorse, 2011

## Sausages

### Method:

- All sausages were made using 32-35 mm salted hog casings using a commercial sausage maker.

January 2010 worked with Paul Derry, Master Butcher at Bonanza Market

### Results:

- Three varieties of sausages were made using standard binder mixes for pork and beef sausages including: breakfast, dinner and spicy Italian.
- Discovered commercial binder blends and their suggested ratios were inappropriate for the milder flavour of fish.
- While some tasters liked the fact that the sausages didn't taste much like fish, most thought that the products were all too salty, and that the fish flavour should be more pronounced with complimentary spices.
- Of the three, Spicy Italian was the most popular and was found to work well in tomato based pasta sauces as well as on its own.

Jan. – Mar. 2011 Developed and refined custom recipes with Paul Derry

### Results:

- Five new custom sausage recipes created:
  - Hot Italian
  - Bratwurst
  - Cranberry, Rosemary, Almond
  - Morels, Caramelized Onion, Star Anise
  - Maritimer Mix (potato, butter, cream, tarragon)
- Discovered mix didn't require binding agents.

- Product fried up like regular sausages.
- Texture a bit 'spongy' in some cases.
- Traditional sausage processing techniques easily adapted to working with fish.

### Salmon Pepperoni Sticks

#### Method:

- Frozen ground Chum was delivered to custom sausage maker "Stacey's Butcher Block" in Whitehorse.
- Stacey made sample pepperoni sticks using standard recipes commonly used for his Bison Pepperoni Sticks.

#### Results:

- Two types of pepperoni - hot and medium
- Although this product is cooked and smoked, because it is made without added nitrites or other preservatives, it must be marketed as a frozen product;

### Jerky

#### Method:

- Ground product combined with flavouring ingredients.
- Processed through a sausage maker fitted with a jerky accessory to create uniform strips of meat.
- Strips refrigerated for 12+ hours to "set-up".
- Strips dried in a commercial dehydrator for 5 - 6 hours.
- Cooled, frozen and packaged.

#### Results:

- Six varieties of non-smoked jerkies were created:
  - Teriyaki
  - Cajun
  - Birch Syrup
  - Blueberry Birch Syrup
  - Curry
  - Blueberry, Hazelnut, Morel
- Initial feedback has indicated these products would be popular, especially with consumers looking for alternate to the salt, preservative and artificial ingredient heavy meat snacks commonly available.
- Made without any artificial additives, preservatives, or smoke means jerky cannot be sold un-refrigerated or unfrozen.

### Soup Stocks

#### Method:

- Soup stocks were made from bones and scrap flesh by-product from initial processing.

#### Results:

- Two variations were created
  - Traditional European (celery, onion, garlic, herbs, white wine)
  - Spicy Oriental (onion, garlic, ginger, chilies, spices, rice wine vinegar)
- Spicy Oriental worked well blended with meat stock for Wonton soup;
- A delicious Thai-style salmon chowder using coconut milk instead of dairy product was created with ground Chum added for extra body and flavour;
- Initial research indicates that fish stock would be a specialty item with limited regional demand.

### Salmon Cheeks

#### Method:

- Cheeks were manually harvested at time of heading and gutting using knives and sharpened spoons.
- Cheeks were later skinned and frozen for future use.

#### Challenges:

- Manually harvesting and processing is very time and labour intensive.
- No restaurant or retail outlet in Dawson currently caters to a clientele that could afford such a luxury item.

#### Results:

- Very popular with testers for both flavour and texture.
- Cheeks could possibly be commercially harvested providing there is a mechanical process for removing them from the head and skinning. Further research would need to be conducted if this were to be pursued.
- Marketing to elite niche markets is expensive and risky, so this will not be pursued in the near future unless chance opportunities present themselves for consideration.

### Salmon Hearts

#### Method:

- Hearts were manually harvested at time of heading and gutting and later frozen for future use

Challenges:

- Same as with cheeks (see above)

Results:

- Less popular than cheeks.
- Small size would require yields of fish well beyond our fisheries capacity to harvest enough to make it economically viable.
- Exotic product with no foreseeable local market.

### Pet Food and Snacks

Method:

- Fins, skin, bones and left over flesh were boiled with rice and oats and then put through a grinder resulting a mash.
- Mash was frozen in packs of 4 -8 lbs 100g balls as dog food.
- Mash was formed in three sizes of “cookies” and baked until hard and dry.
- Skin and tails made into chew treats and “leather” by drying in dehydrator.
- Samples distributed to cat and dog owners in Dawson and Whitehorse.

Challenges:

- All processing was manually done and required considerable time, effort and energy consumption (boiling, baking, freezing).

Results:

- Baked “cookie” treats, dried chew treats and mash food all hugely popular (and addictive..) with the dogs and cats who sampled them.
- Further processing research, experimenting and testing needs to be conducted to determine ways of streamlining production and increasing efficiencies in all stages of production.



Chum Dog Biscuits Cooling

## **7. Product Development & Production Hurdles**

- Need to ensure that water used for field dressing meets YG and CFIA standards for potability. Creek water currently used needs to be filtered through a 1 micron pre-filter followed by a UV filter rated to a minimum of 5 GPM. This will require

- Use of existing commercially certified kitchen facilities in Dawson and Whitehorse has worked for the Research & Development (R&D) phase of the project with small batch processing. These same facilities would prove to be both too cumbersome and uneconomical for processing on a commercial level due to lack of specialized equipment and infrastructure (i.e. walk-in blast freezer/ refrigerator units, fish processing tables, loading dock, spray hoses, concrete floor with trough style drain, etc.).
- Current unpredictability of commercial openings poses the largest hurdle to pursuing commercial production of value-added products at this time. Further investment of both time and finances will be dependent on the health of the run and management regimes over the next three years.
- Meeting CFIA standards regarding shipping and distribution of the proposed human food products requires a guarantee that the product is shipped in a manner which maintains specific temperature (-18 C or colder) controls and monitoring (shipper records and/ or disposable temperature data logger attached to product). Logistics and costs of refrigerated transport from Dawson to other destinations may prove cumbersome and expensive as refrigerated freight trucks (reefer units) leaving Dawson do not run cooling units on “back haul” runs.
- Distribution of test products to the Whitehorse market had to be put on hold until a reasonable solution to the shipping issue is found. YG Environmental Health requires adequate controls and procedures be in place before this can happen. Solutions (i.e. enclosed trailer with small generator powering a chest freezer) are being considered.

## 8. Marketing



Figure 1



Figure 2

#### Product Branding and Identity

- All products will be produced under the company label “Up River”.
- Food products will be branded under “Up River” (Figure 1).
- Dog treats will come under “Russ’ Chum Treats” (Figure 2).
- Initial work on a separate and distinct brand for the food products called “Chum King” (Appendix 03), was dropped for the cleaner and less perplexing “Up River” brand.
- Logo finalized and first run sample labels are being used on test products.

#### Market Research

- Conducted informally and formally with Dawson retailers, restaurants and local consumers 2009 -2011.
- “Tasting Event” March 2011 had 80 plus people attend with 412 feedback survey forms (Appendix 04) completed for the 18 featured products.
- Results of tasting feedback provided direction for which products may be best suited for the Dawson market. (Appendix 05)
- Consultations with Paul Derry of Bonanza Market provided insights into wholesale/ retail pricing structures and was used to establish baseline wholesale and retail pricing table for current products. (Appendix 06)
- 1 lb vacuum packs of frozen ground product were distributed at Tasting Event with a request for feedback to be emailed in. Feedback from this effort is starting to come in. It is hoped that this will help increase Chum sales this fall, pending openings.

## Regional Marketing Strategies for Ground Product, Patties, Jerky and Sausages

### Direct Sales

#### Challenges:

- Production dependent on there being an opening for Chum and of a sufficient number, to accommodate stockpiling frozen fish for scheduled production runs over the winter.
- Producing enough stock to reliably supply wholesale clients, both seasonal and year-round.

#### Strategies:

- Market locally through current whole chum clients via personal contact and email.
- Word of Mouth - as these clients become more familiar with the value-added products they will become my best “sales agents”.
- Keep “regular” local clients up to date on the status of the run leading up to season.
- Take “advance orders” in the event that run forecasts look healthy and/ or commercial openings are sufficient to allow for scheduled production runs over the winter.
- Local advertising via posters and local media (pending run) to offer direct sales to general public.

### Whole Sale Marketing

#### Challenges:

- Consultation with local retailers has resulted in the conclusion that it would be unproductive, and possibly counterproductive, to engage in wholesale marketing at this time without assurances of regular, let alone long-term, supply. If a retailer is to carry Up River product it will likely have to displace another product to make room for it. Without being able to provide a guaranteed supply of product most retailers are hesitant to take the risk of giving up profitable shelf space.
- Restrictions by YG Health and Environment due to concerns over the use of untreated water when field dressing (H&G) our catch and the transportation and distribution of our frozen food products without adequate controls and monitoring in place. These restrictions prevented us from realizing our plan to distribute test products to Whitehorse restaurants and retailers we'd contacted (Appendix 07). Without the feedback this would have provided we were unable to establish the baseline demand for Up River value-added products (Appendix 08).



Tasting Event – Dawson City, YT 2011

#### Strategies:

- Should the 'run' prove strong enough to provide for regular production runs exceeding "Direct Sales" demand, then wholesale marketing strategies would include:
  - Prioritizing and targeting local retailers and restaurants willing to accommodate our seasonal/ specialty products.
  - For Whitehorse market the focus would be on direct sales first and advance to wholesale initiatives only once refrigerated transportation and distribution issues have been resolved.
- "Northern" themed products offer great potential for the Yukon's tourist market. In the next phase of this project I will explore producing custom products specifically designed and packaged to capitalize on the tourist market.
- Establish contacts and build relations with Yukon companies that are tied into the corporate gifting industry.
- Coordinate a "Tasting Event" in Whitehorse and invite distributors, retailers and restaurateurs to provide feedback and build business relationships.

#### Buying Club

- A model currently used by a Whitehorse egg producer. Consumers pay a \$20 membership fee to join the club and then place orders directly with the producer. "Members" pick up and pay for their orders at the Yukon Made Store. The store

- The Yukon Made Store could offer an excellent opportunity to “soft launch” the brand in Whitehorse and provide a base from which to launch the food products line once the transportation issues have been addressed.

### Pet Food and Snack Products

#### Direct Marketing:

- The popularity of these products with pets and their owners has been overwhelming. Samples have been given to a range of pet owners, from people who have just one pet through to Mushers with 20+ dogs. So far not a single animal has responded negatively. As runs stabilize, efforts to enhance direct sales will include posters, mail outs and regional media.
- Once a regular client base is established development of a direct sales network in Whitehorse will follow, starting with the Yukon Made Store.

#### Wholesale Marketing:

- Once confident about increasing production, while still meeting the demand of regular direct sales clients, marketing will expand to Whitehorse pet food retailers, kennels and Veterinarian clinics.

#### Sponsorship Promotions:

- Donated Russ’ Chum Treats to Percy DeWolfe Dogsled Race for sale at their fundraiser concession during the Dawson leg of the Yukon Quest.
- Donated Russ’ Chum Treats and frozen dog food to Percy DeWolfe Dogsled Race to as prizes for their annual post-race dinner.
- Currently exploring promotion and marketing opportunities with other races and events to gain access to the mushing and pet owner communities.

### Marketing Conclusions

- Unreliability of product availability poses many problems from a “long-term” marketing point of view:
  - brand dependability and loyalty;
  - establishing long-term marketing goals;

- financing advertising budgets;
- developing new marketing initiatives;
- product diversification;
- capitalizing on emerging markets;
- customer development, service and support;
- sponsorship and promotions initiatives
- All clients must be informed regarding product availability being contingent on health of the run and that this will mean that products will be produced on a year-to-year basis.
- All marketing materials need to highlight key terms such as “Locally Sourced”, “Yukon Made”, “All Natural”, “Healthy”, “Gluten/ Dairy/ MSG Free”, “No Nitrates or Nitrites Added” and “Sustainably Harvested” where applicable.
- All retail and sponsorship signage requires brands to be displayed as large as possible with “Locally” or “Yukon Made” integrated into signage.
- A website needs to be created that provides the story behind Up River, product information, suggested servings, nutritional information, recipes and testimonials from clients, contact information and links to retailers and related websites.
- Future opportunities for publicity (see below) and promotion (i.e. cooking classes and demonstrations, featured menu item in restaurants, testimonials from Chefs and Gourmets, etc.) of Chum as a table food will be pursued whenever possible.

### Publicity Garnered To Date

- Story of Up River efforts to promote the Chum as table food and four recipes featuring Chum were included in Miche Genest’s cookbook “The Boreal Gourmet” published in 2010 (Appendix 09).
- Miche is now championing the flavour and versatility of Chum through her cooking courses, website (see <http://www.borealgourmet.com/new-writing-cooking/2010/7/10/four-menus.html>) and culinary articles she writes for various publications.
- An article on Up River and Chum is to be included in a new book on preserving food published by the Fireweed Market in Whitehorse. The article will also include a recipe for making jerky from Chum.
- (Potential) Editor of What’s Up Yukon wants to do an article on Up River during this year’s Chum run.

## **9. Conclusions**

Local retailers and restaurateurs are currently more interested in smoked and jerked salmon products over other value-added products. This may be based on “traditional” perceptions of Chum, rather than on personal experience with eating fresh or previously

frozen fish. I will continue to work with these people to expand their understanding of the quality of Chum and of the value of the “non-traditional” uses of it.

Dawson consumers are starting to purchase more Chum as a result of a lack of Chinook and increased awareness of the virtues of Chum as a table food. Hopefully the resulting work undertaken through this project will do the same for consumers in Whitehorse and the communities.

Shifting people’s perceptions of Chum from only being good enough for dogs and moving it towards its rightful place as a healthy and tasty regionally sourced table food will take much more effort, time and resources. So long as there are healthy runs of Chum salmon that allow for sustainable commercial harvests, I will continue to champion it as a quality regionally sourced food, and take every opportunity to promote it as a commercially viable product.

## **10. Next Steps**

- Continue to refine recipes and products (ongoing).
- Acquire and install water filtration system at fish camp (1 micron pre-filter followed by a UV filter) and infrastructure (generator, pump, tanks, hoses and fittings) to be installed at or near our fishing grounds.
- Produce stockpile of frozen food test products for continuing market research (ongoing).
- Produce stockpile of pet food/ snack products for direct sales over the summer (ongoing).
- Build on current client base and increase demand for fresh and frozen whole fish leading up to 2011 season (ongoing).
- Inform other commercial fishers of my research and work to date and gain their assistance in building a food market for their Chum catch.
- Investigate partnering and financing options for building and outfitting a small processing plant that will include a walk-in blast freezer and cooler, standard processing equipment and infrastructure plus a small commercial kitchen facility.
- Continue dialogue with health and environment agencies to improve local understanding of the handling and processing of fish (ongoing).
- Continue research into composting fish waste and potential markets for it and develop plans for implementation with existing community infrastructure (i.e. community garden and greenhouse projects).

## **11. Appendices**

Appendix 01: Summary report on primary processing

Appendix 02: List of value-added products and ingredients

Appendix 03: Graphic design sheet for Chum King logos

Appendix 04: Tasting Event sample feedback form

Appendix 05: Tasting Feedback Results  
Appendix 06: Wholesale/ Retail pricing index  
Appendix 07: List of potential wholesale clients contacted in Whitehorse  
Appendix 08: Sample survey form for wholesale clients  
Appendix 09: PDF of pages from The Boreal Gourmet cookbook

## **Appendix 01**

### **Summary Report on Primary Processing CRE\_124N\_09**



**Submitted by David Curtis  
February 21, 2011**

The following is a summary of the results of primary processing of Chum Salmon in relation to the value-added products being created as a component of project CRE\_124N\_09.

1. Fish were caught in gillnets on the Yukon River and field dressed (headed/ gutted). Gills were removed from head and disposed. When feasible cheeks were harvested and heads were frozen and sold directly to Musers as dog food. Hearts were harvested for personal consumption. Roe and livers were harvested and frozen for use in R&D for dog food and treats. Remaining viscera was disposed of.

a. Average weight of whole fish before field dressing (headed/ gutted):  
3.8 kg.s / 8.5 lbs.

b. Average weight of field dressed fish (headed/ gutted):  
1.9 kg.s/ 4.2 lbs.

c. Field dressed (H&G) fish averaged 49% by weight of average whole fish.



2. Field dressed fish were frozen and later filleted and skinned. De-boned and skinned flesh was then ground and used to develop recipes (ongoing) for a range of value-added products including jerky (dried/ not smoked), pepperoni sticks (smoked and cooked), frozen uncooked burgers/ patties, and frozen uncooked sausages.

a. Average weight of field dressed fish (headed/ gutted):  
1.9 kg.s/ 4.2 lbs.

b. Average weight of flesh per fish after filleting and skinning:  
.770 kg.s/ 1.7 lbs.

c. Flesh recovered as percentage by weight from average H&G fish = 40.5%

d. Flesh recovered as percentage by weight from average whole fish = 20.3%

3. All processing trimmings (skin, fins, bones and remaining flesh) were cooked with rice and oats and ground through a meat grinder. The resulting mash was then frozen into 2.23 kg.s blocks and 100 gr. balls as dog food, and formed into round biscuits and baked as dog treats.

a. Average weight of trimmings per fish recovered from filleting and skinning H&G fish:

1.1 kg.s/ 2.46 lbs.

b. Average trimmings recovered as a percentage by weight from average H&G fish = 59.5%

d. Average trimmings recovered as a percentage by weight from average whole fish before H&G = 28.7%



#### 4. Summary Table

| Summary of Primary Processing Table #1 | Whole Fish | Headed & Gutted | Boned & Skinned Flesh | Trimmings From Filleting |
|--|------------|-----------------|-----------------------|--------------------------|
| Average weight (kg.s/ lb.s)            | 3.8/ 8.5   | 1.86/ 4.16      | .770/ 1.7             | 1.1/ 2.5                 |
| Average weight (as % of whole)         | 100%       | 49%             | 20.30%                | 28.70%                   |

## Appendix 02

### Value-Added Chum Products Ingredients List:

#### Pepperoni

1. **Pepperoni Sticks** Hot - Salmon, salt, pepper, spices, naturally smoked
2. **Pepperoni Sticks** Medium - Salmon, salt, pepper, spices, naturally smoked

#### Jerky

1. **Teriyaki** – Salmon, soy sauce, brown sugar, salt, pepper, lemon juice, fresh ginger, fresh garlic, chili flakes
2. **Cajun** – Salmon, Uncle Berwyn's Birch Syrup, Cajun seasoning (no MSG), brown sugar, pepper, salt, chili flakes, garlic powder, sesame oil
3. **Birch Syrup** – Salmon, Uncle Berwyn's Birch Syrup, brown sugar, ginger powder, salt, pepper
4. **Blueberry Birch** – Salmon, wild blueberries, Uncle Berwyn's Birch Syrup, fresh ginger, lemon juice, salt
5. **Curry** – Salmon, curry powder, brown sugar, salt, pepper, lemon juice, chili flakes, garlic powder
6. **Blueberries, Hazelnuts, Morels** - salmon, white wine, salt, pepper, birch syrup.

#### Burgers

1. **Morels, Blueberries & Wine** – Salmon, wild morel mushrooms, wild blueberries, white wine, onion, bread crumbs, olive oil, fresh garlic, soy sauce, anise, salt, pepper
2. **Wild Sage & Almonds** – Salmon, almonds, onion, wild sage, garlic, salt, pepper
3. **The Boreal Burger** – Salmon, onion, spruce tips, Uncle Berwyn's Birch Syrup, dried juniper berries, lemon peel, garlic
4. **Wild Mushroom, Blueberries, Hazelnut** – Salmon, dried wild blueberries, toasted hazelnuts, Shaggymane and Morel mushrooms, onion, bread crumbs, garlic, salt, pepper
5. **"C" Cubed Burger** (Coconut, Coriander and Chilies) – Salmon, cilantro, unsweetened coconut, coconut milk, chilies, coriander seed, lime juice, garlic, salt, pepper

## **Sausages**

1. **Maritimer Mix** - Salmon, potatoes, butter, cream, salt, pepper, parsley, garlic, onions, tarragon.
2. **Bratwurst** – Salmon, white wine, salt, pepper, sugar, coriander, marjoram, mace
3. **Hot Italian** – Salmon, pepper, fennel, chili flakes, coriander, paprika, fresh garlic, salt, marjoram, olive oil.
4. **Morels, Caramelized Onions & Star Anise** - Salmon, morels, garlic, caramelized onions, sage, pepper, salt, white wine, olive oil, star anise.
5. **Cranberry, Rosemary & Almond** – Salmon, low bush cranberry, almonds, salt, pepper, rosemary, white wine, olive oil, lemon.

Appendix 03



Appendix 04

Product Name:

Ingredients:

Please tell us how you would rate each of the products for the following attributes:

|            | Very Attractive       |                       | Neutral               |                       | Not Attractive at all |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|            | 1                     | 2                     | 3                     | 4                     | 5                     |
| Taste      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Appearance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Texture    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Do you have any suggestions on how we might improve this product?

---

---

---

Suggested product name? \_\_\_\_\_

What price would you consider reasonable for a package of \_\_ of this product?

---

Other comments? \_\_\_\_\_

---

---

## Appendix 05

| <b>Up River Sample Tasting Feedback Results</b> |                     |                             |                      |
|---|---------------------|-----------------------------|----------------------|
| Product Type                                    | # of Feedback Forms | # of "Very Appealing" Votes | Popularity Placement |
| <b>Burgers:</b>                                 |                     |                             |                      |
| Wild Sage, Almond                               | 17                  | 12                          | #1                   |
| Mushroom, Blueberry, Hazelnut                   | 25                  | 16                          | #2                   |
| C Cubed   | 28                  | 16                          | #3                   |
| The Boreal                                      | 18                  | 9                           | #4                   |
| Blueberry, Morel, Wine                          | 16                  | 6                           | #5                   |
| <b>Sausages:</b>                                |                     |                             |                      |
| Morel, Onion, Star Anise                        | 29                  | 20                          | #1                   |
| Hot Italian                                     | 27                  | 16                          | #2                   |
| Cranberry, Rosemary, Almond                     | 24                  | 10                          | #3                   |
| Bratwurst                                       | 27                  | 10                          | #4                   |
| Maritimer                                       | 18                  | 5                           | #5                   |
| <b>Jerky:</b>                                   |                     |                             |                      |
| Blueberry, Hazelnut, Morel                      | 32                  | 27                          | #1                   |
| Birch Syrup                                     | 29                  | 22                          | #2                   |
| Cajun   | 20                  | 13                          | #3                   |
| Teriyaki  | 30                  | 19                          | #4                   |
| Blueberry Birch                                 | 12                  | 5                           | #5                   |
| Curry   | 21                  | 8                           | #6                   |
| <b>Pepperoni Sticks:</b>                        |                     |                             |                      |
| Spicy   | 24                  | 11                          | #1                   |
| Medium  | 15                  | 3                           | #2                   |
| Total Forms Completed                           | 412                 |                             |                      |

## Appendix 06

## Wholesale/ Retail Pricing Projections

| Product type                | Quantity                          | Wholesale | Retail  |
|-----------------------------|-----------------------------------|-----------|---------|
| Frozen Plain Ground Product | 446g/ 1lb pack                    | \$6.00    | \$8.59  |
| Frozen Un-cooked Burgers    | 4 pack (4 x 110g/ 1/4lb patties)  | \$9.00    | \$12.99 |
| Frozen Un-cooked Sausages   | 4 pack (4 x 110g/ 1/4lb sausages) | \$9.00    | \$12.99 |
| Jerky                       | 446g/ 1lb                         | \$27.00   | \$38.59 |
| Pepperoni Sticks (smoked)   | 446g/ 1lb                         | \$18.00   | \$25.59 |
| Frozen Pre-cooked Dog Food  | 4 balls = 446g/ 1lb               | \$2.00    | \$2.89  |
| Frozen Pre-cooked Dog Food  | 20 balls = 2.23kg/ 5lb pack       | \$8.00    | \$11.49 |
| Baked Dog Biscuits (large)  | 12 biscuits = 446g/ 1lb           | \$7.00    | \$10.00 |
| Baked Dog Biscuits (small)  | 48 biscuits = 446g/ 1lb           | \$7.00    | \$10.00 |

## Appendix 07

## **Whitehorse Contacts**

The following businesses were contacted to see if they would be interested in participating in a survey of the value-added chum products. All of the businesses agreed to and were interested in participating in the survey.

| <u>Name</u>         | <u>Email</u>  | <u>Head Chef or Owner</u> | <u>Phone</u> |
|---------------------|---|---------------------------|--------------|
| Whitehorse Westmark | <a href="mailto:whmhs-chef@hollandamerica.com">whmhs-chef@hollandamerica.com</a>  | Michael                   | 393-9710     |
| Georgio's           |   | George Lavitus            | 668-4050     |
| Chocolate Claim     | <a href="mailto:chocolateclaim@northwestel.net">chocolateclaim@northwestel.net</a>  | Judith Van Goulick        | 667-2202     |
| Baked Café          | <a href="mailto:jack@kza.yk.ca">jack@kza.yk.ca</a>  | Jack Koubiashi            | 633-6291     |
| Yukon Meat&Sausage  | <a href="mailto:ykmeat@polarcom.com">ykmeat@polarcom.com</a>  | Sandra Wohlfarth          | 667-7583     |
| Riverside Grocery   | <a href="mailto:Leona@riversidegrocery.ca">Leona@riversidegrocery.ca</a>  | Leona                     | 667-7712     |
| Yukon Inn           | <a href="mailto:mgigNac51yt@yahoo.ca">mgigNac51yt@yahoo.ca</a>  | Michael Gignac            | 667-2527     |
| High Country Inn    | <a href="mailto:chef@highcountryinn.yk.ca">chef@highcountryinn.yk.ca</a>  |                           | 667-4471     |
| Gold Rush Inn       | <a href="mailto:chef@goldrushinn.yk.ca">chef@goldrushinn.yk.ca</a><br>or <a href="mailto:minichef@live.com">minichef@live.com</a> | Lailand Koss              | 668-4500     |

## **Appendix 08**



*RESTAURANTS, HOTELS & CATERERS SURVEY*

*Up River Fishing is presently in the test phase of developing a line of value-added chum fish products. Your participation in the survey will help us refine our recipes and direct and guide our product's development. We thank you and appreciate the time you are taking to provide us with valuable feedback.*

*Of the products sampled, please check the box beside those you feel might best suit your clientele.*

***Jerkey***

- 
- 
- 

***Pepperoni***

- *Hot/Spicy*
- *Mild*

***Burgers***

- 
- 
- 

***Sausages***

- 
- 
-

*Do you have any advice, or would like to offer any suggestions, on improvements that would make any of these products more viable for your market?*

**Jerkey**

---

---

**Pepperoni**

---

---

**Burgers**

---

---

**Sausages**

---

---

*Of these products, do you currently carry a comparable product? If so, which products?  
Answer Yes or No.*

**Jerky**\_\_\_\_\_

**Pepperoni**\_\_\_\_\_

**Burgers**\_\_\_\_\_

**Sausages**\_\_\_\_\_

*Who are your current suppliers for the products you identified above?*

**Jerky**\_\_\_\_\_

**Pepperoni**\_\_\_\_\_

**Burgers**\_\_\_\_\_

**Sausages**\_\_\_\_\_

*If you were to order any of these products how would you prefer them to be packaged?*

**Jerky**

\_\_\_\_\_ *Plastic bag enclosed in cardboard box*

\_\_\_\_\_ *Single packages/small portions, vacuum packed*

**Pepperoni**

\_\_\_\_\_ *Plastic bag enclosed in Cardboard box*

\_\_\_\_\_ *Single packages/ or small portions vacuum packed*

**Burgers**

\_\_\_\_\_ *Plastic bag enclosed in Cardboard box*

\_\_\_\_\_ *Single packages/ or small portions vacuum packed*

**Sausages**

\_\_\_\_\_ *Plastic bag enclosed in Cardboard box*

\_\_\_\_\_ *Single packages/ or small portions vacuum packed*

*If you were to purchase any of these products in BULK, what quantity would you prefer to purchase them in?*

*Burgers:*

☐ *5kg box*

☐ *10 kg box*

*Sausages:*

☐ *5 kg box*

☐ *10 kg box*

*Pepperoni/Jerky:*

☐ *5 kg box*

☐ *Other? \_\_\_\_\_*

*Do you have any other comments, suggestions or ideas you would like to share with us regarding the development of these value-added salmon products or the potential for use/sale in your business?*

---

---

---

---

*THANK YOU again for taking the time to respond to the survey!*

Appendix 09

## Chum Salmon

David Curtis loves chum salmon. The former arts administrator, fine art teacher, film festival founder and visual artist from Dawson City has now transmogrified into an enthusiastic commercial salmon fisher, with a small fish camp on an island on the Yukon River south of Dawson. David is convinced that chum, long considered the least interesting salmon in the pantheon of sockeye, coho, chinook and pink, gets a bad rap, and it is undeserved. He and his partner Chris Clarke are in the first stages of building a small company, testing recipes and developing frozen and fresh chum and chinook dishes and products that will eventually be available in retail outlets and by mail order.

We've been talking about doing a chum hand over for a couple of years so I could experiment and report back, and in the fall of 2009 we finally got the chance. At first it didn't look like there would be a chum season at all on the Yukon River, the numbers were so low, but early in October a short chum opening was finally announced and David and Chris rushed out to their camp, travelling through a blizzard in their open boat. Two weeks later he showed up at my house with two nice-sized chum, about four pounds each, and gave me a lesson in chum preparation, including filleting, and I actually got the hang of it. (David had just bought a brand-new filleting knife from the local kitchen supply store, and he was quite excited about it.) One of the things about chum that turns people off, he said, is the thick slime that covers the outside of the fish. He held a fish firmly under the gills over the sink and scraped downwards, and a coating of slime rippled in waves down the fish and off the tail into the sink. He scraped and rinsed and scraped and rinsed and finally the fish was relatively free of slime, enough so that it wouldn't slide on the cutting board while he filleted. (A splash of white vinegar applied directly to the counter then wiped off with a sponge, followed by hot water, is an effective cleaner.) We skinned two fillets, left the skin on the other two because I intended to smoke them, and I tucked them away in the freezer.

David separated the fins and tail from the bones, and with the bones I made a beautiful delicate stock and turned it into chowder the next day, with some left over baked

sockeye. He and Chris are going to turn their scraps into commercial dog biscuits.

A few days later, I tried a method I'd read about in Paula Wolfert's *The Slow Mediterranean Kitchen* and which seems to be making the rounds of the cooking shows these days: salmon poached in olive oil. It worked beautifully with the skinned fillet, and allowed the mild, sweet flavour of the chum to shine, unadorned. Chum is more delicate than the other salmons in both colour and flavour, and to my palate tastes closer to trout than salmon. The trick is to keep a close eye on the temperature of the oil, and never let it get above 155F (68C). This way the fish really is poached, not deep fried.

The second chum recipe included here I owe to my friend Janet Moore, a former Yukoner who has now relocated to the wilds of the Madawaska Valley in Ontario, and with whom I shared many a culinary adventure in the good old days when she lived just up the hill in Hillcrest on the ridge that overlooks Whitehorse. Janet left a message on my voicemail that was basically a list of ingredients and a shorthand methodology: halibut wrapped in prosciutto, seared then cooked in a hot oven with black olives, cherry tomatoes, capers, onions and basil or cilantro. This sounded tailor-made for David's chum, and it was.

## CHUM POACHED IN OLIVE OIL

---

Rinse the pieces of fillet and dry thoroughly. Pour the oil into a deep-sided saucepan and heat slowly to about 130F (55C). Slide the pieces of fish gently into the oil—you'll find that the temperature of the oil suddenly increases by 30 to 40 degrees and then subsides to about 155F (65C).\*

Poach the salmon for 10 to 12 minutes, and then remove the saucepan from the heat and let the fish continue cooking for 2 to 3 minutes. Remove the fish from the oil and let sit for a couple of minutes on a paper bag before serving.

*\*This is counter intuitive, you'd expect the temperature to decrease. But the moisture in the fish causes the oil to bubble up rapidly, and the intense activity raises the temperature of the oil.*

*Makes four servings*

**1½ lb (680 gr) skinned chum fillet, cut into 4 pieces**

**2½ cups (600 mL) good quality olive oil**

Paula Wolfert suggests cooking a branch of thyme and three cloves of garlic in the oil for 10 minutes, removing them before adding the fish. I did this, but didn't discern any noticeable fragrance or taste in the fish, and so I've left out that step. But a good quality olive oil is essential here. (Oil can be strained through a coffee filter, stored in the fridge and used again to poach another fish, but takes on a fishy odour after a couple of weeks, whether it's used for more poaching or not. Taste before using a second time.)

# CHUM WRAPPED IN PROSCIUTTO AND BRAISED IN TOMATOES, OLIVES AND CAPERS

1 lb (454 gr) chum fillet, cut into 4 pieces  
8 slices of thinly-sliced prosciutto or Westphalia ham  
2 Tbsp (30 mL) olive oil  
4 spring onions, chopped  
2 cloves garlic, minced  
2 cups (475 mL) cherry tomatoes, halved  
½ cup (125 mL) Kalamata olives, pitted and roughly chopped  
2 Tbsp (30 mL) capers  
Pepper to taste  
½ cup (125 mL) chopped fresh basil or cilantro  
½ cup (125 mL) white wine

Preheat oven to 400F (205C). Wrap each piece of chum in two pieces of prosciutto, one slice lengthwise and one crosswise, pulling tightly, and press the meat onto itself so it seals. Sear the packages of prosciutto and fish in olive oil in an oven-proof frying pan or casserole over medium heat for 2 minutes each side, remove from heat and reserve. In the same oil (add another splash, if necessary) over medium-low heat, sauté the spring onions for 2 minutes then add the cherry tomatoes and cook for another 5 minutes.

Add the olives and capers, pepper, wine and the basil or cilantro. Cook for 2 minutes more, then slide the prosciutto and fish packages in with a spatula. Spoon some sauce over each piece of fish, place the dish in the oven uncovered and cook for 15 minutes. Remove from the oven and let sit for a further 5 minutes in the sauce to finish cooking—this way you avoid over cooking.

Serve with pasta tossed with oil and garlic and a green salad.

*Makes four servings*



## SIMPLE BUT EXCELLENT SALMON STOCK

---

Heat the butter and oil in a pot over medium-low heat; add vegetables all at once, stir and cook without browning until soft, 10 to 12 minutes. Add white wine or lemon juice, stir, and cook for another 2 minutes. Add salmon scraps, bay leaf and enough water to barely cover. Bring to a boil and cook over medium heat for about 30 minutes. Remove from heat, strain, cool and refrigerate.

Makes about 8 cups (2 L) stock

2 lbs (900 gr) salmon scraps, meat, bones, head and fins (if your salmon is chum, just use the bones and flesh, not the skin; it's slimy and doesn't taste great)

1 medium onion, diced

1 medium carrot, diced

1 stalk celery, diced

2 Tbsp (30 mL) olive oil or half oil, half butter

1 bay leaf

Optional:

Splash of white wine or juice of  
½ lemon



A Yukon fisherman sets his nets.