# Analysis of State Revenue from Fisheries

## Upper Cook Inlet, 2014

Ninilchik Harbor, photo by Kyle Martin

**United Cook Inlet Drift Association**

**2015**

# Analysis of State Revenue from Fisheries

## 1. Introduction

The reality of the economic circumstances facing Alaska requires more than a cursory review of direct revenues generated by one of Alaska's greatest natural and renewable resources - Alaskan seafood. The Alaska commercial seafood industry is the State's second largest industry, the largest employer and a major generator of State tax revenue. Alaska's fishery resources have the potential to provide an even greater benefit to the State treasury. This analysis uses the 2014 Upper Cook Inlet (UCI) salmon fishery to demonstrate additional revenue options and why a comprehensive review of State fishery economics is needed. Results and conclusions from this review provide examples of the types of returns we could expect from other fisheries State-wide.

The greatest value to the State from its' fishery resources will not be realized until the Alaska Department of Fish & Game (ADF&G) and the Board of Fisheries (BOF) incorporate a business model approach to every management policy and plan. Fisheries management needs to be focused on fully utilizing these renewable resources with the understanding that allocation and daily management decisions have direct economic consequences to the welfare of the State. Taxes, licenses and permit fees should be adjusted so that all resource users share in the necessary cost of management.

To illustrate these concepts, this analysis examines the results of changing taxation revenue, license fees and monetizing unharvested surplus salmon. A retrospective analysis based on the fully documented 2014 UCI salmon fishery was chosen over projecting into an uncertain future. The 2014 UCI salmon fishery is the latest year for which harvest data is complete. This retrospective analysis will provide the reader an estimate of State revenues resulting from applying a series of revenue options to the 2014 UCI salmon fisheries. There are several options for additional revenue under consideration. First, a review of unharvested salmon stocks, monetizing the economic value they represent and increasing the commercial fishery business tax to 4%; second, increasing the sport fishing license by $5 for resident and $10 for non-resident anglers; third, implementing a new $30 fee for each original dipnet permit.

In this analysis, the effects on direct State tax and license revenue from UCI salmon fisheries would be:

- Harvesting surplus salmon for an additional $1,505,000 at the current tax rate;
- Applying a 1% increase to the Commercial Fishery Business Tax Rate for an additional $350,000 in commercial revenue and $1,715,000 in revenue from the unharvested salmon, totaling $2,065,000 in new revenues;
- Applying a $5 resident and a $10 non-resident sport fishing license fee increase for $900,000 in new revenue;
- Applying a $30.00 fee to the original personal use permit for $900,000 in new revenue.

Total of potential new tax and license revenue is $3,865,000 for UCI salmon.

## 2. Salmon Stocks and Harvests

In Table 1 and Figures 1 - 5, the UCI salmon stocks, escapement needs and harvests by the commercial, sport and personal use groups are listed, described and graphically displayed. Table 1 provides stock status, escapement needs and harvests for all five Pacific Salmon species in UCI. Figures 1 - 5 illustrate the above elements for each salmon stock separately using pie charts. Escapement needs are from ADF&G sources. Escapements are estimated for stocks with no established escapement goals.

**Table 1. 2014 Upper Cook Inlet Salmon Stock Status & Harvests**

| | Chinook | Sockeyes | Coho | Pink | Chum | Total All Species |
|---|---|---|---|---|---|---|
| **Total Run** | 250,000 | 5,500,000 | 2,750,000 | 20,000,000 | 1,500,000 | **30,000,000** |
| **Less Escapement Needed** | (100,000) | (1,500,000) | (960,000) | (4,000,000) | (450,000) | **(7,000,000)** |
| **Available Harvest** | 150,000 | 4,000,000 | 1,790,000 | 16,000,000 | 1,050,000 | **23,000,000** |
| **Commercial Harvest** | 4,600 | 2,343,032 | 137,200 | 642,754 | 116,083 | 3,243,669 |
| **Percentage** | 3.1% | 58.6% | 7.7% | 4.0% | 11.1% | 14.1% |
| **Sport Harvest** | 18,750 | 397,985 | 140,000 | 50,000 | 20,000 | 626,735 |
| **Percentage** | 12.5% | 9.9% | 7.8% | 0.3% | 1.9% | 2.7% |
| **Personal Use** | 50 | 506,079 | 9,382 | 26,796 | 1,860 | 544,167 |
| **Harvest Percentage** | 0.0% | 12.7% | 0.5% | 0.2% | 0.2% | 2.4% |
| **Total Harvest(s)** | 23,400 | 3,247,097 | 286,582 | 719,550 | 137,943 | 4,414,572 |
| **Percentage By Species** | 15.6% | 81.2% | 16.0% | 4.5% | 13.1% | **19.2%** |
| **Unharvested** | 126,600 | 752,903 | 1,503,418 | 15,280,450 | 912,057 | 18,585,428 |
| **Percentage by Species** | **84.4%** | **18.8%** | **84.0%** | **95.5%** | **86.9%** | **80.8%** |

## A. Discussion

- About 30,000,000 salmon returned to UCI streams and rivers in 2014. These salmon returns to UCI are some of the largest wild, native returns in Alaska. After escapement needs (7,000,000), there were approximately 23,000,000 salmon available for harvest. Of the 23 million salmon available for harvest, only around 4.5 million were utilized.
- If harvested in the commercial fishery, the 23 million salmon would be worth over $150 million dollars at the First Wholesale Value level.
- Non-utilized/unharvested describes those salmon in excess of escapement needs that have gone past the commercial, sport and personal use fisheries.
- These abundant salmon stocks should be available for harvest; however, the effects of current BOF and ADF&G management plans and policies result in over 80% of these stocks going unharvested. Specifically, 84.4 % of the Chinook, 18.8% of the sockeyes, 84.0% of the coho, 95.5% of the pinks and 86.9% of the chum salmon stocks swim through UCI untouched.
- The non-utilized stocks represent millions of lost tax revenue dollars to the State Treasury, tens of millions of dollars in lost economic benefit to the regional economies, loss of food products and by-products and lost jobs. These same non-utilized salmon represent an opportunity for growth and diversification in local, regional and State economies.
- The commercial sector is the only user group that has the capacity or the ability to harvest and monetize these non-utilized stocks.

**Figure 1. Distribution of the 250,000 Chinook Run in Upper Cook Inlet, 2014**

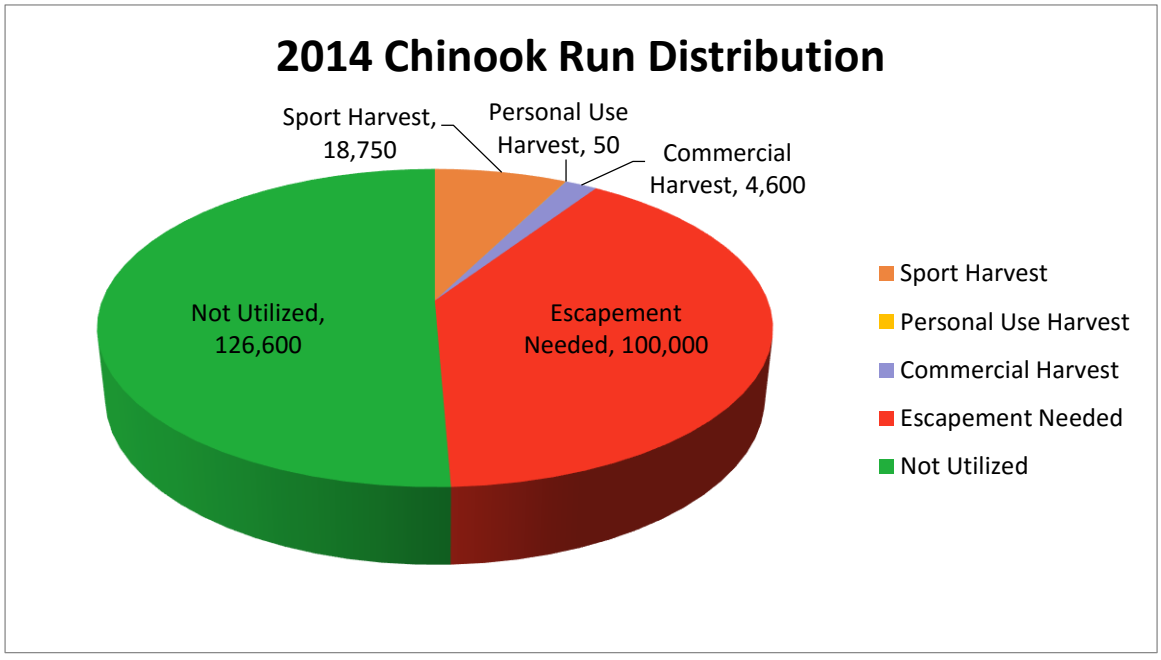


**Figure 2. Distribution of the 5,500,000 Sockeye Run in Upper Cook Inlet, 2014**

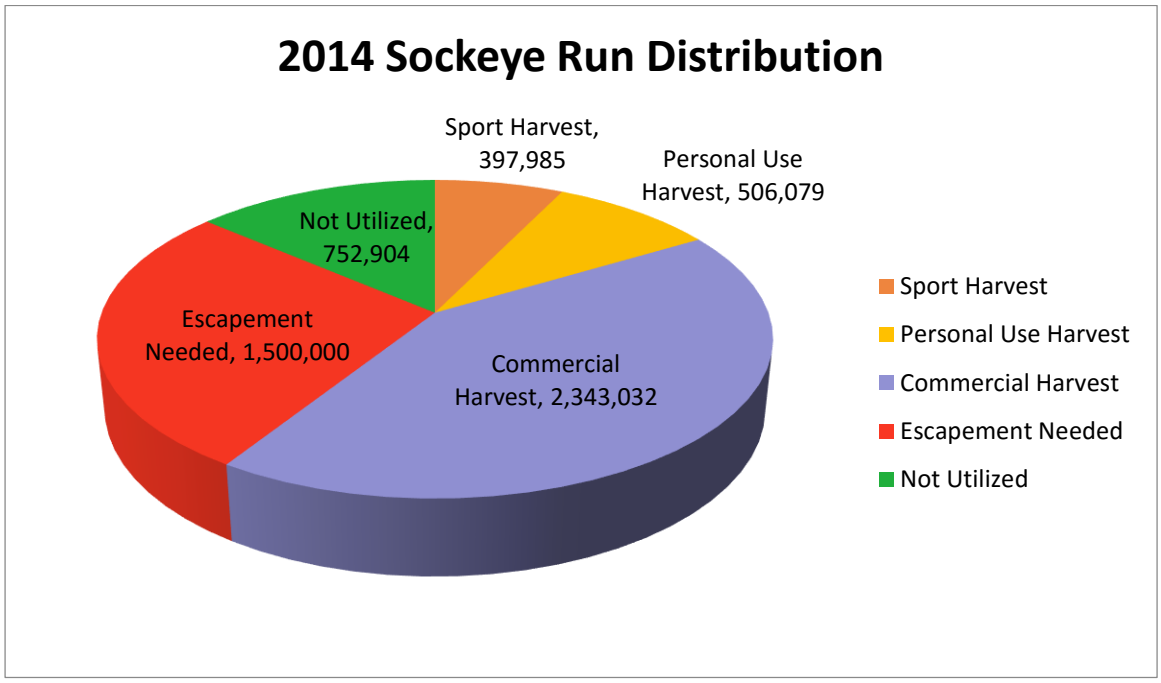



**Figure 3. Distribution of the 2,750,000 Coho Run in Upper Cook Inlet, 2014**

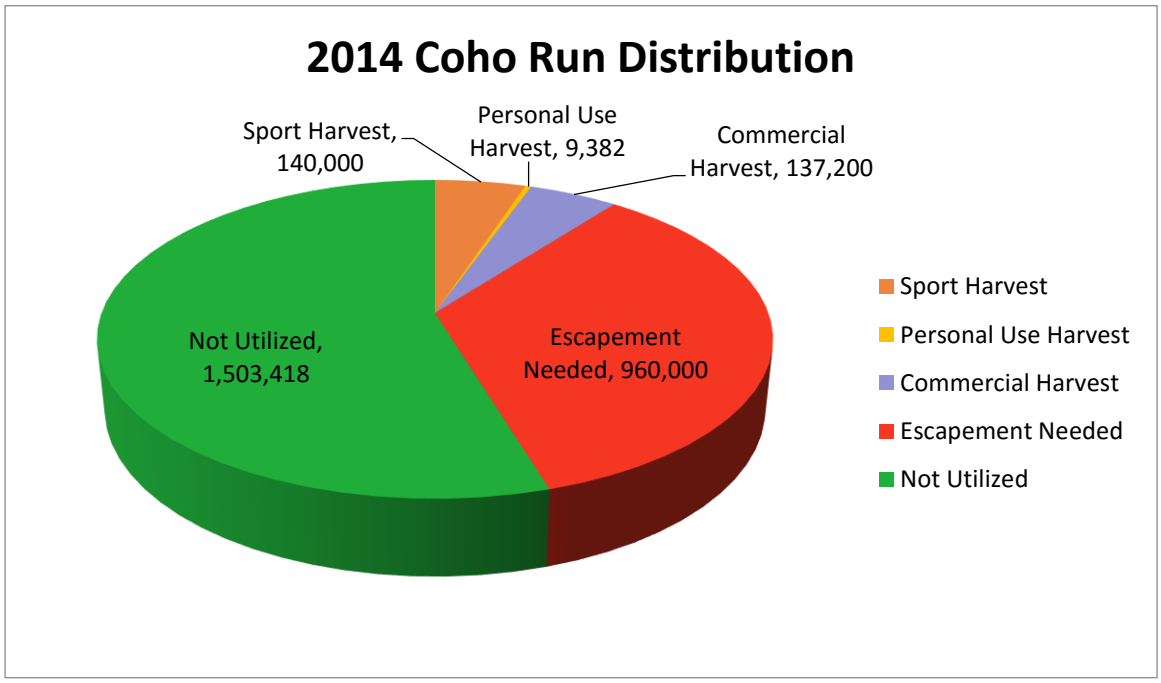


**Figure 4. Distribution of the 20,000,000 Pink Run in Upper Cook Inlet, 2014**

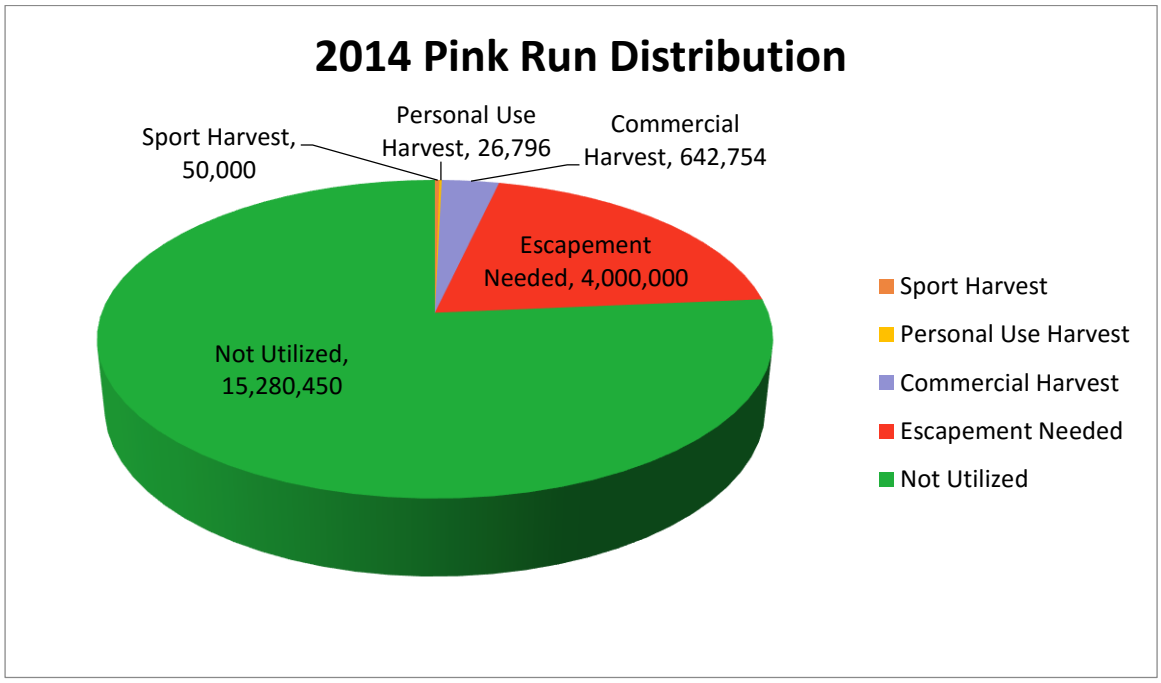
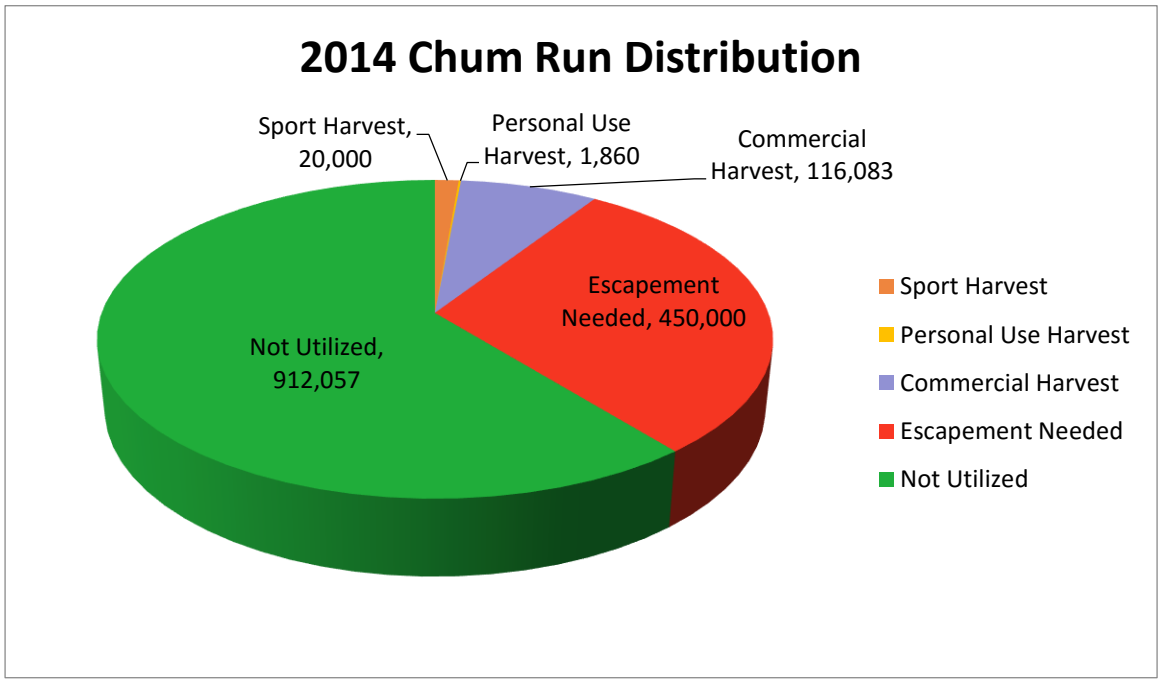



**Figure 5. Distribution of the 1,500,000 Chum Run in Upper Cook Inlet, 2014**



## 3. Model Development and Utility

Revenue modeling is the task of building a representation (model) of a real-world revenue situation. Models are designed to represent a simplified version of the revenue performance of a salmon asset or any other asset. Salmon resource revenue modeling allows for the quantification of selected revenue alternatives from which the public, ADF&G management, Legislators and the Governor can choose.

Revenue modeling is illustrated here by a series of examples demonstrating different tax, or fee applications for both the seller (State) and the purchasers (harvesters) and how the anticipated revenues will change.

Revenue models provide all parties the same view of the events, while at the same time fixing a variety of variables to constant values. By purposefully fixing some values and changing a limited number of values, the model isolates the cause and effect, changing revenue values and outcomes for both the State and harvesters.

Revenue models are built around changing inputs and then identifying the resulting output; in this case, annual revenues to the State. The financial models that follow will first represent the existing, real-world State revenues and available unrealized revenue; then the effects of changing a tax rate, license price or permit fee.

Constructing new revenue models also provides an opportunity for an examination of historic asset performance. Have revenues and economic benefits to the regional and State economies been considered in past management decisions? Are the State's fishery resources being managed for the maximum sustained yield as required by the State constitution?

**References provided for Tables 2, 3 and 4**

- $35,000,000 describes the First Transaction Commercial Value (Ex-Vessel Value) for all five salmon species **harvested** in UCI (2014 ADF&G Annual Management Report), First Transaction Commercial Value is what the fish buyer paid, in dollars, to the permitted CFEC salmon harvester
- $70,000,000 is the First Wholesale Commercial Value sold by the processors for all five salmon species harvested in UCI in 2014 (first dollar value for sales after primary processing: head & gutted, frozen, filleted, etc.)
- The First Transaction Commercial Value (Ex-Vessel Value) of the **unharvested** surplus salmon stocks is approximately $40,000,000, however, fully utilizing the entire surplus may not be practicable; therefore, $21,000,000 was used for calculation of the unharvested tax revenue
- Sport includes guided and non-guided anglers; all license revenues are stated using equivalents, resident sport fishing, combined fishing, hunting and trapping licenses used for Cook Inlet salmon
- Personal Use is limited to salmon harvests in UCI; does not include other finfish or shellfish
- CFEC – Commercial Fisheries Entry Commission, in UCI there are currently 1,319 commercial fishing permits: 573 Drift and 746 Set Net
- Alaska Statute 43.75.015 Fisheries Business Tax of 3.0% – Assessed on First Transaction Commercial Value (Ex-Vessel dollar value)
- Alaska Statute 43.76.365 Marketing Tax of 0.5% – Assessed on First Transaction Commercial Value (Ex-Vessel dollar value)
- Alaska Statute 43.76.011 Enhancement Tax of 2.0% – Assessed on First Transaction Commercial Value (Ex-Vessel dollar value)
- Alaska Statute 43.77.010 Fisheries Landing Tax of 0.5% – Assessed on First Wholesale Commercial Value
- All permits, licenses, registrations and fees are publically available information

**Table 2** – Presents a break-out of tax, license and permit revenue generated by the commercial fishery at the current Fishery Business Tax rate of 3%, compared to the proposed increase to 4%.

| Table 2. 2014 Upper Cook Inlet Commercial Salmon Fisheries Revenues | | | | |
|---|---|---|---|---|
| | 3% | | 4% | |
| **Taxes, Permits, Licenses & Fees** | **Commercial** | **Unharvested[3]** | **Commercial** | **Unharvested[3]** |
| Fisheries Business Tax[1] | 1,050,000 | 630,000 | 1,400,000 | 840,000 |
| 0.5% Marketing Tax[1] | 175,000 | 125,000 | 175,000 | 125,000 |
| 2.0% Enhancement Tax[1] | 700,000 | 500,000 | 700,000 | 500,000 |
| 0.5% Fisheries Landing Tax[1] | 350,000 | 250,000 | 350,000 | 250,000 |
| Marine Fuel Tax | 45,000 | | 45,000 | |
| CFEC Permits[2] | 287,000 | | 287,000 | |
| CFEC Crew Member Licenses[2] | 200,000 | | 200,000 | |
| Processor Licenses[2] | 50,000 | | 50,000 | |
| CFEC Vessel Licenses[2] | 50,000 | | 50,000 | |
| DMV Vessel Licenses[2, 4] | 6,000 | | 6,000 | |
| DNR Permits[2] | 141,000 | | 141,000 | |
| DOT Permits[2] | 26,000 | | 26,000 | |
| Corporate Income Tax | 1,000,000 | | 1,000,000 | |
| Personal Use Permits[2] | | | | |
| Resident Sport Fish Licenses[2] | | | | |
| Non-Resident Sport Fish Licenses | | | | |
| Existing Revenue, 3%[5] | 4,080,000 | | | |
| Unharvested Revenues, 3%[5] | | 1,505,000 | | |
| Total Revenue, 3%[5] | 5,585,000 | | | |
| **New Revenue, 3%[5]** | **1,505,000** | | | |
| Existing Revenue, 4%[6] | | | 4,430,000 | |
| Unharvested Revenues, 4%[6] | | | | 1,715,000 |
| Total Revenue, 4%[6] | | | 6,145,000 | |
| **New Revenue, 4%[6]** | | | **2,065,000** | |
| | | | | |
| [1]Harvest (Volume-Based) Annual Revenues, Price progressivity and sensitivity | | | | |
| [2]Harvest (Non-Volume Based) Permits, Licenses and Fees | | | | |
| [3]Revenue Lost due to Unharvested Surplus Escapement in 2014 by tax designation | | | | |
| [4]DMV (AK vessel license sales either by commercial, sport or personal use individuals | | | | |
| [5]Calculated and summarized using a 3% Fisheries Business Tax | | | | |
| [6]Calculated and summarized using a 4% Fisheries Business Tax | | | | |

**A. Details:**

- Unharvested revenues are available, but not realized, as shown in Table 2. These revenues are based on a portion of the surplus salmon that entered the rivers of UCI in excess of the escapement needs (see Table 1). The total First Transaction Value of the **unharvested** surplus salmon was approximately $40,000,000. Since full utilization of the surplus is unlikely, $21,000,000 was used for calculation of the unharvested tax revenues.
- In 2014, there was $1,505,000 of lost State tax revenue due to the surplus escapements.
- These unharvested surplus salmon are gone forever as is their tax revenue.
- The unharvested salmon stocks have both short term and long term effects on tax revenues.
- The actual existing revenues of $4,080,000 and the additional available revenues of $1,505,000 were added to determine a grand total of $5,585,000 of possible commercial revenue from UCI in 2014.

**B. Discussion:**

It is noted that the revenues from the commercial fishery are from 12 unique taxes, permits and licenses.

At present, there are few, if any, consequences for the $1,505,000 in foregone tax revenues or the $21,000,000 in lost harvest revenue. The BOF and ADF&G have no accountability for management plans and regulations that create these losses to the economy and the State Treasury. This needs to change, especially now that the State is struggling with reduced revenues and budgets.

Commercial salmon tax revenues are sensitive to both volume and price. To arrive at the tax revenues payable to the State, multiply the pounds per fish by the price per pound and then multiply by the applicable tax rate. Example: 100,000 lbs x $2.25/lb = $225,000 First Transaction Value. This value multiplied by the 0.03% tax rate equals a payable tax of $6,750. Another example: 100,000 lbs x $0.50/lb. = $50,000 First Transaction Value. This value multiplied by the 0.03% tax rate equals a payable tax of $1,500. This demonstrates that the greater the price per pound, the greater the tax revenue to the State.

In the 2014 UCI season, the First Transaction Value was $2.25 per pound. This value of $2.25/lb for sockeye salmon was 3.6 times greater than some other areas of the State. As such, the price per pound of UCI sockeye salmon provided the State with 3.6 times the tax revenues on a pound by pound comparison. A harvest of 4 million UCI sockeye is the equivalent of, in State revenue and to the regional economy, a 13 million sockeye harvest in other areas of the State.

Due to the larger size and exceptional quality of UCI salmon, they occupy a unique and preferred market status. The UCI commercially harvested salmon are handled utilizing bleeding techniques, icing and slush icing, refrigerated sea water and smaller brailer bags. The salmon are delivered promptly, processed quickly and shipped to fresh markets across the United States.

The multi-level quality control and best practices for the harvesting, processing and shipping of UCI salmon are known to produce food products that are high in quality and freshness. Salmon harvested in UCI have immediate access to sea, land and air transportation services. Currently, most of the salmon harvested in UCI commercial fisheries is shipped fresh to the lower 48 States.

The price progressivity and sensitivity in commercial salmon tax revenues should motivate the State to increase revenue by both maximizing the harvest of surplus salmon in UCI and working to maintain the highest product quality. As an example, in herring fisheries, the herring are sampled by ADF&G and the fishery doesn't occur until roe percentages are high enough to maximize the value of the harvest. Maximizing the market value, and tax revenue return, of UCI salmon requires attention to run timing and harvest area. Another example, the quality of the sockeye salmon harvested in the Kasilof River Special Harvest Area is so poor that processors greatly reduce the price per pound, or may refuse to purchase salmon from this area at all, so that the poor quality salmon doesn't affect the value and perception of the entire Cook Inlet harvest. Generally, salmon harvested further offshore are of higher quality and command a higher price in the marketplace. Maximizing the value of the State's resources should be a factor in fishery management policy.

An increase in the Fisheries Business Tax to 4% has a positive effect of $560,000 on the State Treasury from the Upper Cook Inlet commercial salmon fisheries. State-wide, this new tax rate would increase tax revenues by over 19 million dollars. There are several large-volume fisheries that will be affected. UCIDA does not make any endorsements or comments on behalf of any other fishery group. An increase in the Fisheries Business Tax should only be considered as a component of a comprehensive overhaul of fishery management policies, taxes and license fees.

Additionally, there needs to be a discussion and resolution of how the BOF and ADF&G will be held accountable for the losses in State revenues, economies and food security due to unharvested fishery resources.

**Table 3** – Presents the current license fee revenue and the effects of increasing the resident sport fishing license fee from $24.00 to $29.00, increasing the non-resident sport fishing license fee from $50.00 to $60.00, and instituting a personal use permit fee of $30.00.

| Table 3. 2014 Upper Cook Inlet Sport & Personal Use Salmon Fisheries Revenues | | | | |
|---|---|---|---|---|
| **Taxes, Permits, Licenses & Fees** | **Sport/$24** | **PU/$0** | **Sport/$29** | **PU/$30** |
| 4% Fisheries Business Tax | | | | |
| 0.5% Marketing Tax | | | | |
| 2.0% Enhancement Tax | | | | |
| 0.5% Fisheries Landing Tax | | | | |
| Marine Fuel Tax | | | | |
| CFEC Permits | | | | |
| CFEC Crew Member Licenses | | | | |
| Processor Licenses | | | | |
| CFEC Vessel Licenses | | | | |
| DMV Vessel Licenses | 54,000 | | 54,000 | |
| DNR Permits | | | | |
| DOT Permits | | | | |
| Corporate Income Tax | | | | |
| Personal Use Permits | | 0 | | 900,000 |
| Resident Sport Fish Licenses[1] | 1,440,000 | | 1,740,000 | |
| Non-Resident Sport Fish Licenses[2] | 3,000,000 | | 3,600,000 | |
| **Total Existing Resident & Non-Resident Revenue** | **4,494,000** | | | |
| Sport License, $29[1] | | | 5,394,000 | |
| Personal Use, $30[3] | | | | 900,000 |
| **Additional Resident Only Revenue[4]** | | | **1,200,000** | |
| **Additional Non-Resident Revenue** | | | **600,000** | |
| **Total Additional Resident & Non-Resident Revenue** | | | **1,800,000** | |
| | | | | |
| | | | | |
| [1]Sport Fish License - Residents - $24 or $29, including hatchery surcharge | | | | |
| [2]Non-Resident Sport Fish License - $50, or $60 | | | | |
| [3]Personal Use Permit - $0 or $30 | | | | |
| [4]Additional Sport License Revenue plus Personal Use Revenue | | | | |

**A. Details:**

- There will be $300,000 of new revenue as a result of the $29.00 resident sport fishing license fee.
- Currently, a personal use harvest permit is free when a resident sport fishing license is purchased.
- New revenue from purchasing a personal use permit would be $900,000.
- These new harvest fees and revenues were calculated as new revenues, dependent on purchasing a resident sport fishing license. In this model, it would still be required to purchase a resident sport fishing license prior to purchasing a $30.00 personal use harvest permit.
- If residents will be required to purchase both sport fishing and personal use harvest permits, they will be subject to both fees ($29.00 + $30.00 = $59.00).

**B. Discussion:**

The revenues to the State from the sport fishery rely on two types of license sales. There are no harvest-based or volume-based revenues to the State for either the sport or the personal use fisheries.

UCIDA opposes the current legislation, HB 137, adopted by the Alaska House of Representatives of a stand-alone sport fish license fee increase. The new rate simply does not raise enough revenue. An increase in the sport fish license fee should only be considered as a component of a comprehensive overhaul of fishery management policies, taxes and license fees. The proposed increase is not volume-based and makes no consideration for progressivity.

Sport and personal use harvests in UCI have increased dramatically while the State's license revenues have actually declined. Over the past 20 years, the number of resident sport fishing licenses sold annually has decreased by 20,000. During the same time period, the number of salmon taken by the sport and personal use fisheries in UCI has nearly tripled. With larger harvests and fewer licenses, the State revenues have decreased significantly from the 1996 revenue values.

In 1996, the UCI sport and personal use sockeye harvest was 368,367. In 2014, that number had grown to 904,064 sockeye salmon. That number is greater than the harvest of the commercial set netters and was 60% of the commercial drift gillnet harvest.

Most of this increase in the sport and personal use salmon harvest has been taken directly out of the commercial harvest with no financial compensation to the CFEC permitted users, aquaculture associations or State and municipal governments that receive shared tax revenues. The commercial industry loses the economic benefit of this salmon harvest and the State loses revenue. These losses have never been accounted or considered.

Keep in mind, the sport fish license allows as many daily bag and possession limits as the individual chooses to catch, as well as personal use harvests of salmon and shellfish. It is difficult to measure any economic benefit of these resources to the State when they are harvested in the sport or personal use fishery.

**Table 4** – Summarizes the combined effects of the previously discussed changes to taxes, permit fees and harvests.

| Table 4. Summary of Proposed Fee Increases, Including Unharvested Surplus | | | |
|---|---|---|---|
| **Taxes, Permits, Licenses & Fees** | Commercial[1] | Sport[2] | Personal Use[3] |
| 4% Fisheries Business Tax | 2,240,000 | | |
| 0.5% Marketing Tax | 300,000 | | |
| 2.0% Enhancement Tax | 1,200,000 | | |
| 0.5% Fisheries Landing Tax | 600,000 | | |
| Marine Fuel Tax | 45,000 | | |
| CFEC Permits | 287,000 | | |
| CFEC Crew Member Licenses | 200,000 | | |
| Processor Licenses | 50,000 | | |
| CFEC Vessel Licenses | 50,000 | | |
| DMV Vessel Licenses | 6,000 | 54,000 | |
| DNR Permits | 141,000 | | |
| DOT Permits | 26,000 | | |
| Corporate Income Tax | 1,000,000 | | |
| Personal Use Permits | | | 900,000 |
| Resident Sport Fish Licenses | | 1,740,000 | |
| Non-Resident Sport Fish Licenses | | 3,600,000 | |
| **Total Revenue** | **6,145,000** | **5,394,000** [5] | **900,000** |
| Existing Revenue | 4,080,000 [4] | 4,494,000 | 0 |
| **Total New Revenue** | **2,065,000** | **900,000** | **900,000** |
| **Grand Total** | | **3,865,000** | |
| [1]Combined Commercial and Unharvested Revenue At 4% Tax Rate, See Table 2 | | | |
| [2]$29 Sport Fish License, See Table 3 | | | |
| [3]$30 Personal Use Harvest Fee, See Table 3 | | | |
| [4]Existing Revenue 3%, See Table 2 | | | |
| [5]Sport License, $29, See Table 3 | | | |

## 4. Conclusion

This is an opportune time for the State to substantially increase revenues and expand local economies by getting the most from its fishery resources. A directive from the Governor's Administration to the BOF and ADF&G to apply a business model to fisheries management could begin a process that would have expanding benefits across the State.

The BOF is comparable to a Board of Directors that is responsible for the conservation of a resource and the development a multi-billion-dollar industry. The current system of creating management policies and regulations is entirely inadequate for businesses of this magnitude. Too often, decisions are made on the basis of a personal bias or prejudice, disregarding the best interest of the State or the fishery resources.

Policy and management decisions have direct economic consequences at many levels. Costs and benefits must be weighed; exploiting efficiencies and eliminating waste should be a priority. Economic benefits need to be evaluated in numerous contexts, from monetizing resources in general, to employment and supporting small businesses. Regulatory stability is essential for continued investment in the industry and development of value-added ventures.

Revenues must be reinvested for ADF&G to be adequately funded to maintain and sustain the fishery resources for maximum production and habitat protection. A more rational business model approach to fishery management could also reduce the unnecessary allocation conflicts in UCI that have wasted so much energy and salmon over the years.

Specific objectives for UCI management should include developing a cost-benefit analysis decision making model and setting harvest goals. Policy makers and managers need to better understand the consequences of the trade-offs inherent in managing this mixed stock fishery. Harvest and utilization goals for the next two to three years should be increased substantially to begin the process of monetizing this resource appropriately.

Reasonable harvest rates for utilizing the available surplus (after escapement needs) for UCI stocks would be:

- Chinook 50% of available stocks;
- Sockeye 95% of available stocks;
- Coho 70% of available stocks;
- Pinks 60% of available stocks;
- Chum 60% of available stocks.

We also propose that the administration appoint a small working group dedicated to establishing models and recommendations for these fisheries prior to the next UCI BOF meetings on UCI.

The positive news is that many fisheries in Alaska are underutilized and have the potential for boosting State revenues and supporting and retaining small fishing and support businesses. The challenge will be to make the changes required.