

Crafting a Near-term Management Strategy for Spring Chinook Fisheries: Policy Questions Before the Commissions

BACKGROUND

The Option 2a, Option 2b, and Option 2c tables distributed to the Commissioners and Advisors on the Columbia River Fish Working Group are intended to enable comparisons of fisheries performance for the near-term management of spring Chinook fisheries under different sets of assumptions about key policy decisions:

- The table describing Option 2a optimizes **pre-update** commercial fishing opportunities in the select areas at a cost to commercial fishing opportunities in the mainstem and optimizes **pre-update** sport fishing opportunity upstream from Bonneville Dam at a cost to sport fishing opportunity downstream from Bonneville Dam.
- The table describing Option 2b optimizes **pre-update** commercial fishing opportunities in the mainstem at a cost to commercial fishing opportunities in the select areas and optimizes **pre-update** sport fishing opportunity downstream from Bonneville Dam at a cost to sport fishing opportunity upstream from Bonneville Dam.
- The table describing Option 2c attempts to balance **pre-update** commercial fishing opportunities in the mainstem with commercial fishing opportunities in the select areas and balance **pre-update** sport fishing opportunity downstream from Bonneville Dam with sport fishing opportunity upstream from Bonneville Dam.

Changes to any of these assumptions would alter the performance of the options. At the end of this document is a summary table (Table 2) that highlights differences in performance of the fisheries under the average run size (1999-2008) when comparisons are made between the three options described above.

MATRIX

Fisheries managers have proposed three matrices that could be used to determine the sport/commercial share of impacts based on run sizes of upper Columbia and Willamette spring Chinook. Each matrix weights the sport and commercial fisheries differently. In general, the sport share increases as run sizes decrease (Table 1). Options 2a, 2b, and 2c use the matrix with the 60%/40% base allocation of impacts to the sport and commercial fisheries. At the end of the document is a summary table (Table 3) that highlights differences in performance of the fisheries under the average run size (1999-2008) when comparisons are made between the three matrix “base-cases” for Option 2a.

Table 1. Percent of total available impacts assigned to sport and commercial fisheries at different run sizes for upper Columbia and Willamette spring Chinook. The base case represents range of run sizes that most frequently have occurred in the recent past.

Run Size of Upriver Columbia Spring Chinook	Run Size of Willamette Spring Chinook	
	Low (<50,000)	High (>50,000)
Very Low (<33,000)	80/20%	70/30%
Low (33,000 – 55,000)	70/30%	65/35%
Medium-High (55,000 – 271,000)	65/35%	60/40% (base)
Very High (>271,000)	55/45%	50/50%

THE BUFFER

Each of the three options listed above share a significant principle: they set aside a portion of the total allowable impacts, as determined by the *US v Oregon* harvest schedule, for the period prior to the run-size update as a buffer to ensure a high likelihood that fisheries will be managed within those allowable impacts. This buffer recognizes the uncertainties in pre-season forecasts of run size and in other estimates of fisheries performance used to predict harvest and incidental handling of protected salmon and steelhead. Options 2a, 2b, and 2c assume that approximately 35% of the total allowable impacts is set aside prior to the run size update as a buffer and that it is determined by allocating 25% of the total allowable impacts from the sport fishery and 50% of the total allowable impacts from the commercial fishery.

POLICY QUESTIONS

The following set of policy questions is relevant to crafting a near-term management strategy for spring Chinook fisheries.

1. How should the total allowable impacts, as determined by the *US v Oregon* harvest schedule, be shared between the sport and commercial fisheries?
The base allocations below correspond to the cell in the matrix when the abundance of Columbia and Willamette spring Chinook runs is medium to high (Columbia = 55,000 to 271,000 and Willamette > 50,000).
 - a. Set as your base allocation a 60%/40% sport fishery/commercial fishery share.
 - b. Set as your base allocation a 70%/30% sport fishery/commercial fishery share.
 - c. Set as your base allocation a 50%/50% sport fishery/commercial fishery share.
2. How should the buffer be shared between the sport and commercial fisheries?
 - a. Determine the buffer by allocating 25% of the total allowable impacts from the sport fishery and 50% of the total allowable impacts from the commercial fishery (All of the scenarios for Option 2).
 - b. Determine the buffer by allocating 35% of the total allowable impacts from the sport fishery and 35% of the total allowable impacts from the commercial fishery (Each fishery contributes proportional to its share of overall impacts).
 - c. Set the buffer equal to 35% and allocate half to each fishery.
 - d. Set the buffer equal to 35% and allocate all of it to one fishery or the other.
3. Prior to the run-size update (pre-update), what proportion of pre-update sport fisheries impact should we assign to fisheries downstream and upstream from Bonneville Dam?
 - a. Generally maintain the status quo by allocating 75% of the sport fisheries share of pre-update impacts downstream from Bonneville Dam and 25% upstream. (Option 2a)
 - b. Assign the sport fishery downstream from Bonneville Dam a higher priority than under the status quo by allocating 90% of the sport fisheries share of pre-update impacts downstream from Bonneville Dam and 10% upstream. (Option 2c)
 - c. Assign the sport fishery downstream from Bonneville Dam 100% of the sport fisheries share of pre-update impacts. (Option 2b)

4. Prior to the run-size update (pre-update), what impact level should we assign to commercial fisheries in the select areas and mainstem?
 - a. Generally maintain the status quo by assigning an impact level of approximately 0.15% to the select areas and assigning the balance of pre-update impacts available for commercial fishing to the mainstem. (Option 2c)
 - b. Assign commercial fisheries in select areas a higher priority than under the status quo by assigning an impact level of at least 0.22% to the select areas and assigning the balance of pre-update impacts available for commercial fishing to the mainstem. (Option 2a)
 - c. Assign commercial fisheries in the mainstem a higher priority than under the status quo by assigning 100% of the pre-update impacts available for commercial fishing to the mainstem. (Option 2b)

5. After the run-size update (post-update), what proportions of post-update available impacts should we assign to sport and commercial fisheries. The post-update allowable impact is the buffer \pm adjustments for differences between forecasted (pre-update) and actual (post update) run size.

Select areas fisheries have nominal effects on upriver spring Chinook in mid-May and June. If the run-size update occurs in late April or early May, these fisheries may need more impacts than assigned pre-update.

 - a. After the run size update, allocate the remaining allowable impacts as necessary to ensure the sport and commercial share of impacts (pre- and post-update) equals the proportion of the total impacts from the sharing matrix. (Option 2a, 2b, and 2c)
 - b. After the run size update, allocate the remaining allowable impacts as necessary to ensure the commercial fisheries in the select areas maximize harvest (linked to a decision to minimize pre-update select area fisheries).
 - c. After the run size update, allocate the remaining allowable impacts as necessary to ensure the commercial fisheries in the mainstem maximize harvest (linked to a decision to minimize pre-update mainstem fisheries).
 - d. After the run size update, allocate the remaining allowable impacts as necessary to ensure the sport fisheries upstream from Bonneville Dam maximize harvest (linked to a decision to minimize pre-update sport fisheries upstream from Bonneville Dam).

COMPARISONS OF OPTIONS

Table 2. Numbers of upriver spring Chinook caught under Option 2a, Option 2b and Option 2c. Also shown are the number of days the sport fishery downstream of Bonneville Dam would be open under Option 2a, Option 2b and Option 2c. Estimates are based on model runs that assume an “average run size” for 1999-2008 and a 60/40% sharing of impacts between sport and commercial fisheries.

Year	Option 2a Average (1999-2008)	Option 2b Average (1999-2008)	Option 2c Average (1999-2008)
Total sport fishery harvest of upriver fish (assuming 75% mark rate and sport fishery uses all its impacts)	17,066	17,066	17,066
Sport fishery harvest of upriver fish downstream from Bonneville Dam	12,799 ^a	17,066 ^a	15,359 ^a
Sport fishery harvest of upriver fish upstream from Bonneville Dam	4,267	0	1,707
Projected closing date for sport fishery downstream from Bonneville Dam pre-update (assumes open 7 days/ week)	14-Apr	18-Apr	16-Apr
Projected closing date for sport fishery downstream from Bonneville Dam pre-update (assumes open 3 days/ week)	30-Apr	14-May	14-May
Total commercial fishery harvest of upriver fish (assuming 75% mark rate and commercial fishery uses all its impacts)	3,720	5,754	4,367
Commercial harvest of upriver fish in select areas	496 ^b	0 ^b	338 ^b
Commercial harvest of upriver fish in the mainstem	3,224 ^a	5,754 ^a	4,029 ^a
Total sport fisheries impact	1.140%	1.140%	1.140%
Total commercial fisheries impact	0.760%	0.760%	0.760%
Final sport fisheries share of impacts used	60%	60%	60%
Final commercial fisheries share of impacts used	40%	40%	40%

^a the actual harvest of spring Chinook may be approximately twice this number since upriver fish may comprise around half the harvest

^b the harvest of upriver spring Chinook that would occur to harvest select area stocks of spring Chinook

Notes:

1. Option 2a sets aside a 35% buffer, sets aside at least 10% of total impacts for select area commercial fisheries (impacts $\geq 0.22\%$) and allocates 25% of the pre-update sport fishery impacts to the area upstream from Bonneville Dam.
2. Option 2b sets aside a 35% buffer, sets aside no impacts for select area commercial fisheries and allocates none of the pre-update sport fishery impacts to the area upstream from Bonneville Dam.
3. Option 2c sets aside a 35% buffer, sets aside at least 7.5% of total impacts for select area commercial fisheries (impacts $\geq 0.15\%$) and allocates 10% of the pre-update sport fishery impacts to the area upstream from Bonneville Dam.

Table 3. Numbers of upriver spring Chinook caught when the sport/commercial share of available impacts equals 60%/40%, 70%/30% and 50%/50%. Also shown are number of days the sport fishery downstream of Bonneville Dam would be open when the sport/commercial share of available impacts equals 60%/40%, 70%/30% and 50%/50%. Estimates are based on model runs that assume an “average run size” for 1999-2008, 25% of the sport fisheries impacts are allocated to the fishery upstream from Bonneville Dam, and select-area commercial fisheries are allocated an impact of 0.22% (Option 2a).

Year	Average (1999-2008) 60/40 base	Average (1999-2008) 70/30 base	Average (1999-2008) 50/50 base
Total sport fishery harvest of upriver fish (assuming 75% mark rate and sport fishery uses all its impacts)	17,066	19,910	14,222
Sport fishery harvest of upriver fish downstream from Bonneville Dam	12,799 ^a	14,932 ^a	10,666 ^a
Sport fishery harvest of upriver fish upstream from Bonneville Dam	4,267	4,978	3,556
Projected closing date for sport fishery downstream from Bonneville Dam pre-update (assumes open 7 days/ week)	14-Apr	16 Apr	12 Apr
Projected closing date for sport fishery downstream from Bonneville Dam pre-update (assumes open 3 days/ week)	30-Apr	14 May	23 Apr
Total commercial fishery harvest of upriver fish (assuming 75% mark rate and commercial fishery uses all its impacts)	3,720	2,281	5,158
Commercial harvest of upriver fish in select areas	496 ^b	496 ^b	496 ^b
Commercial harvest of upriver fish in the mainstem	3,224 ^a	1,785 ^a	4,662 ^a
Total sport fisheries impact	1.140%	1.330%	0.950%
Total commercial fisheries impact	0.760%	0.570%	0.950%
Final sport fisheries share of impacts used	60%	70%	50%
Final commercial fisheries share of impacts used	40%	30%	50%

^a the actual harvest of spring Chinook may be approximately twice this number since upriver fish may comprise around half the harvest

^b the harvest of upriver spring Chinook that would occur to harvest select area stocks of spring Chinook

Notes:

- The 60/40 Base assigns 60% of total available impacts, determined using the U.S. v. Oregon harvest schedule, to sport fisheries and 40% to commercial fisheries when run sizes are in the “medium-to-high” range, i.e. 55,000 to 271,00 upriver spring Chinook salmon return to the Columbia River, as measured at the river mouth.
- The 70/30 Base assigns 70% of total available impacts, determined using the U.S. v. Oregon harvest schedule, to sport fisheries and 30% to commercial fisheries when run sizes are in the “medium-to-high” range, i.e. 55,000 to 271,00 upriver spring Chinook salmon return to the Columbia River, as measured at the river mouth.
- The 50/50 Base assigns 50% of total available impacts, determined using the U.S. v. Oregon harvest schedule, to sport fisheries and 50% to commercial fisheries when run sizes are in the “medium-to-high” range, i.e. 55,000 to 271,00 upriver spring Chinook salmon return to the Columbia River, as measured at the river mouth.