



FISH PASSAGE CENTER

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MEMORANDUM

TO: FPAC

FROM: Jerry McCann

DATE: July 6, 2005

RE: Preliminary Estimates of Collection Efficiency and Transportation Proportion for Subyearling Chinook originating above Lower Granite Dam 2005

In response to your request, the FPC has generated preliminary estimates of collection efficiency and transport proportion for subyearling Chinook originating above Lower Granite Dam for 2005. It should be emphasized that these data are based on in-season PIT-tag detections to date, and therefore, the estimated collection efficiency for all the dams, especially for the period after June 20, should be viewed as preliminary.

Collection efficiency estimates were calculated using PIT-tagged subyearling Chinook released above Lower Granite Dam from June 16 to July 6, 2005. Tags included were acclimation and research releases of hatchery subyearlings as well as wild fish released in the Snake and Clearwater rivers.

The overall transportation proportions in Table 1 reflect the probability of fish originating above Lower Granite Dam experiencing transportation versus inriver migration. These estimated probabilities apply to unmarked fish. The collection efficiency (CE) estimates were generated from PIT-tags while the likelihood of being transported, once fish are guided into the collection system were based on SMP estimated values for total collection and transportation. Since mortality occurs as smolts migrate to downstream transportation sites prior to collection and actual transport, the number of fish passing Lower Granite Dam and "destined" to the transport management strategy will be higher than the actual number transported. The computed probability partitions this mortality between fish in the transport and in-river management strategies for proper determination of 'spread the risk' in Table 1.

Two periods were compared in the tables; the first being the period prior to the court ordered summer spill in the Snake River (in this analysis from roughly June 1 to June 20) and after spill began at all Snake Projects. While McNary Dam began court ordered summer spill July 1, June 20 was also used for estimating CE and transport proportion for consistency. A very preliminary estimate of CE for McNary Dam since July 1 included two days of detections and was about 10%. But it is too early to provide a meaningful estimate at this time for the time period after July 1. Table 1 lists the proportions destined for transport prior to June 20 and since that time with a breakdown for Snake River transport sites and then with McNary Dam included.

Table 1. Estimated Transport probabilities for subyearling fall Chinook originating above Lower Granite Dam in 2005.

| Transport Site Included | Probability of Transport for subyearlings originating above LGR | |
|-------------------------|---|-------------------|
| | Prior to June 20 | June 20 and later |
| LGR, LGS, LMN | 0.882 | 0.404 |
| LGR, LGS, LMN, MCN | 0.882* | 0.532 |

* Prior to June 24 unmarked subyearling Chinook were not transported at McNary Dam.

Tables 2 and 3 show the individual estimates that were used to calculate probability of transport for each dam. P(T) refers to the proportion of fish collected at a dam that were subsequently transported, while P(J) is the overall proportion of fish alive in the forebay at a dam that would be collected and then transported (the product of CE and P(T)). Collection totals listed in Table 2 list the estimated numbers collected beginning around June 1 on through June 19 at each site. Therefore the totals in Table 2 do not reflect total subyearlings collected or transported for the year prior to June 20.

Table 2. Estimates of Subyearling Collection Efficiency, Collection and Transportation proportions at Snake River dams and McNary Dam **prior to June 20**.

| Site | Collection | CE | Transport | P(T) | P(J) |
|------|------------|------|-----------|-------|------|
| LGR | 1,362,525 | 0.49 | 1,351,593 | 0.992 | 0.49 |
| LGS | 797,892 | 0.70 | 794,558 | 0.996 | 0.70 |
| LMN | 128,116 | 0.24 | 124,936 | 0.975 | 0.24 |
| MCN | 735,906 | 0.46 | 0* | 0.000 | 0.00 |

*Prior to June 24 unmarked subyearling Chinook were not transported at McNary Dam.

Table 3. Estimates of Subyearling Collection Efficiency, Collection and Transportation proportions at Snake River dams and McNary Dam **June 20 and later**.

| Site | Collection | CE | Transport | P(T) | P(J) |
|------|------------|------|-----------|-------|------|
| LGR | 61,101 | 0.21 | 58,851 | 0.963 | 0.20 |
| LGS | 79,432 | 0.22 | 75,972 | 0.956 | 0.21 |
| LMN | 20,728 | 0.06 | 18,714 | 0.903 | 0.06 |
| MCN | 3,125,790 | 0.25 | 2,657,338 | 0.850 | 0.22 |