

# University of Washington

## School of Aquatic & Fishery Sciences

### Columbia Basin Research

Columbia Basin Research (CBR) is a scientific research group at the University of Washington, School of Aquatic & Fishery Sciences. We investigate salmon biology and survival in the Columbia and Snake river basins. We provide user-friendly data analysis and modeling tools, and maintain DART, an interactive secondary database, for the fisheries community and the general public.

### Inside . . .

#### Status & Trends Overview: Location-based Searches

Begin search by:  Measure  Species  Province  Subbasin  HUC3  HUC4  Ob:

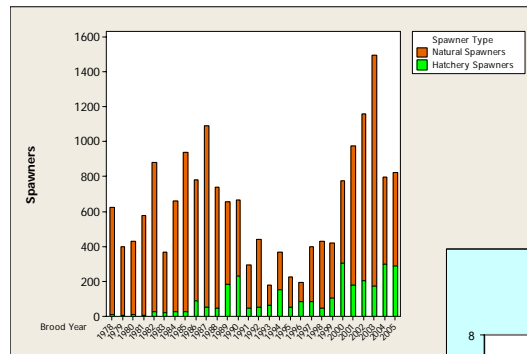
Select a Province Subbasin:

Columbia Plateau - Deschutes

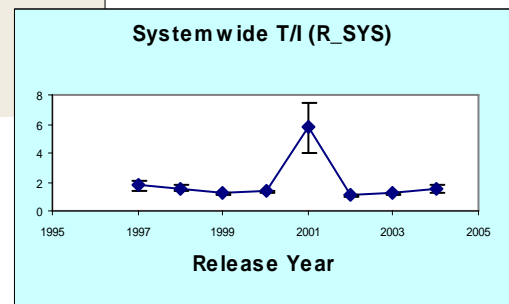
#### Smolt to Adult Ratio:

Hatchery	Species	Run	Status	
All	All	All	All	Filter
Oak Springs Hatchery	Steelhead	Summer	NA	<a href="#">graph</a>
Oak Springs Hatchery	Steelhead	Winter	L	<a href="#">graph</a>
Oak Springs Hatchery	Steelhead	Spring/Summer	NA	<a href="#">graph</a>
Round Butte Hatchery	Chinook	Spring	VI	<a href="#">graph</a>

#### Adult Escapement



#### Program ROSTER 1.3



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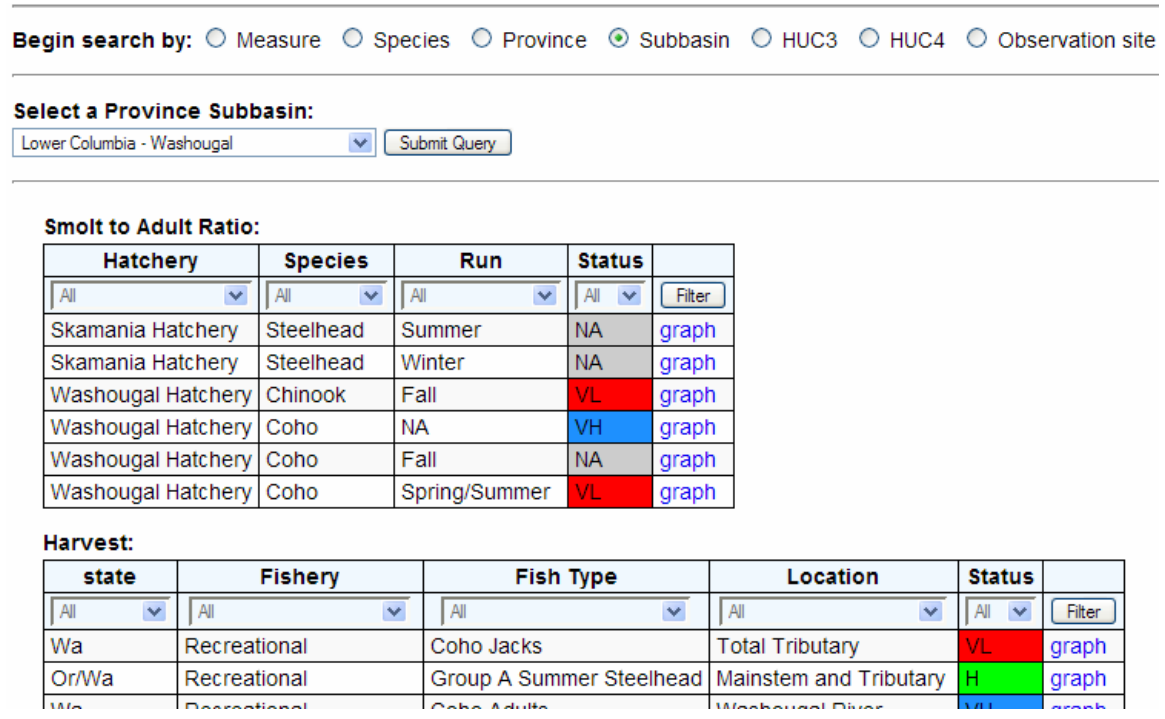
## CBR Status & Trends Overview: Location-based Searches

Location identifiers have been added to the Status & Trends Overview database to enable geographic searches. The Status & Trends website contains interactive displays of monitoring data with compliance targets for wild and hatchery adult and smolt salmon. It is now possible to search this database and cross-reference multiple compliance targets based on Province, Subbasin, Water Resources Council (WRC) Accounting Unit (HUC3), or WRC Cataloging Unit (HUC4). Subbasins are a subcategory of Province, and HUC4's are subcategories of HUC3's, so the specificity of the search is based on which location criteria are used ([Status and Trends Overview](#)).

Currently, the performance measures available for searching by location criteria are Smolt-to-Adult

Ratios, PIT-Tag Survival and Travel Times, Harvest, and Adult Escapement data. When a location is selected, any of these types of data that pertain to the selected location are displayed in tables. The user can then view the data using a graphical tool that provides a bar graph of annual data and also provides the ability to view decadal means, decadal trends, or smoothed trends.

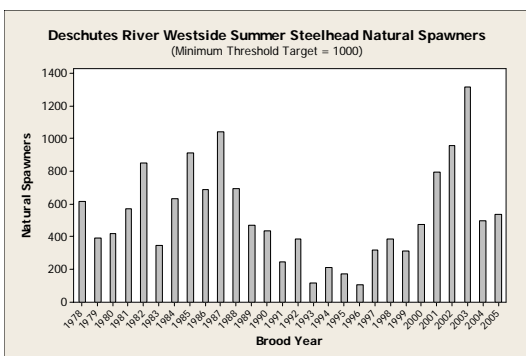
Below is a screenshot of the Status & Trends Overview interface. In this example, the user has selected to search by Subbasin. The selection menu lists all possible subbasins from which the selection of "Lower Columbia – Washougal" is made. The database contains smolt-to-adult ratios of fish released in this subbasin as well as harvest data for this region (see Figure 1).



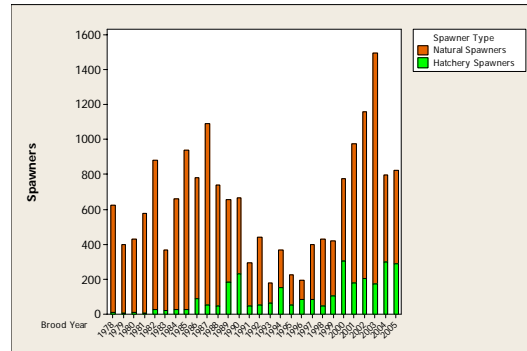
**Figure 1.** Status and Trends Overview: Lower Columbia – Washougal subbasin.

## CBR Status & Trends Overview: Adult Escapement Added

The adult escapement page of CBR's Status & Trends website has been updated to include the Interior Columbia Technical Review Team's (ICTRT) most recent population viability analyses and salmonid recovery information. The new second-tier database is scheduled to come online in August and will replace the current one ([Adult Escapement for the Columbia Basin](#)). The site will include 44 interior Columbia Basin salmonid population escapement indices, with each index consisting of a natural spawner series and a hatchery spawner series graphed as in Figures 2 and 3. As before, the estimates are derived from either expanded redd counts or live counts. The source for the data, rationale for the minimum threshold target abundances, and methodology for developing the estimates will be explained and documented in the notes section with relevant literature citations.



**Figure 2.** Deschutes River Westside natural summer steelhead spawners.



**Figure 3.** Deschutes River Westside natural and hatchery summer steelhead spawners.

There will be 28 Chinook salmon (spring, summer and spring/summer runs), and 15 steelhead (winter and summer run types) population escapement aggregate indices along with the Redfish Lake sockeye redd index, Asotin River summer steelhead redd index, and Snake River fall Chinook index from the current version of the escapement database.

Each page will feature a different escapement index and will include the estimated counts for both natural and hatchery spawners. The adult escapement is an essential component of salmon and steelhead recovery efforts, which can now be reviewed at a glance.

For more information, please contact Jim Griswold at (206) 616-7445 or [jimg@cbr.washington.edu](mailto:jimg@cbr.washington.edu).

### CBR Tools & Models: Update to Program ROSTER 1.3

A new version of Program ROSTER (River-Ocean Survival and Transportation Effects Routine) has been posted on the CBR Tools & Models website ([ROSTER](#)). Improvements in ROSTER 1.3 include analysis of data sets with only a single adult detection site and estimates of additional performance measures. For example, dam-specific  $D$  (delayed mortality) values are now reported, measuring the post-Bonneville survival of fish transported from a dam relative to fish passing that dam without transport. ROSTER 1.3 has added flexibility, allowing the user to enter values of transportation rates for untagged smolts and the survival rate of transported smolts during transportation. The user can now explore alternative model structures by modifying the streamlined model file, or by rerunning the estimation routine with different starting values. Both these options allow the user to confirm that the

estimation routine has found the best model fit.

Many performance measures are estimated by ROSTER, including the ocean return rate (Bonneville-to-Bonneville return rate) for non-transported fish,  $O_{NT}$ , and a systemwide measure of the effect of the transportation system on return rates to Bonneville,  $R_{SYS}$ . The measure  $R_{SYS}$  incorporates the dam-specific T/I (transportation/inriver) measures estimated for each dam, as well as the proportion of fish that are actually transported and the return rate of fish that are not transported. Figures 4 and 5 show estimated  $O_{NT}$  and  $R_{SYS}$  values for spring Chinook salmon released in the Snake River upstream of Lower Granite Dam between the years 1996 and 2004. These data were downloaded from PTAGIS and processed through PitPro to give capture histories in the ROSTER format.

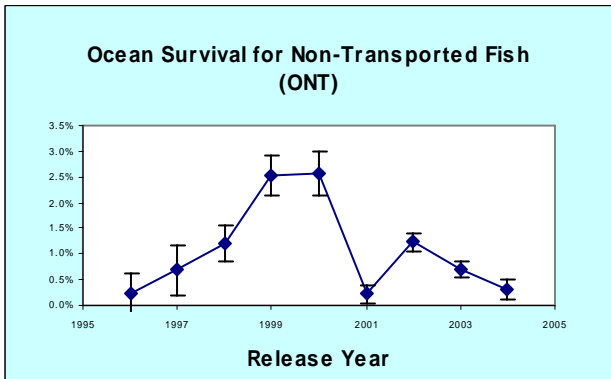


Figure 4. Ocean survival for non-transported fish.

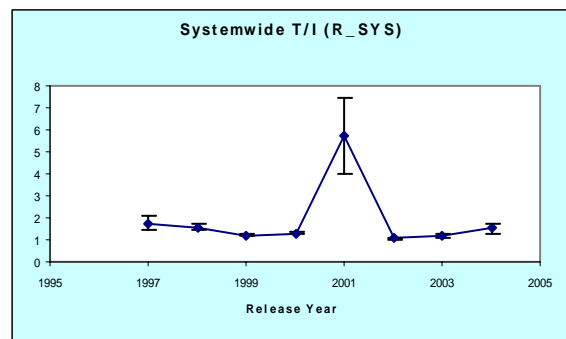


Figure 5. Systemwide T/I measuring the effect of the transportation system on return rates to Bonneville Dam.