

DECEMBER 2022
PERFORMANCE MEASURE INFORMATION SHEET
DUNCAN: RECREATION & TOURISM

SUMMARY

Goal: Maximize the quantity and quality of the recreational experience, including reservoir access and visual aesthetics.

Recommended performance measure:

Objective/ Location	Performance Measure	Description
Recreation and Tourism/ Duncan Reservoir	Recreation days	Weighted number of days per year that preferred elevation levels are reached during spring shoulder season (April 1- July 14), peak recreation season (July 15 – Sept. 6) and fall shoulder season (Sept. 7- Oct. 11). More is better.

A sub-measure representing preferred elevations for avoiding high water debris will inform detailed scenario evaluation.

Introduction

The Duncan Dam area is used by a variety of recreationalists and attracts many tourists each year. In general, local residents are the main users and their activities are concentrated in the southern end of the Duncan Reservoir rather than downstream of Duncan Dam. The Howser and Glacier Creek campsites, along with the Glayco Beach day use area, are the principal recreation areas on the reservoir. Activities at the reservoir include swimming, boating, fishing, and activities such as camping near the beach areas. This performance measure is for the Duncan Reservoir only.

The quality of the recreational experience supports tourism opportunities for local operators who rely on the Duncan Reservoir as a principal attraction during the summer months.

The impact of Duncan Dam operations on recreation quality is directly linked to Duncan Reservoir elevations. Reservoir water levels affect the following recreation factors:

- Foot access and boat access to the water;
- Area of usable beaches;
- Visual quality (appearance of the reservoir, adjacent beaches, mudflats and stumped areas) - in general, the fuller the reservoir the better the aesthetic values associated with recreation and tourism opportunities; and
- The presence of floating debris which, in addition to causing navigational hazards for boaters, can also damage shoreline recreational assets – floating debris is mainly an issue when the reservoir reaches full pool and refloats stranded debris.

Performance Measures from Past Processes

The [Duncan Dam Project Water Use Plan \(WUP\) Consultative Committee Report](#) (2005) established that local interests see the preferred time for recreation as being from July 15 to September 30 when water temperatures are high and the Duncan Reservoir is near full pool.

Howser and Glacier Creek campsites were used as indicators for recreational use in the entire reservoir area. The preferred reservoir elevation for beach use was defined at between 1.0m and 1.5m (3.3ft – 4.9ft) below full pool for these campsites based on a number of surveys. It is worthwhile to note, however, that there was some disagreement among the committee over preferred elevations, with an RDCK representative stating that, based on their informal poll of local residents, the majority prefer full pool, with some preferring levels 6 inches to 1ft (0.2m – 0.3m) below full pool to allow for some beach access (BC Hydro, 2005). Due to the low sloping shoreline, reservoir elevations particularly impact the recreation quality at Glacier Creek campsite.

The Recreation Quality performance measure used in the WUP reported the number of days the reservoir is at ideal levels for recreation interests during the primary recreation period, which at that time was understood as July 15 to September 6. Each user day was weighted by a factor (see Figure 1) depending on:

- a) reservoir elevation - the preferred elevation of 1m - 1.5m below full pool being rated the highest, and elevations below and above this elevation rated lower; and
- b) season – July 15 - 31 (shoulder season) was rated lower than the peak season from August 1 to September 6.

The resulting performance measure was the sum total of each weighted user day within the defined recreation season for each year.

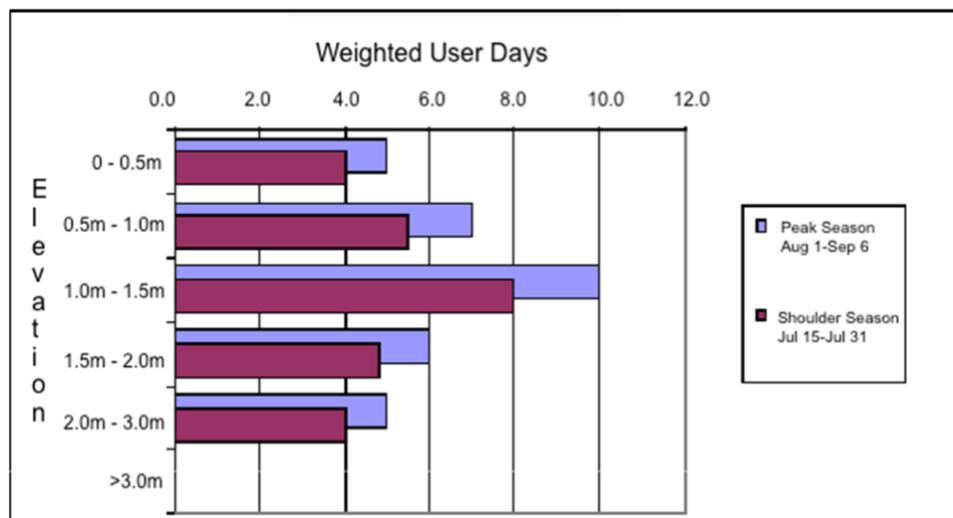


Figure 1. Recreation quality weightings used in the WUP process

New Information

During a consultation webinar undertaken as part of the current Socio-Economic Performance Measures project, the CRT Local Governments Committee and the Columbia

Basin Regional Advisory Committee confirmed the preferred elevations and seasonal weightings while recommending that the seasons be changed as follows:

- April 1- July 14 – Spring shoulder season
- July 15 - September 6 – Peak season
- September 7 – October 11 – Fall shoulder season

Following the webinar, BC Recreation Sites and Trails staff confirmed the appropriateness of the new season definitions (J. Dexter, pers. comm.).

A committee member also indicated that the popularity of angling on the reservoir has been increasing in recent years, and another suggested that angling may therefore be worth considering as a performance measure under the recreation and tourism theme. The team has confirmed that there is no available data to support an evaluation of angling trends on the reservoir (W. Warnock, pers. comm.) or to develop a related performance measure.

Finally, a committee member indicated that debris management affects recreational activities on the reservoir, in that high water floats shoreline debris which becomes a hazard to boating. Further, debris has caused damage to the beach at the RDCK-owned and operated Glacier Creek Regional Park. RDCK staff shared that debris is problematic at elevations close to full pool, which happens in most years, when it piles up on the shoreline, sometimes making the boat ramp difficult to use. Each spring, the park hires costly machinery to collect and burn debris left from the previous season. Debris was not as much of a problem at Glacier Creek when a boom protected the beaches. That boom has since been removed (Gaynor, pers. comm.) The team does not have information on what specific reservoir elevations are problematic in terms of debris.

The research team is not aware of any other new reports or studies that are relevant to this performance measure.

Recommended Performance Measure

Given the information above, the team recommends that the recreation quality weightings from the Duncan WUP be continued and the seasons be changed to:

- April 1- July 14 – Spring shoulder season
- July 15 - September 6 – Peak season
- September 7 – October 11 – Fall shoulder season

The revised performance measure is summarized in Figure 2 below.

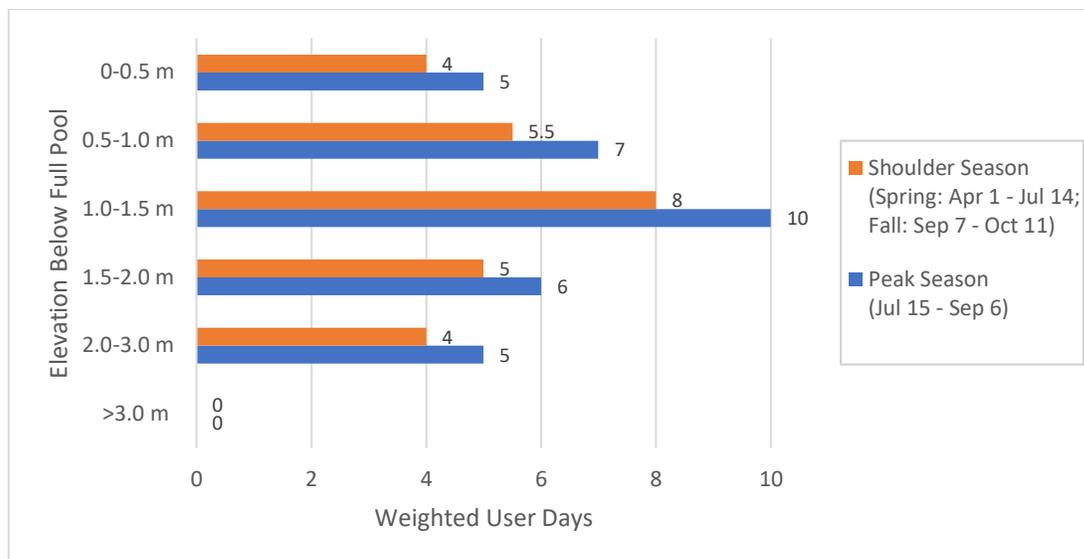


Figure 2: Recreation quality weightings with new recommended seasons

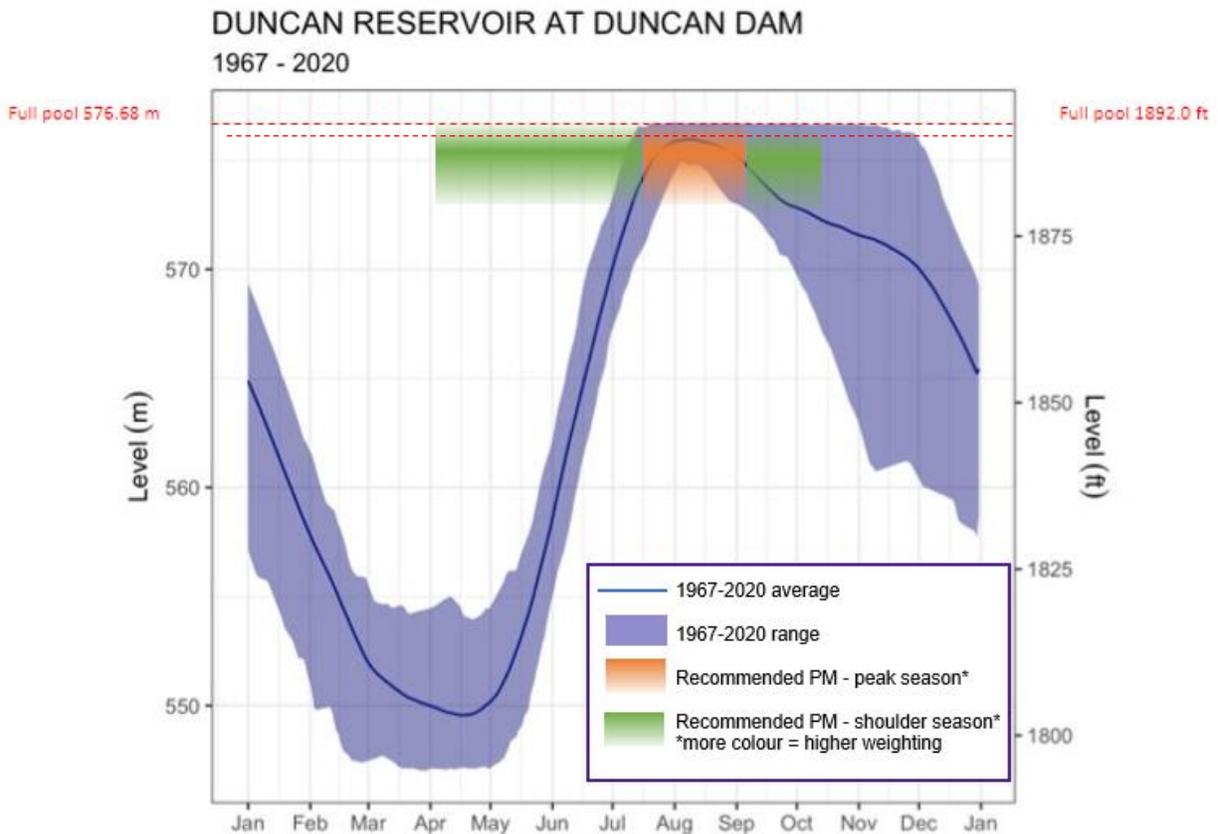
Recreation PMs that are in development for other Columbia River Treaty reservoirs incorporate a series of “sub-measures” that track how individual recreational factors (e.g., swimming, motorized and non-motorized boating) are affected by reservoir levels. Because of a shortage of recreation-focused research for the Duncan reservoir, the research team does not have access to sufficient information to allow for development of factor-specific sub-measures, with the exception of debris impacts on recreation at Glacier Creek Regional Park. A sub-measure has been developed for this issue (Table 1). Should local representatives indicate that the recommended PM does not sufficiently address remaining recreation or tourism factors, it is recommended that research be conducted into the main recreation activities that occur on the reservoir, their season, elevations that permit access for each (e.g., operable ranges of boat ramps), and the elevation preferences of each user group.

Table 1: Sub-measure for analysis during the modeling process

Sub-Measure Objective	Season	Elevation Range
High water debris avoidance	Apr 1 – Oct 11	1891ft (576.4m) and above

Comparison of Recommended PM to Historic Operations

As shown in Figure 1, recommended elevations for the peak season are within the range of usual reservoir operations at that time. Reservoir elevations are typically towards the lower end of the recommended elevations during the fall shoulder season. Recommended elevations for the spring season are unlikely to be met until July, as the reservoir is drawn down in the spring to allow space for the incoming freshet to avoid downstream flooding.



Calculations:

For each scenario:

1. Assemble the daily simulated results for the recommended elevation range.
2. Count the number of days between the upper and lower thresholds for each season.
3. Summarize all statistics.

Key Assumptions and Uncertainties

- Minimal recreation use outside the preferred time for recreation and the preferred Duncan Reservoir elevations.
- If the reservoir is managed for recreation quality, recreation areas other than the Glacier and Howser campsites will also benefit.

This performance measure does not account for other variables that impact recreation quality and are outside the effects of reservoir elevations, including:

- Weather – warm weather results in increased recreation use.

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- Water temperatures in Duncan Reservoir and Kootenay Lake and other surrounding lakes.
- Day of the week – increased recreation use on weekends and holidays.
- Wildfire smoke – heavy smoke results in a significant drop in recreational use.

References

BC Hydro (2005). Duncan Dam Water Use Plan Consultative Committee Report.
<https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/environment-sustainability/water-use-planning/southern-interior/wup-duncan-consultative-committee-report.pdf>