Grande Ronde summer steelhead cumulative DD

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Grande Ronde summer steelhead Columbia River temperature time series from 2017. 4 scenarios included:

- Columbia River 2017
- Columbia River 2017, no CWRs
- Columbia River 2017 plus 1
- Columbia River 2017 plus 1, no CWRs

Columbia 2017B assigns the John Day Pool temperature from the John Day forebay, which is the warmer part of the pool.

DD > 18 °C

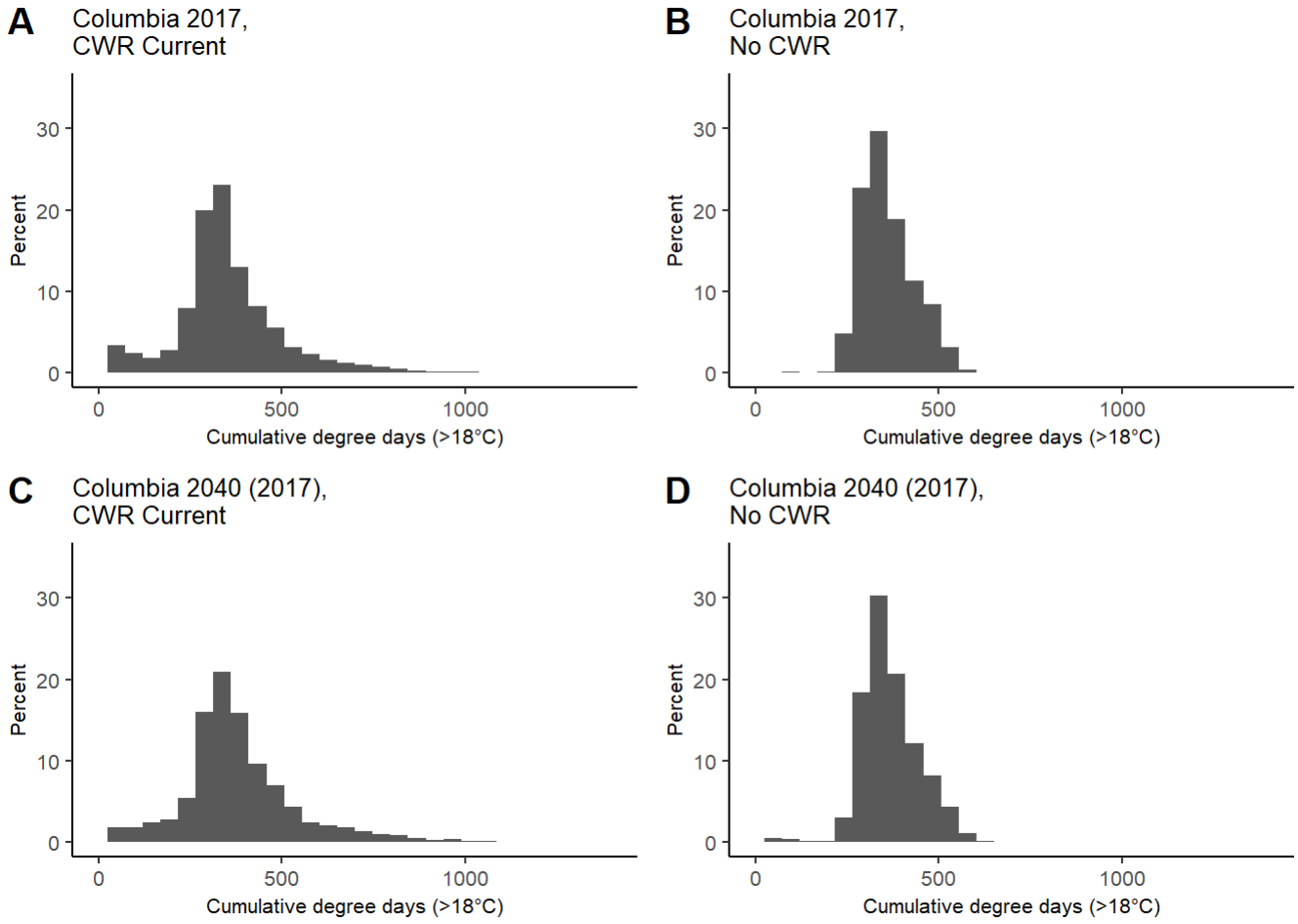

Fig. 1. Histograms of modeled Grande Ronde River summer steelhead accumulated degrees day over 18°C from Bonneville to the Snake River confluence in the Columbia River.

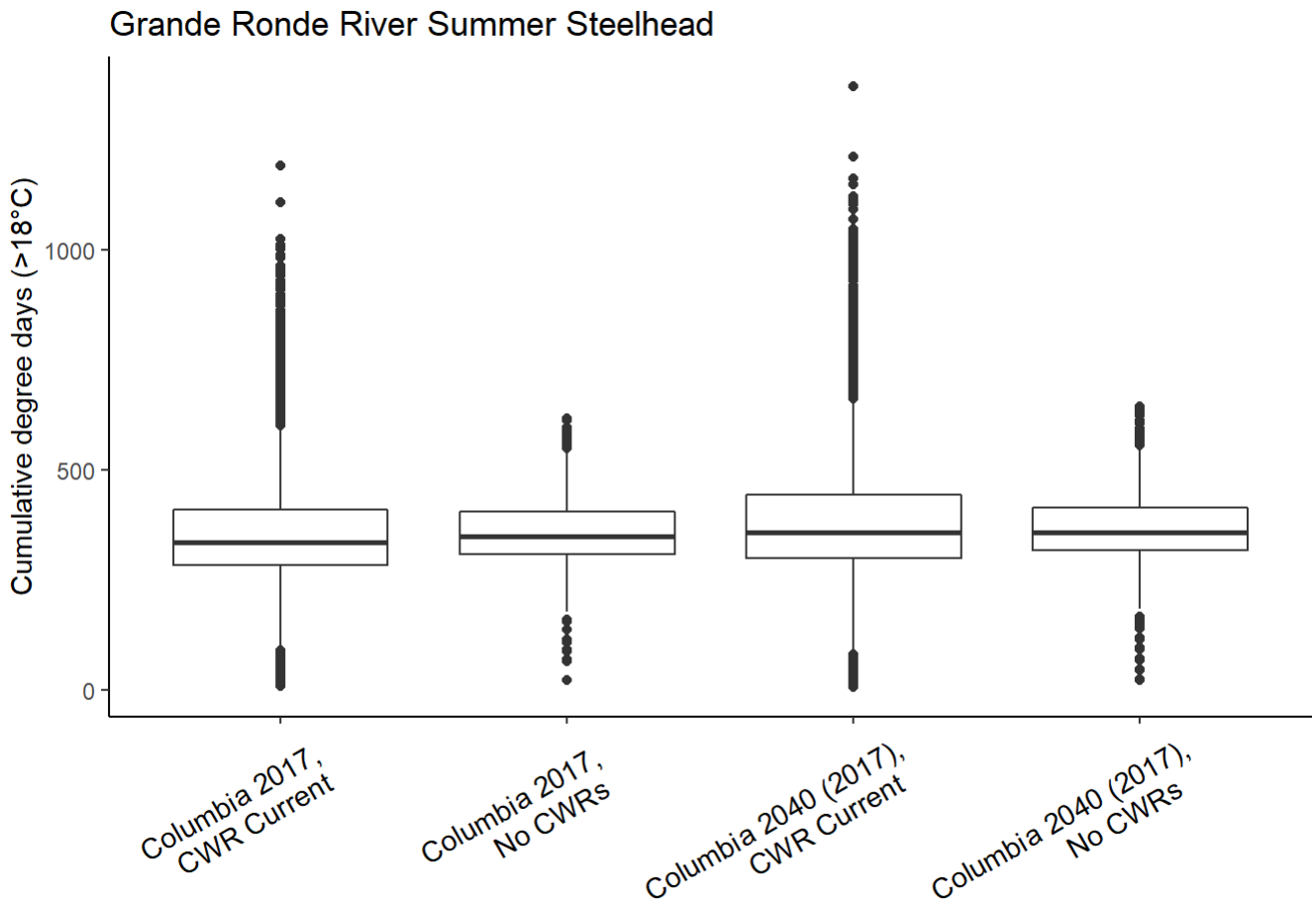

Fig. 2. Boxplots of modeled Grande Ronde River summer steelhead accumulated degrees day over 18°C from Bonneville to the Snake River confluence in the Columbia River.

Table 1. Cumulative degree days (>18°C) used across different HexSim thermalscapes summarized for Grande Ronde River Summer Steelhead.

Scenario	Minimum	25% quantile	Median	75% quantile	Maximum
Columbia 2017, CWR Current	8	283	337	410	1193
Columbia 2017, No CWR	22	309	348	405	619
Columbia 2040 (2017), CWR Current	7	299	357	444	1373
Columbia 2040 (2017), No CWR	22	318	357	414	645

Degree Days > 20°C

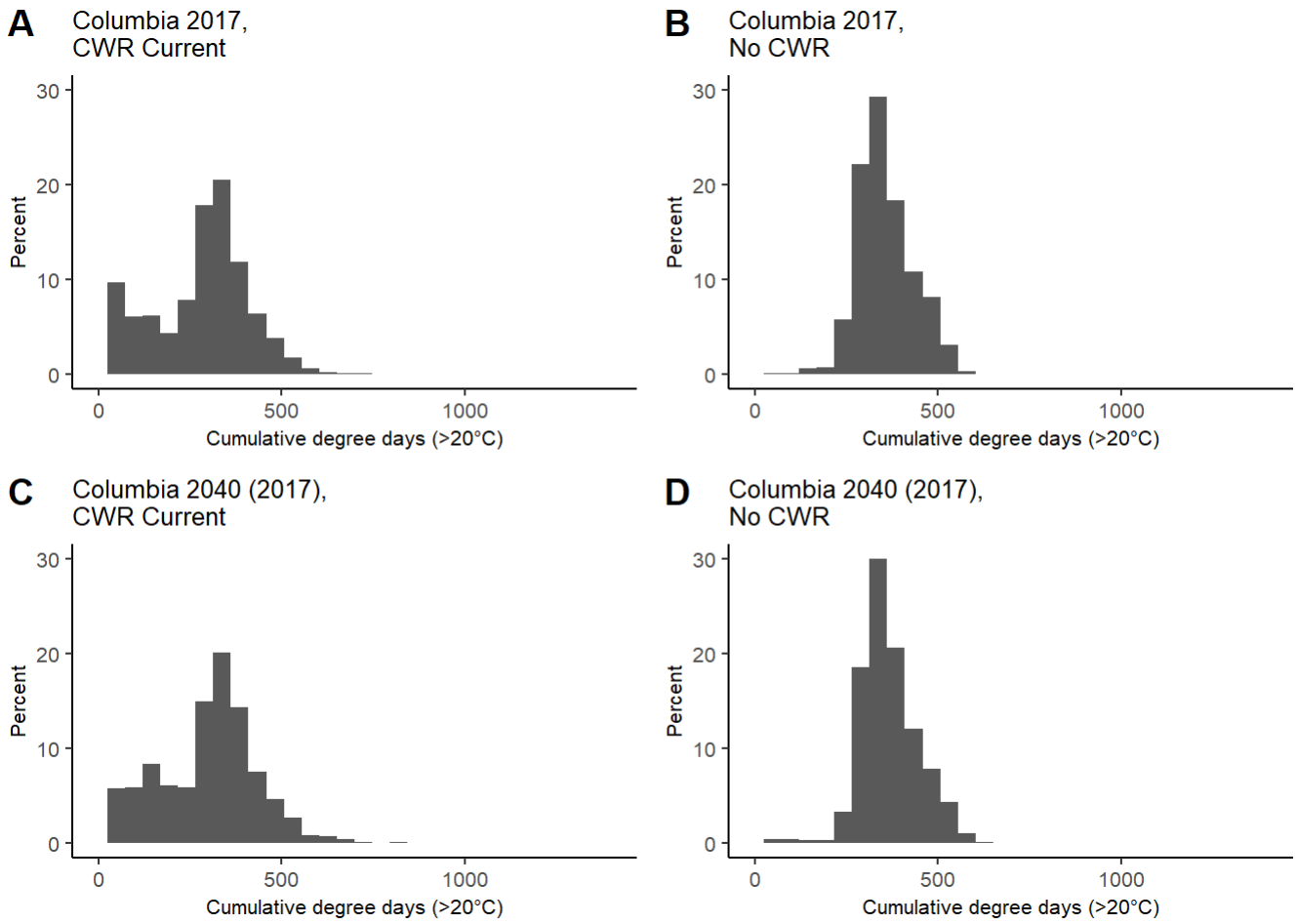

Fig. 1. Histograms of modeled Grande Ronde River summer steelhead accumulated degrees day over 18°C from Bonneville to the Snake River confluence in the Columbia River.

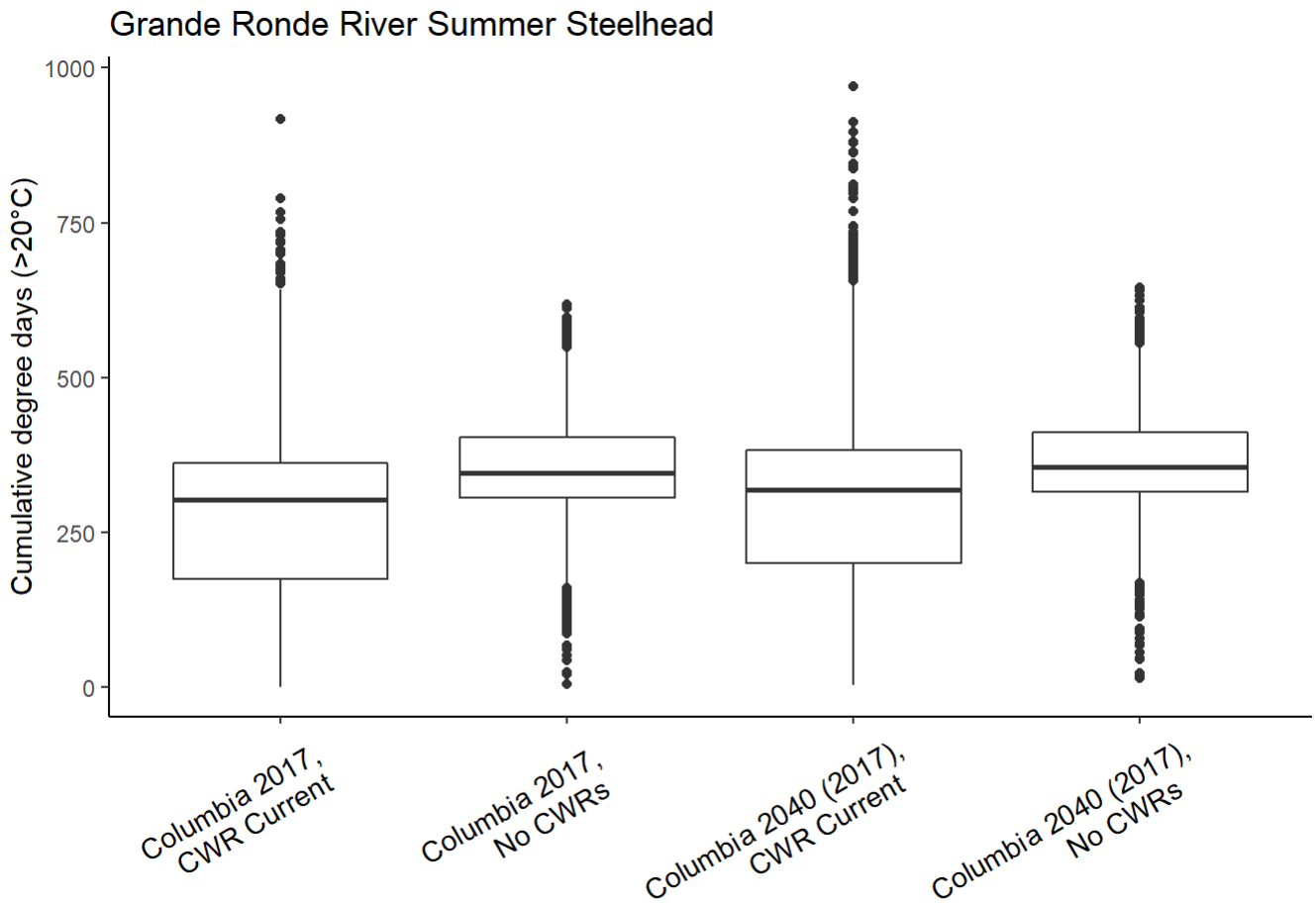

Fig. 2. Boxplots of modeled Grande Ronde River summer steelhead accumulated degrees day over 18°C from Bonneville to the Snake River confluence in the Columbia River.

Table 1. Cumulative degree days (>20°C) used across different HexSim thermalscapes summarized for Grande Ronde River Summer Steelhead.

Scenario	Minimum	25% quantile	Median	75% quantile	Maximum
Columbia 2017, CWR Current	1	175	303	362	918
Columbia 2017, No CWR	6	306	346	403	619
Columbia 2040 (2017), CWR Current	4	200	319	382	970
Columbia 2040 (2017), No CWR	15	316	356	412	645

Degree Days > 21°C

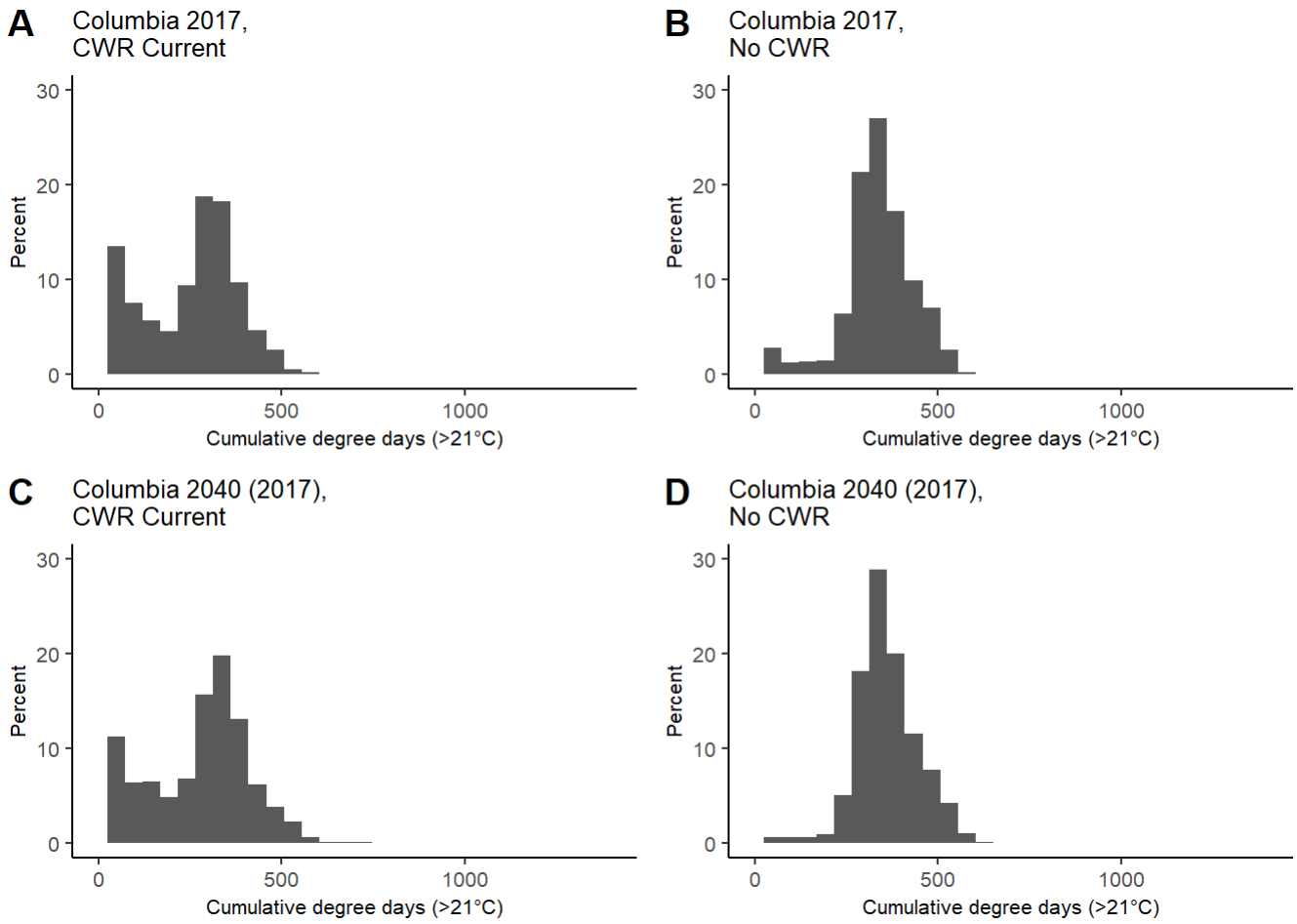

Fig. 1. Histograms of modeled Grande Ronde River summer steelhead accumulated degrees day over 21°C from Bonneville to the Snake River confluence in the Columbia River.

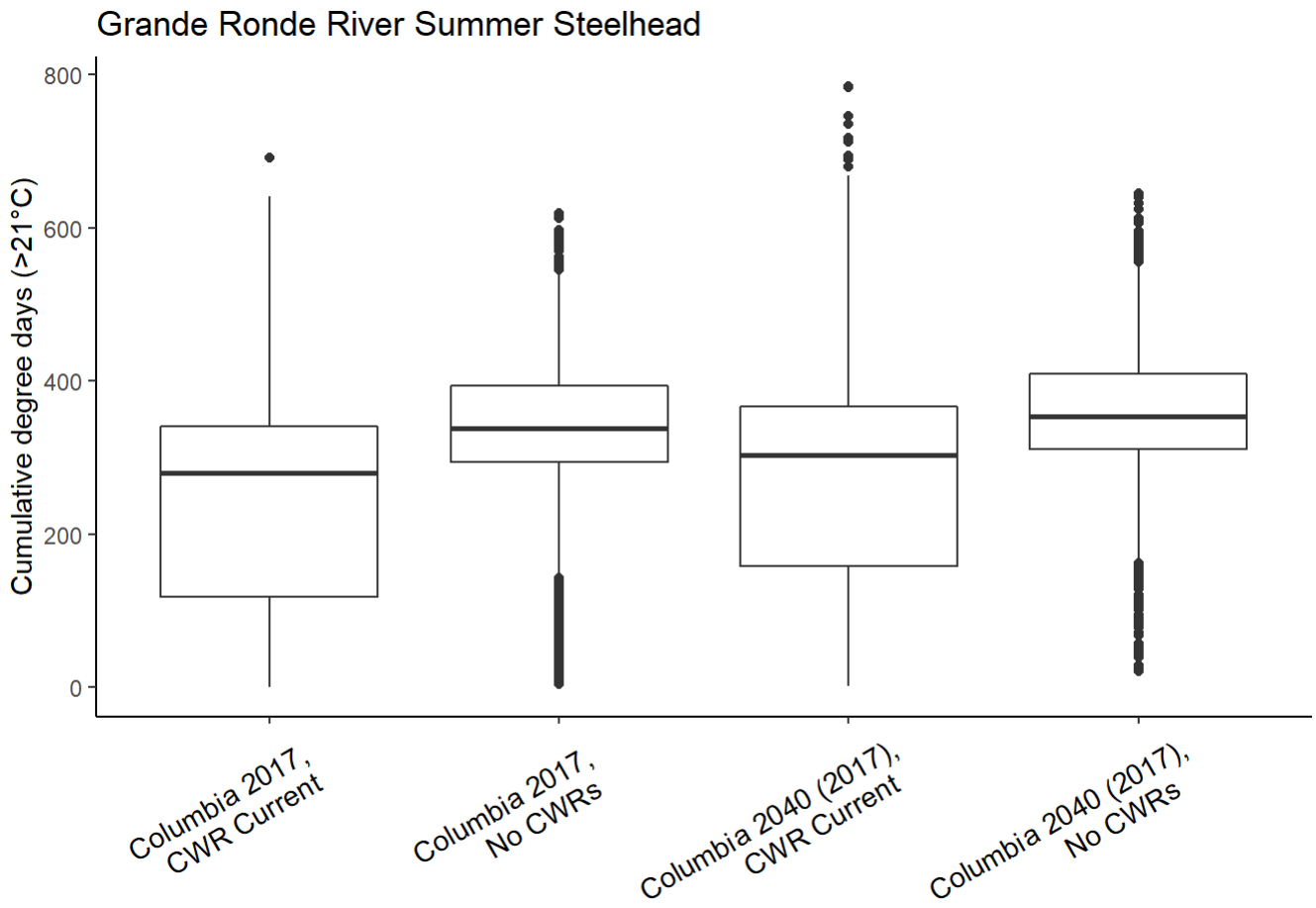

Fig. 2. Boxplots of modeled Grande Ronde River summer steelhead accumulated degrees day over 21°C from Bonneville to the Snake River confluence in the Columbia River.

Table 1. Cumulative degree days (>21°C) used across different HexSim thermalscapes summarized for Grande Ronde River Summer Steelhead.

Scenario	Minimum	25% quantile	Median	75% quantile	Maximum
Columbia 2017, CWR Current	1	119	280	341	691
Columbia 2017, No CWR	4	294	338	394	619
Columbia 2040 (2017), CWR Current	2	158	303	366	785
Columbia 2040 (2017), No CWR	22	311	353	409	645

Degree Days > 22°C

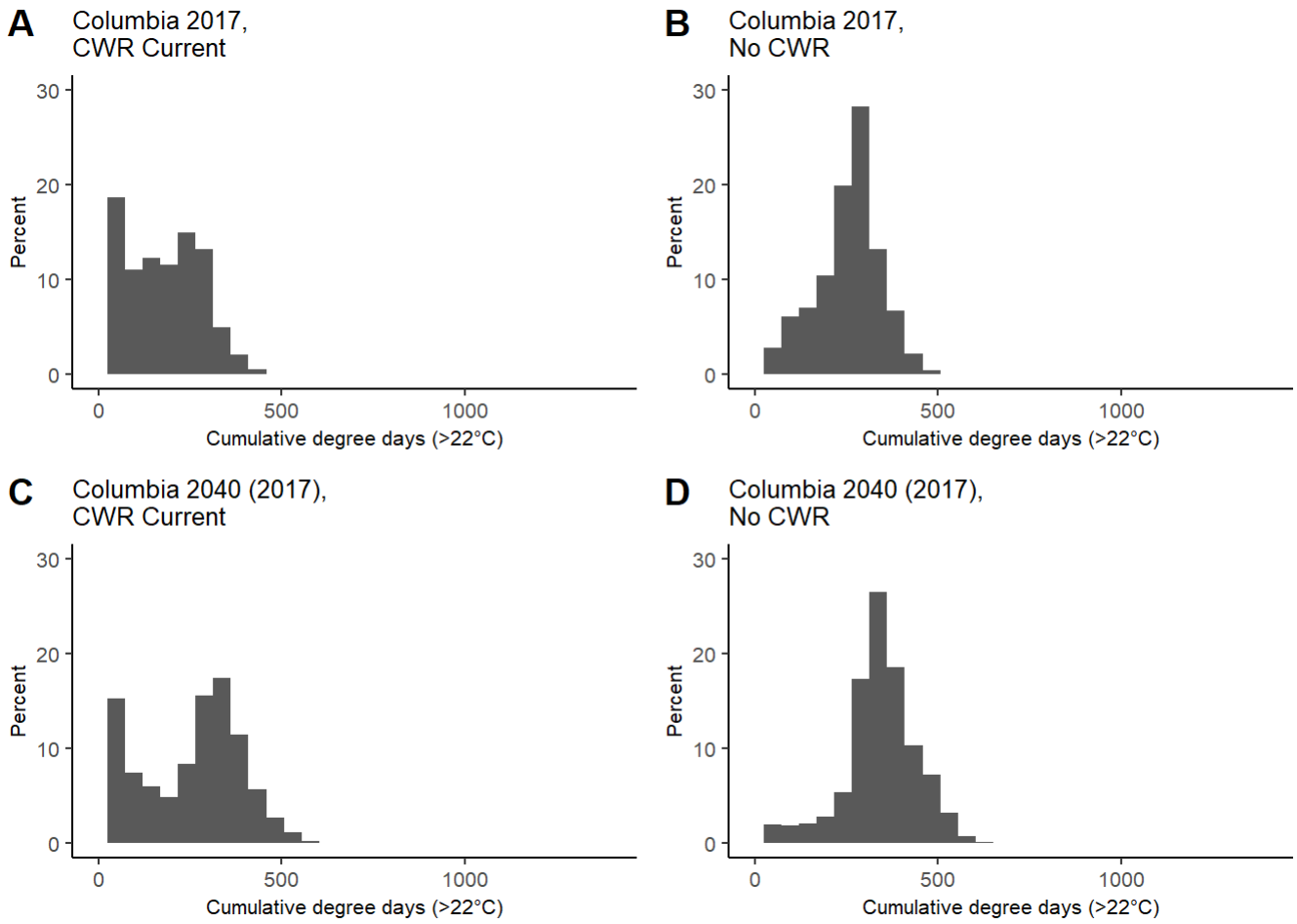

Fig. 1. Histograms of modeled Grande Ronde River summer steelhead accumulated degrees day over 22°C from Bonneville to the Snake River confluence in the Columbia River.

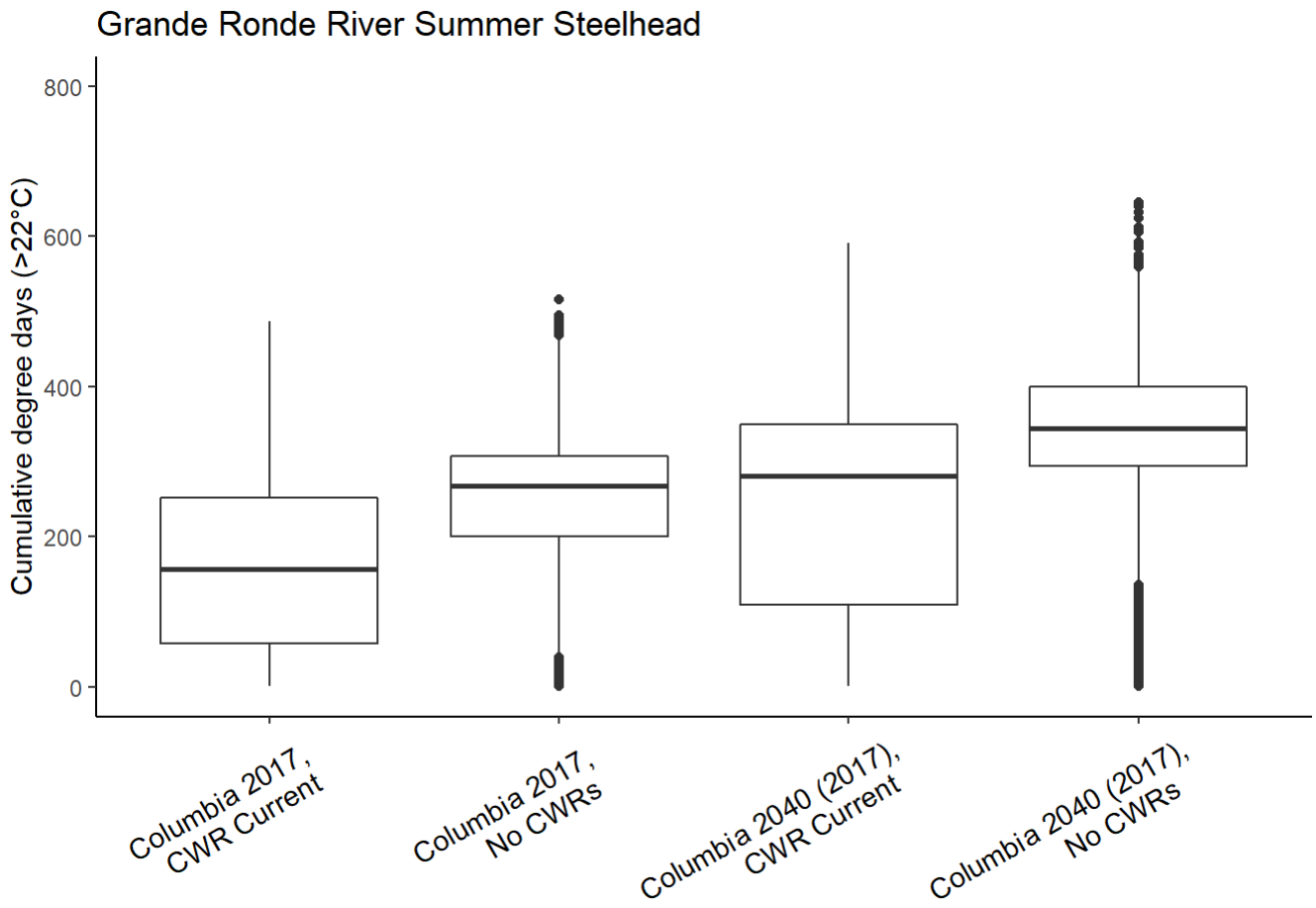

Fig. 2. Boxplots of modeled Grande Ronde River summer steelhead accumulated degrees day over 22°C from Bonneville to the Snake River confluence in the Columbia River.

Table 1. Cumulative degree days (>22°C) used across different HexSim thermalscapes summarized for Grande Ronde River Summer Steelhead.

Scenario	Minimum	25% quantile	Median	75% quantile	Maximum
Columbia 2017, CWR Current	1	58	157	252	486
Columbia 2017, No CWR	1	201	267	308	516
Columbia 2040 (2017), CWR Current	1	109	280	350	592
Columbia 2040 (2017), No CWR	1	295	345	400	645

Degree Days > 23°C

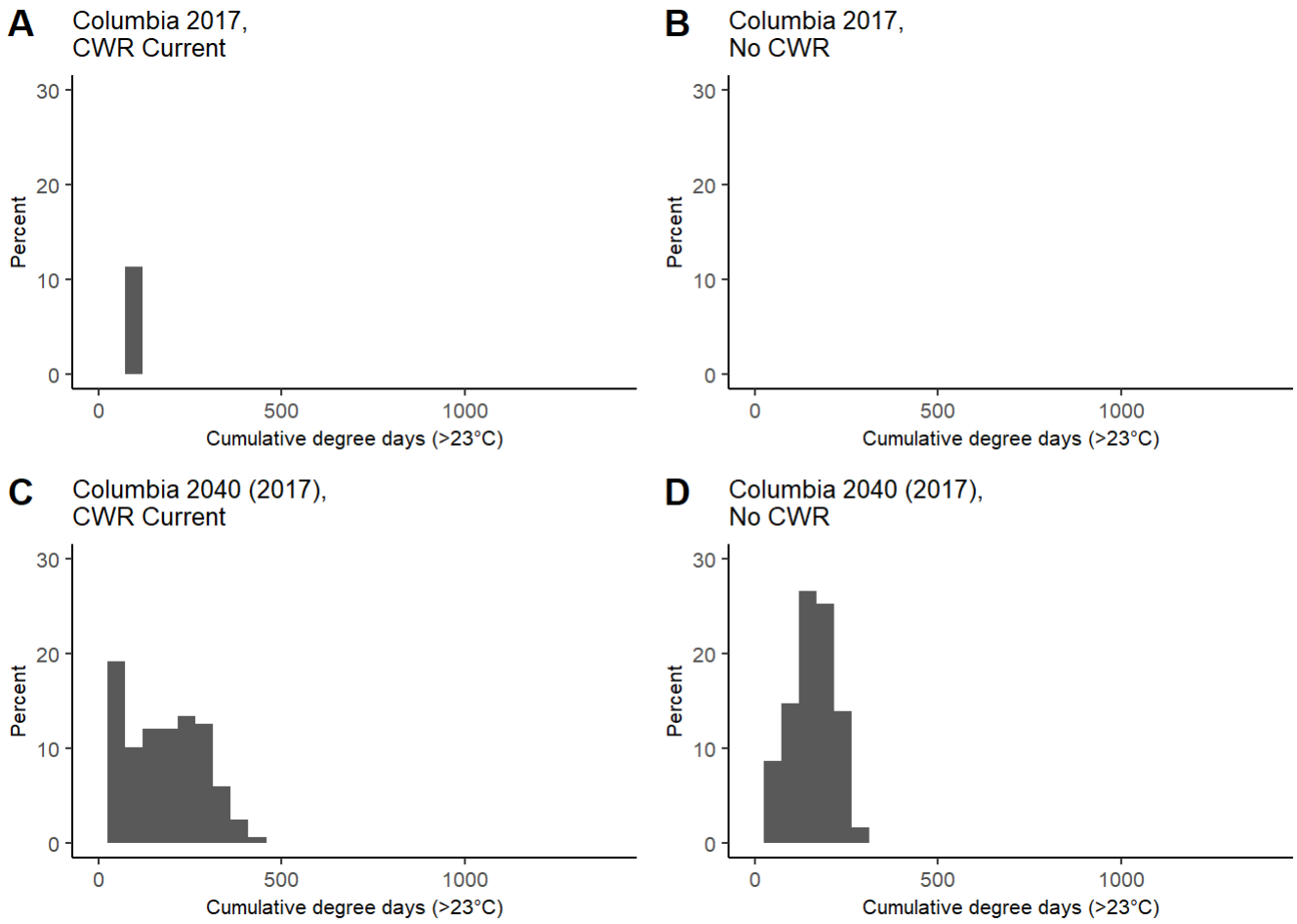

Fig. 1. Histograms of modeled Grande Ronde River summer steelhead accumulated degrees day over 23°C from Bonneville to the Snake River confluence in the Columbia River.

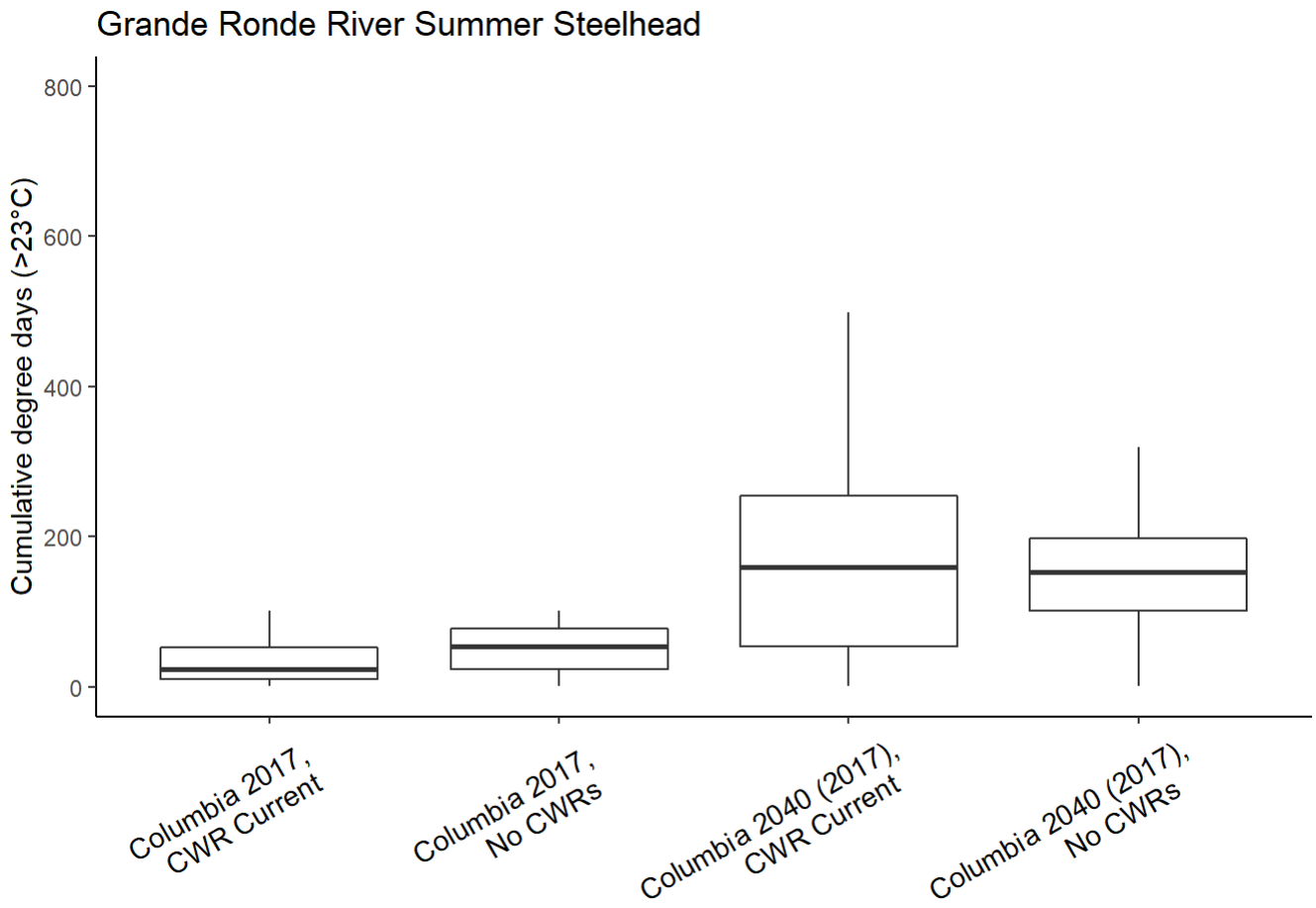

Fig. 2. Boxplots of modeled Grande Ronde River summer steelhead accumulated degrees day over 23°C from Bonneville to the Snake River confluence in the Columbia River.

Table 1. Cumulative degree days (>23°C) used across different HexSim thermalscapes summarized for Grande Ronde River Summer Steelhead.

Scenario	Minimum	25% quantile	Median	75% quantile	Maximum
Columbia 2017, CWR Current	1	10	23	52	101
Columbia 2017, No CWR	1	23	54	78	101
Columbia 2040 (2017), CWR Current	1	54	159	254	500
Columbia 2040 (2017), No CWR	1	101	152	198	320