Grande Ronde summer steelhead summarized fitness outcomes

MNSnyder

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

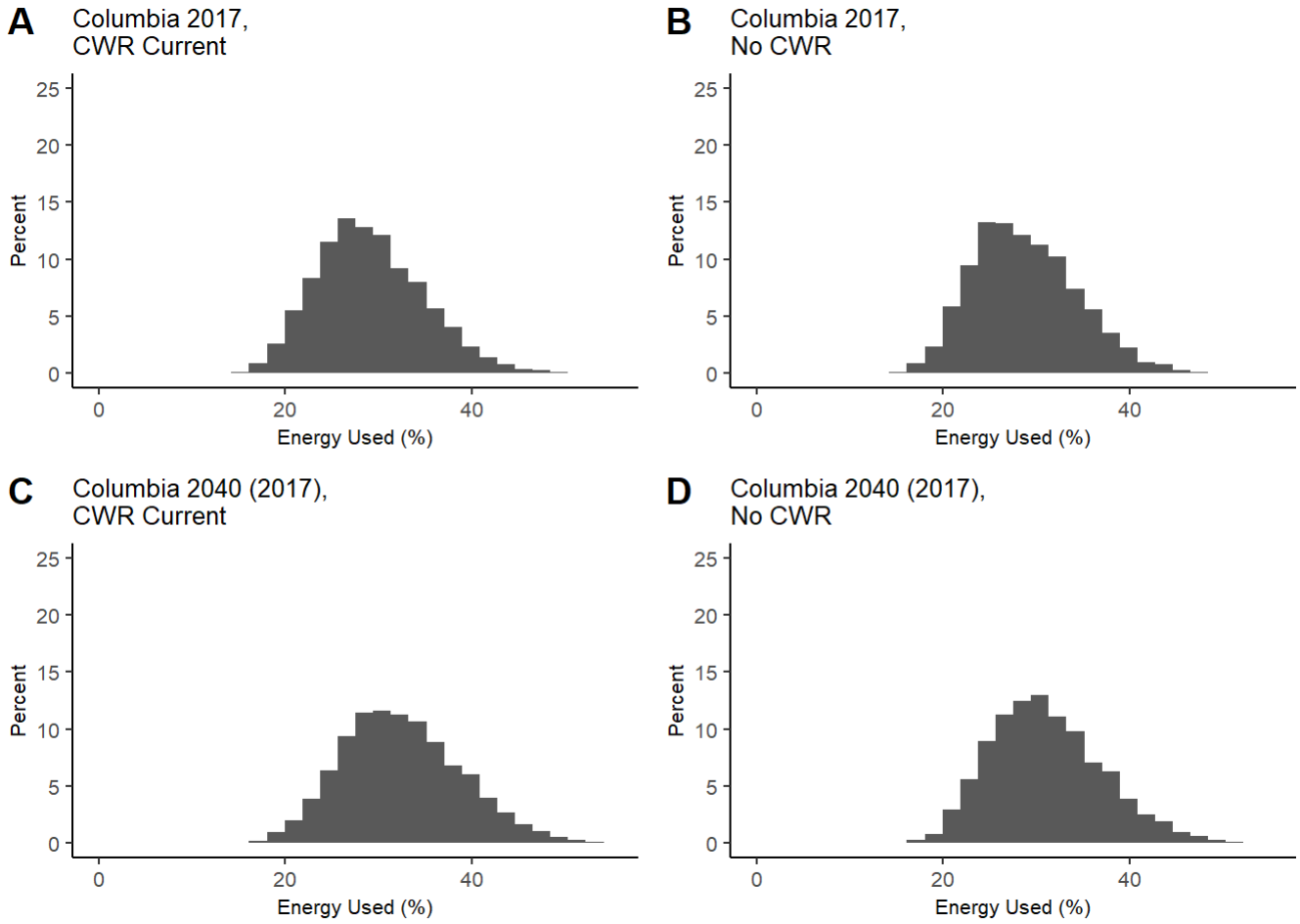


Fig. 1. Histogram of percent energy lost for modeled Grande Ronde summer steelhead migrating through four different modeled thermalscapes.

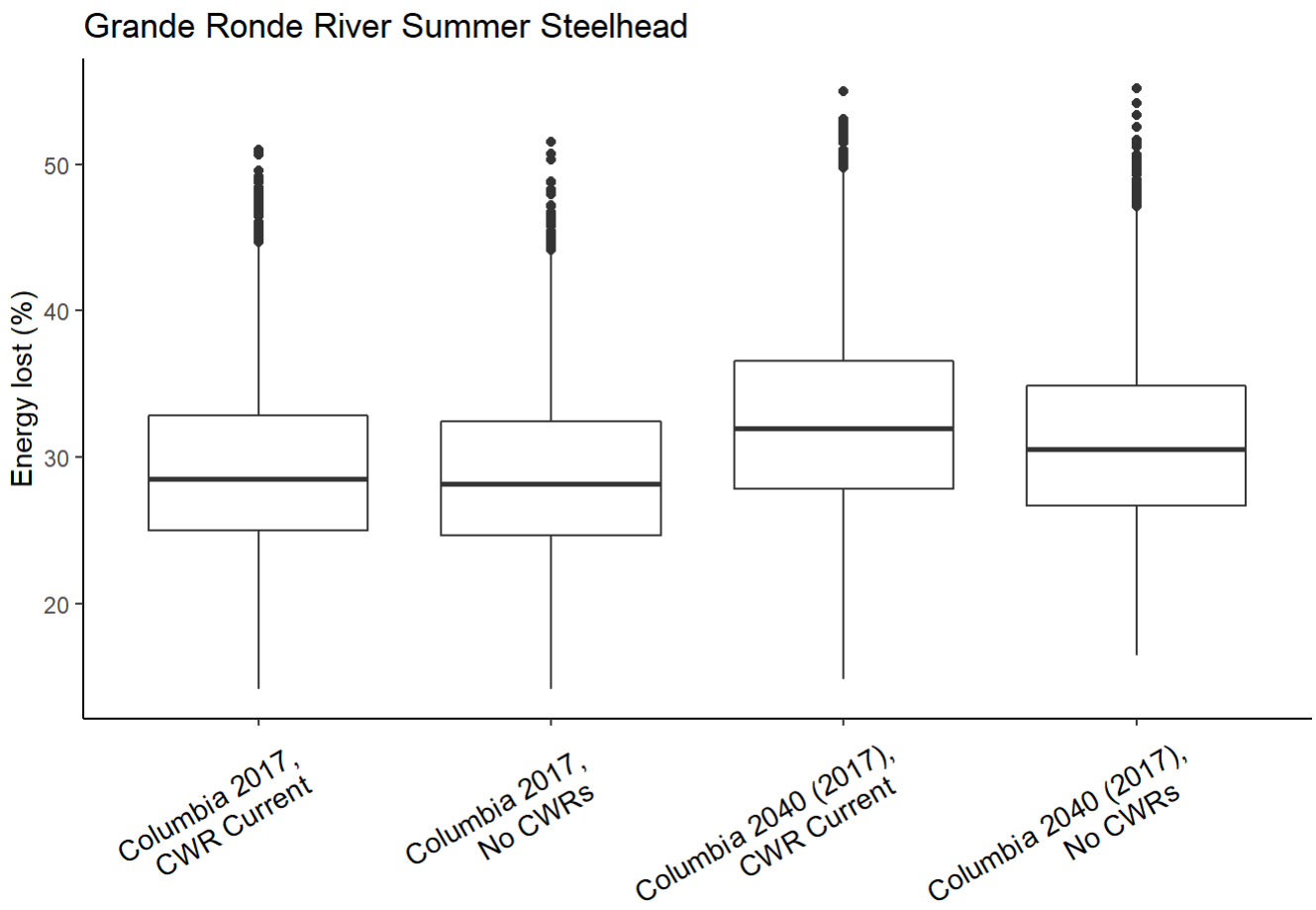


Fig. 2. Boxplot of percent energy lost for modeled Grande Ronde summer steelhead migrating through four different modeled thermalscapes.

Table 1. Percent energy used across different HexSim thermalscapes summarized for Grande Ronde River Summer Steelhead.

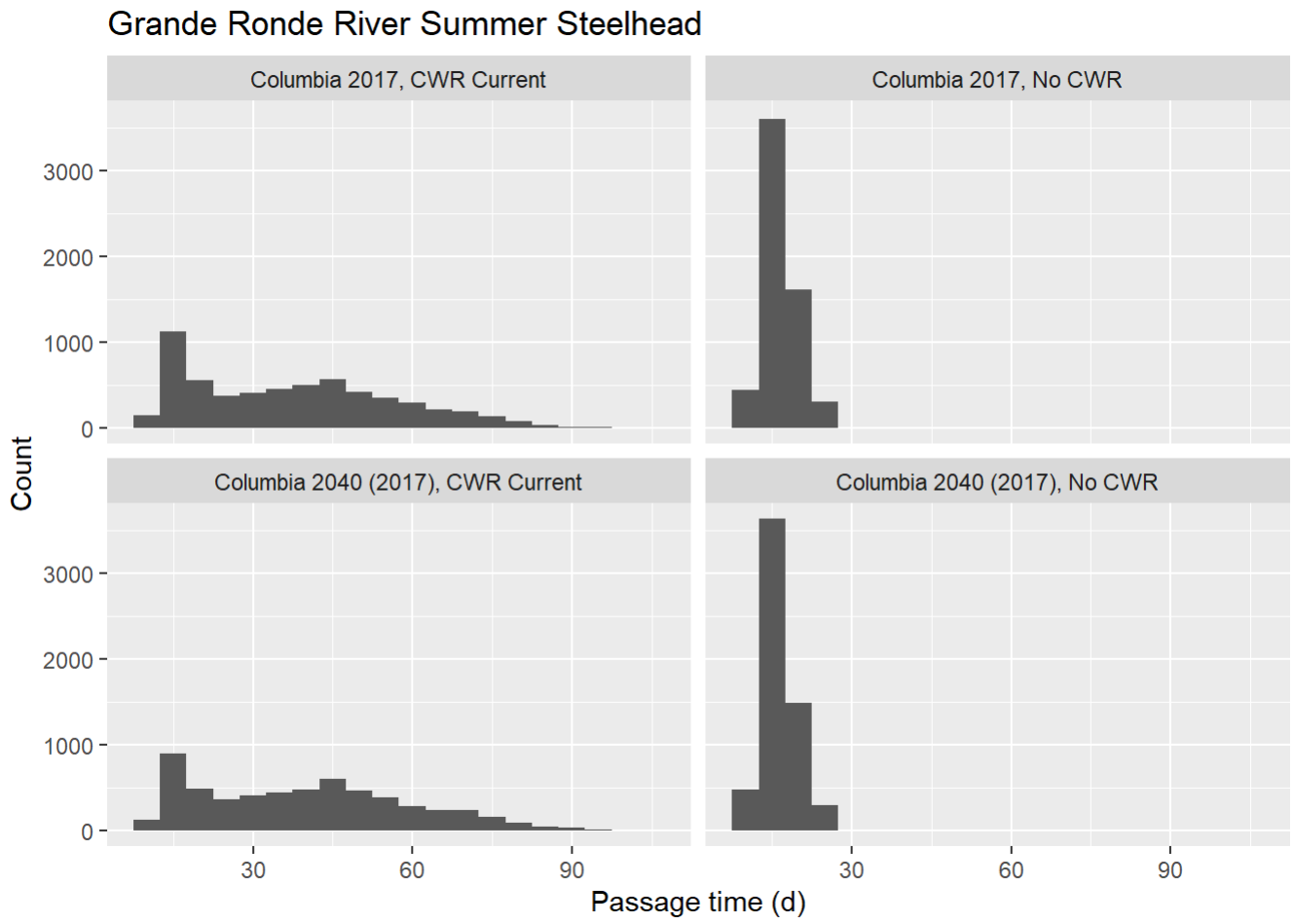
Scenario	Minimum	25% quantile	Median	75% quantile	Maximum
Columbia 2017, CWR Current	14	25	29	33	51
Columbia 2017, No CWR	14	25	28	32	52
Columbia 2017, CWR Current	15	28	32	37	55
Columbia 2017, No CWR	16	27	31	35	55

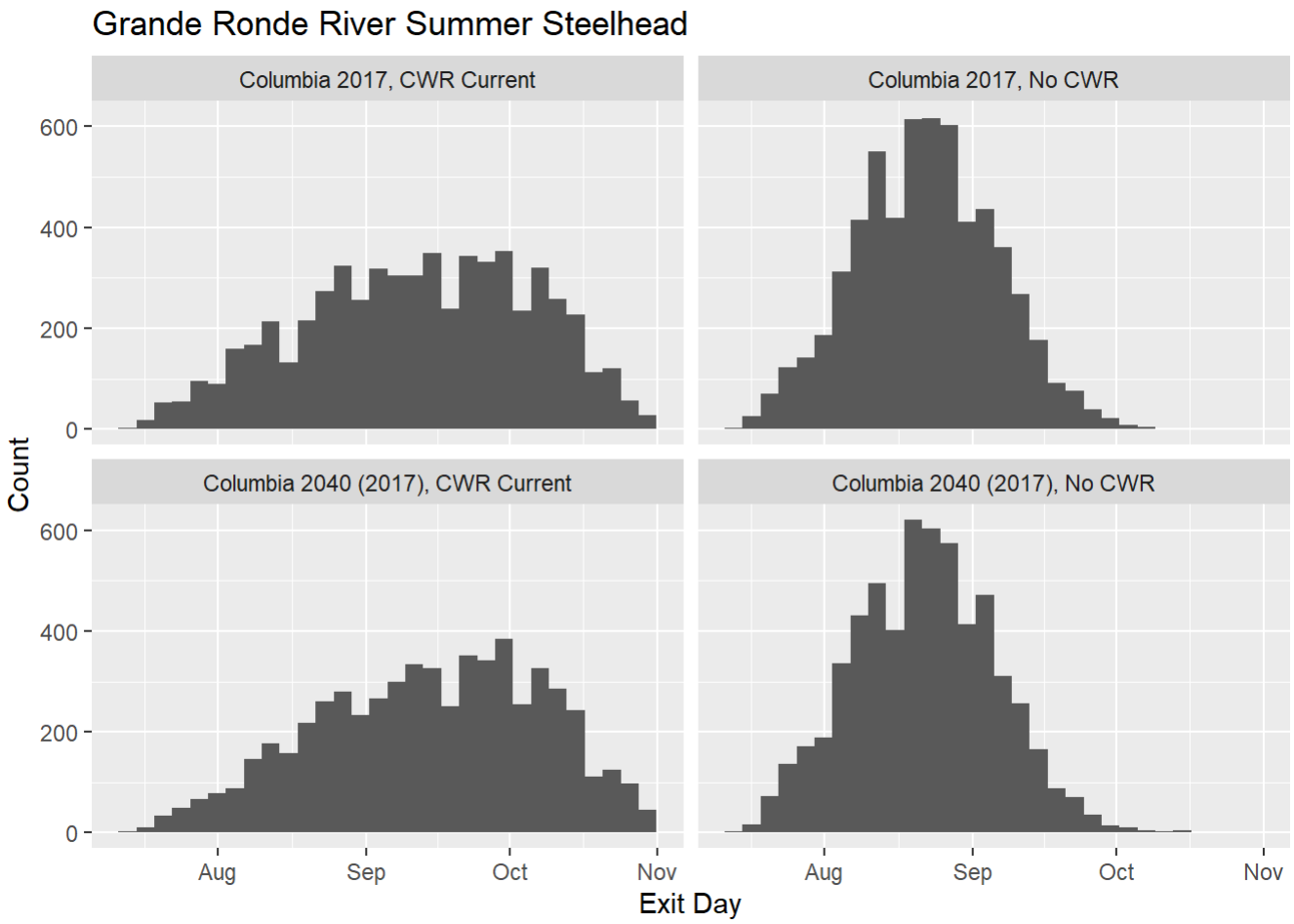
Table 3. Model output for total hours residing n cold water refuges summarized for Grande Ronde River Summer Steelhead.

Scenario	Total CWR Residence (h)
Columbia 2017,CWR Current	3061505
Columbia 2017, No CWRs	16
Columbia 2040 (2017), Current	3410964
Columbia 2040 (2017), No CWRs	17

Table 4. Model output for percent of individuals dying from acute temperature stress summarized for Grande Ronde River Summer Steelhead.

Scenario	Total mortality
Columbia 2017,CWR Current	0.95
Columbia 2017, No CWRs	1.5
Columbia 2040 (2017), Current	5.2
Columbia 2040 (2017), No CWRs	5.25




Grande Ronde River Summer Steelhead
Columbia 2017, CWR Current
Columbia 2017, No CWR
Columbia 2040 (2017), CWR Current
Columbia 2040 (2017), No CWR
Count
600
400
200
0
Aug
Sep
Oct
Nov
Exit Day