

Estimation of Juvenile Salmonid Survival from Bonneville Dam Through the Columbia River Estuary Using Acoustic Tags

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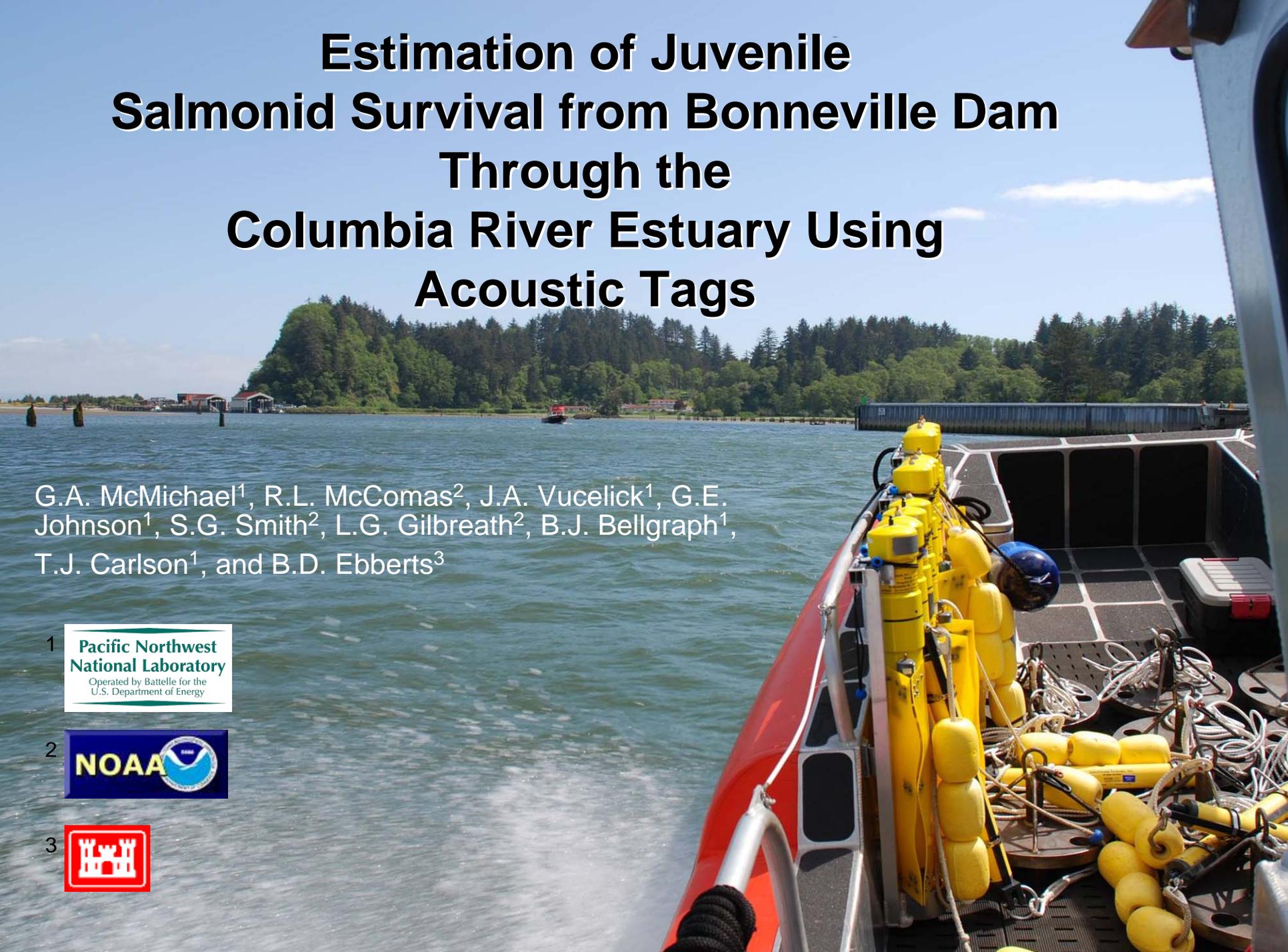
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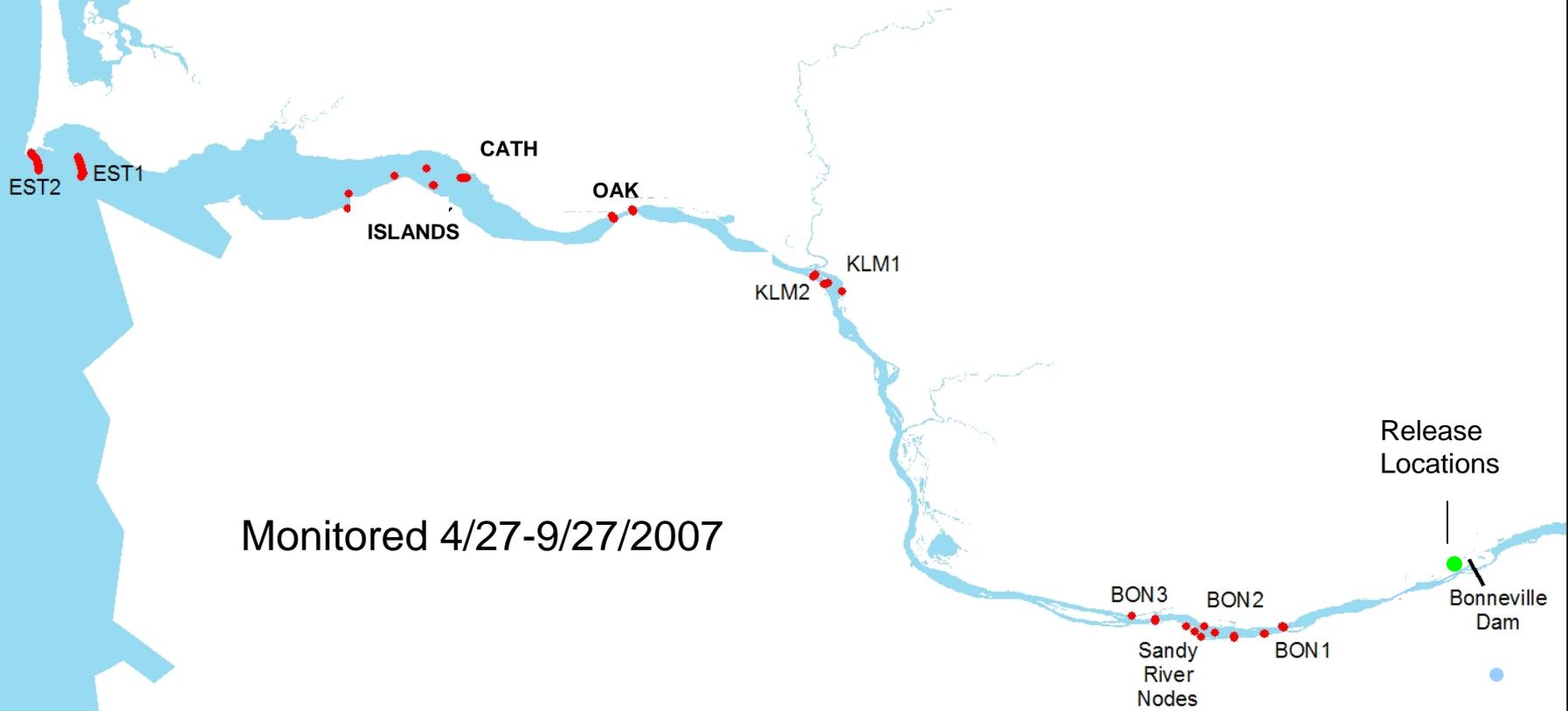
2007 Objectives

- ▶ Estimate Survival from Bonneville Dam tailrace to the mouth of the Columbia River
 - Yearling Chinook salmon
 - Subyearling Chinook salmon
- ▶ Partition Survival in Columbia River reaches downstream of Bonneville Dam
- ▶ Evaluate Mobile Tracking (McComas)
- ▶ Determine Migration Pathways in Estuary

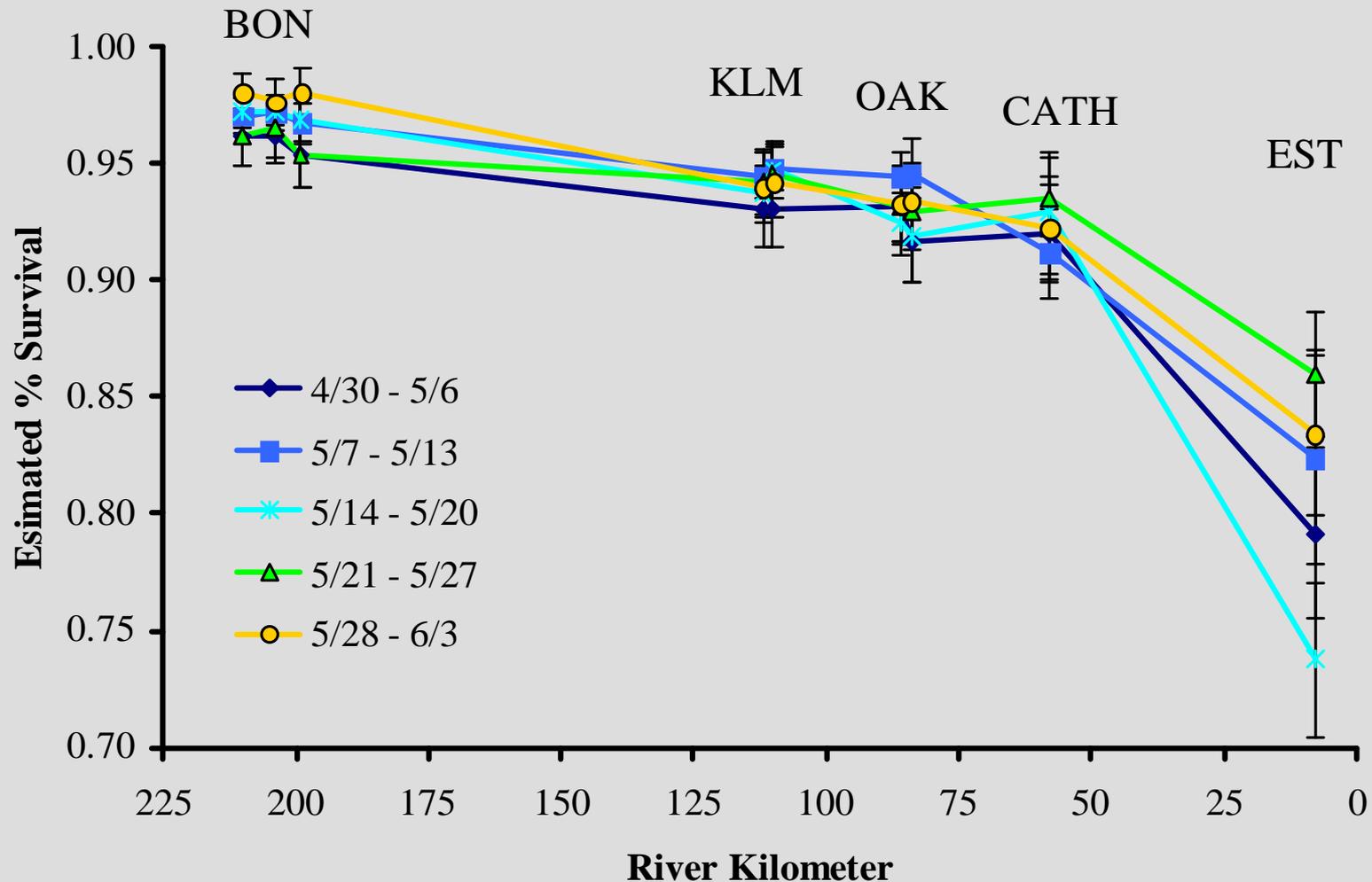
Fish Releases

- ▶ Released run-of-river smolts implanted with JSATS transmitters + PIT tag in the Bonneville Dam tailrace (mid-channel and B2 JEF outfall)
 - 1,787 Yearling Chinook salmon May 1 through June 2
 - 1,037 by boat in tailrace
 - 750 in the Bon2 JEF outfall
 - 2,790 Subyearling Chinook Salmon June 16 to July 21
 - 1,039 by boat in tailrace
 - 1,751 in Bon2 JEF outfall

Array Locations

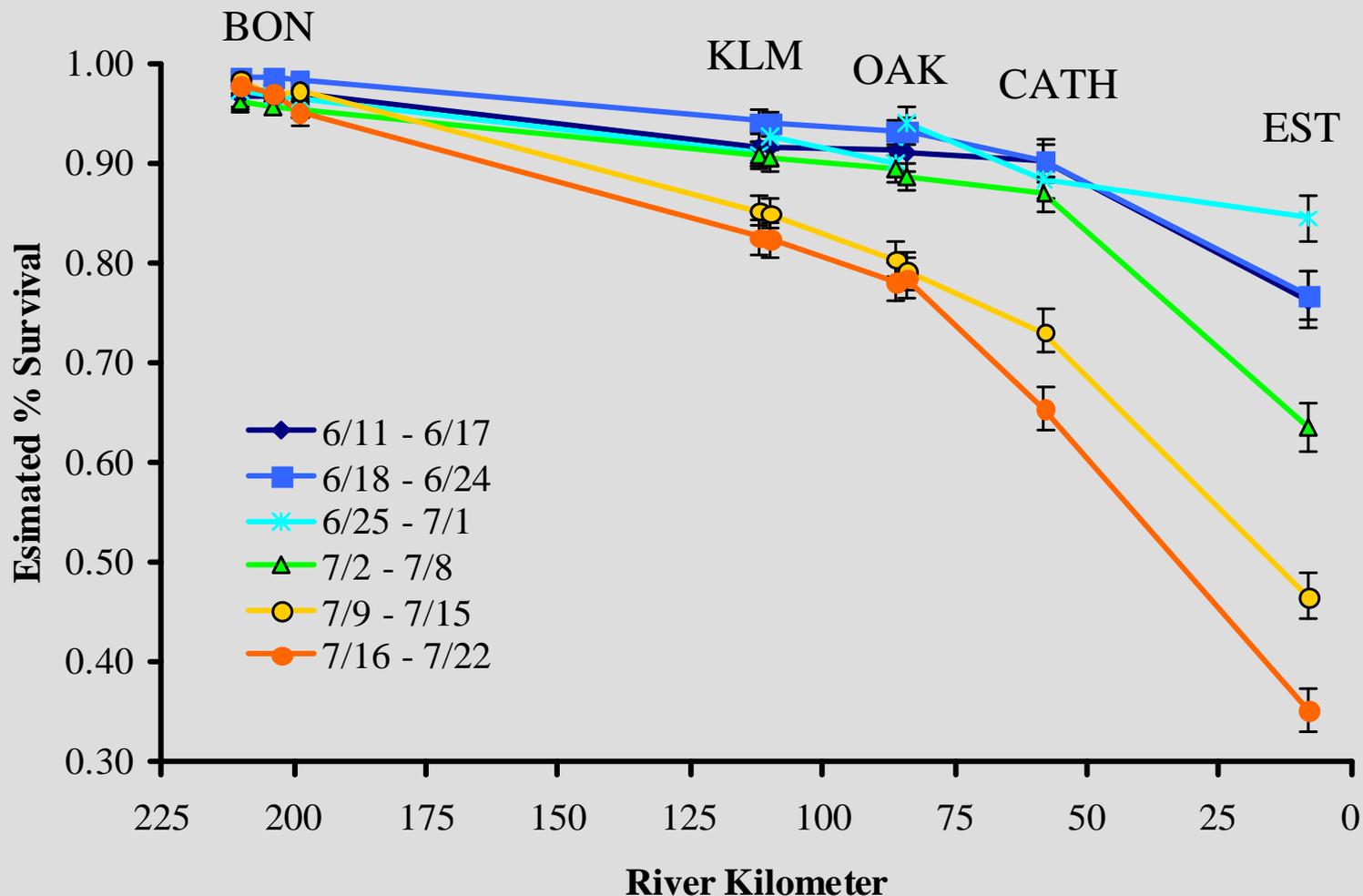


Yearling Chinook Salmon Survival* was lowest in the final 50 km of Columbia River/Estuary



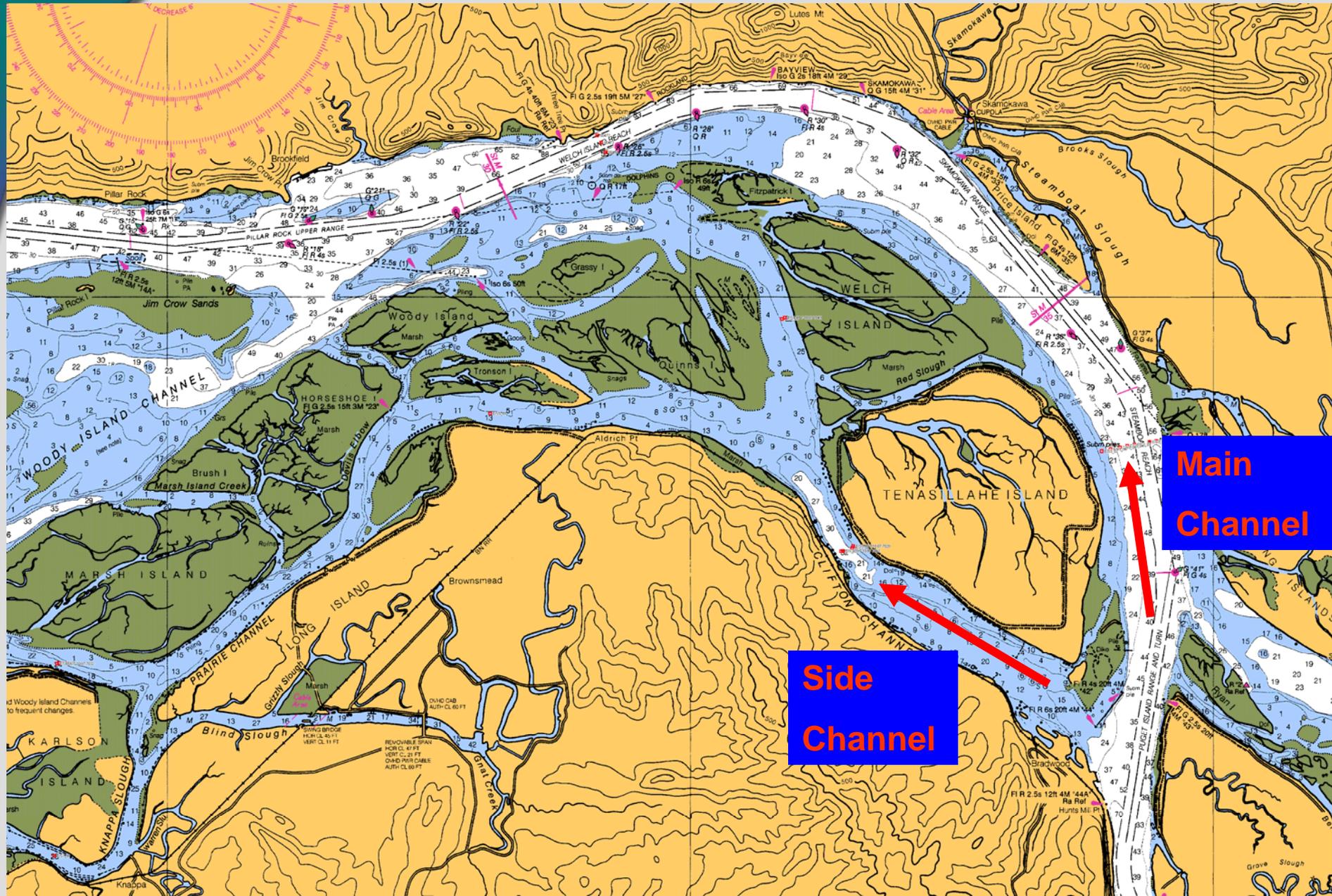
* Preliminary survival estimates – final estimates will be prepared by NOAA Fisheries

Subyearling Chinook Salmon Survival* was lower after July 2 and in lower 50 km

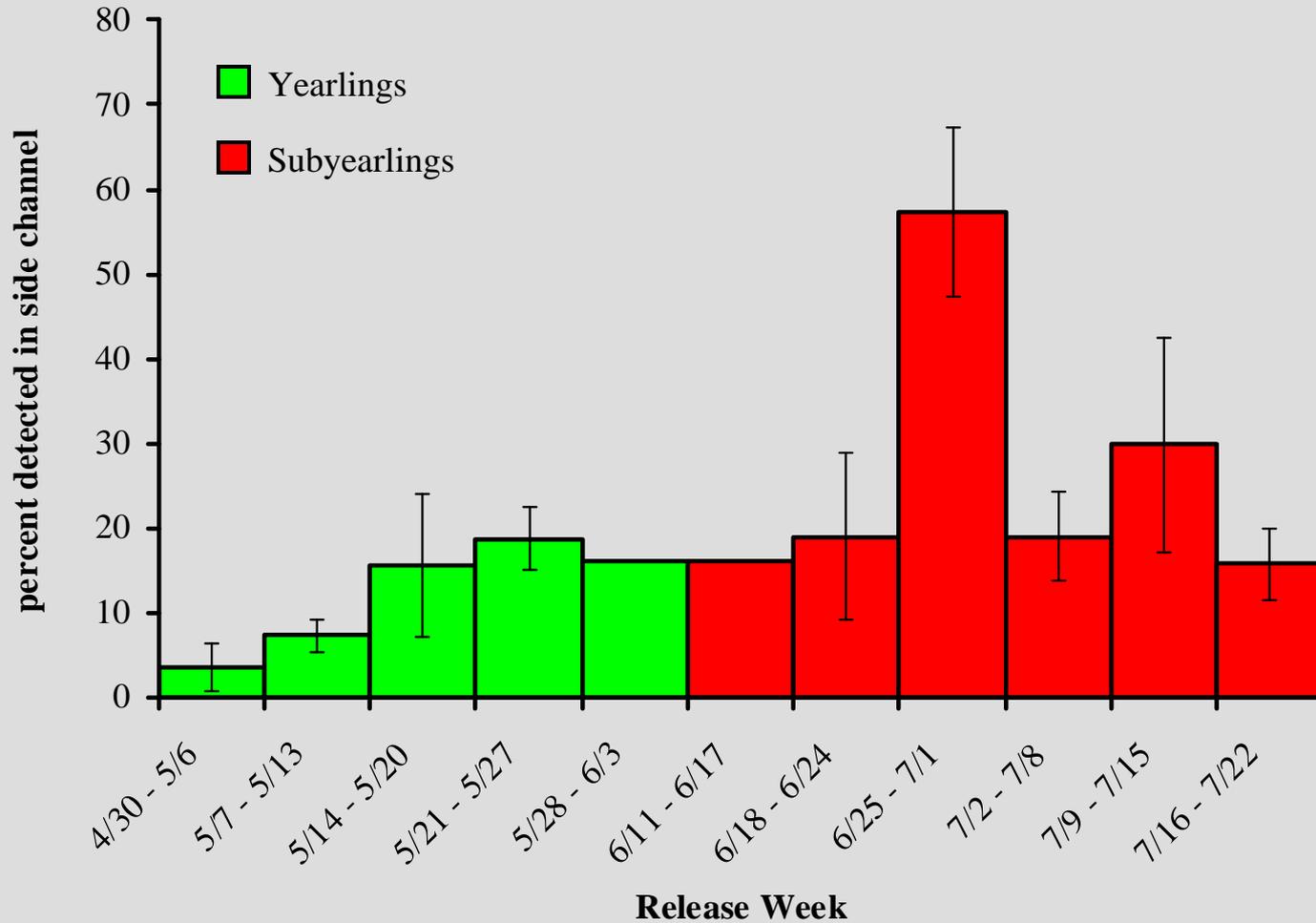


* Preliminary survival estimates – final estimates will be prepared by NOAA Fisheries

Migration Pathways

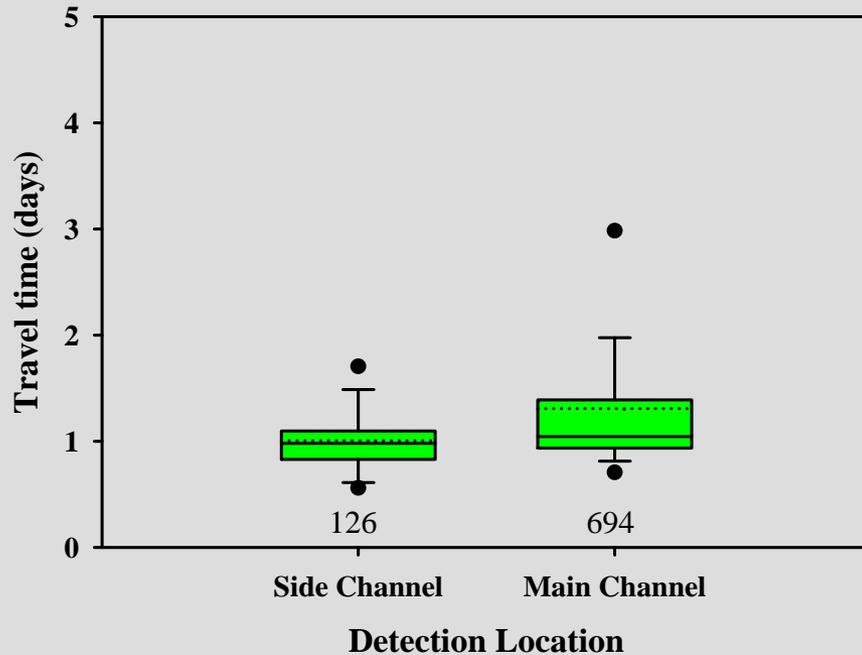


Yearling and Subyearling Chinook Salmon used side channel migration routes

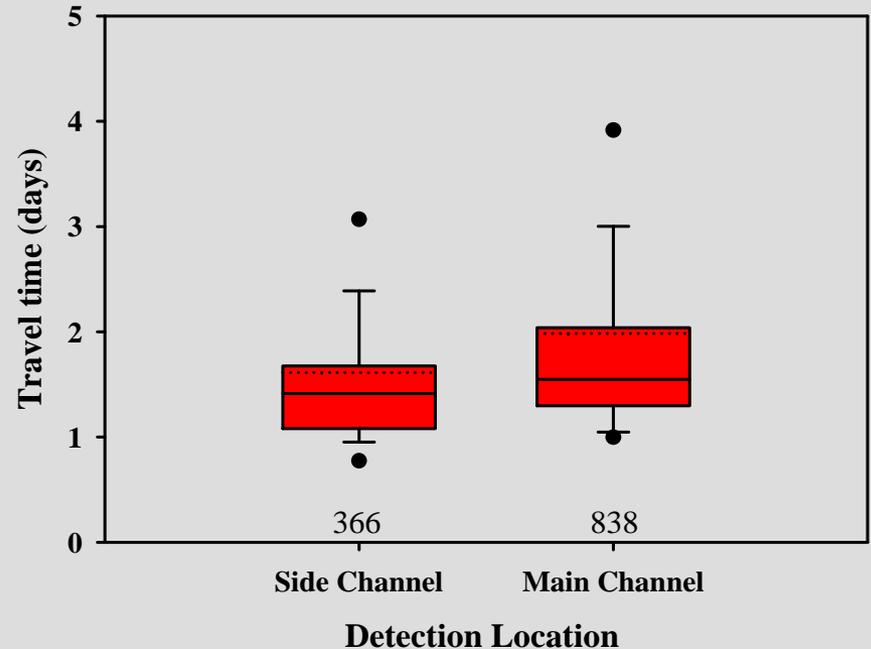


Travel time from Cathlamet to East Sand Island (50 km) was similar for both routes

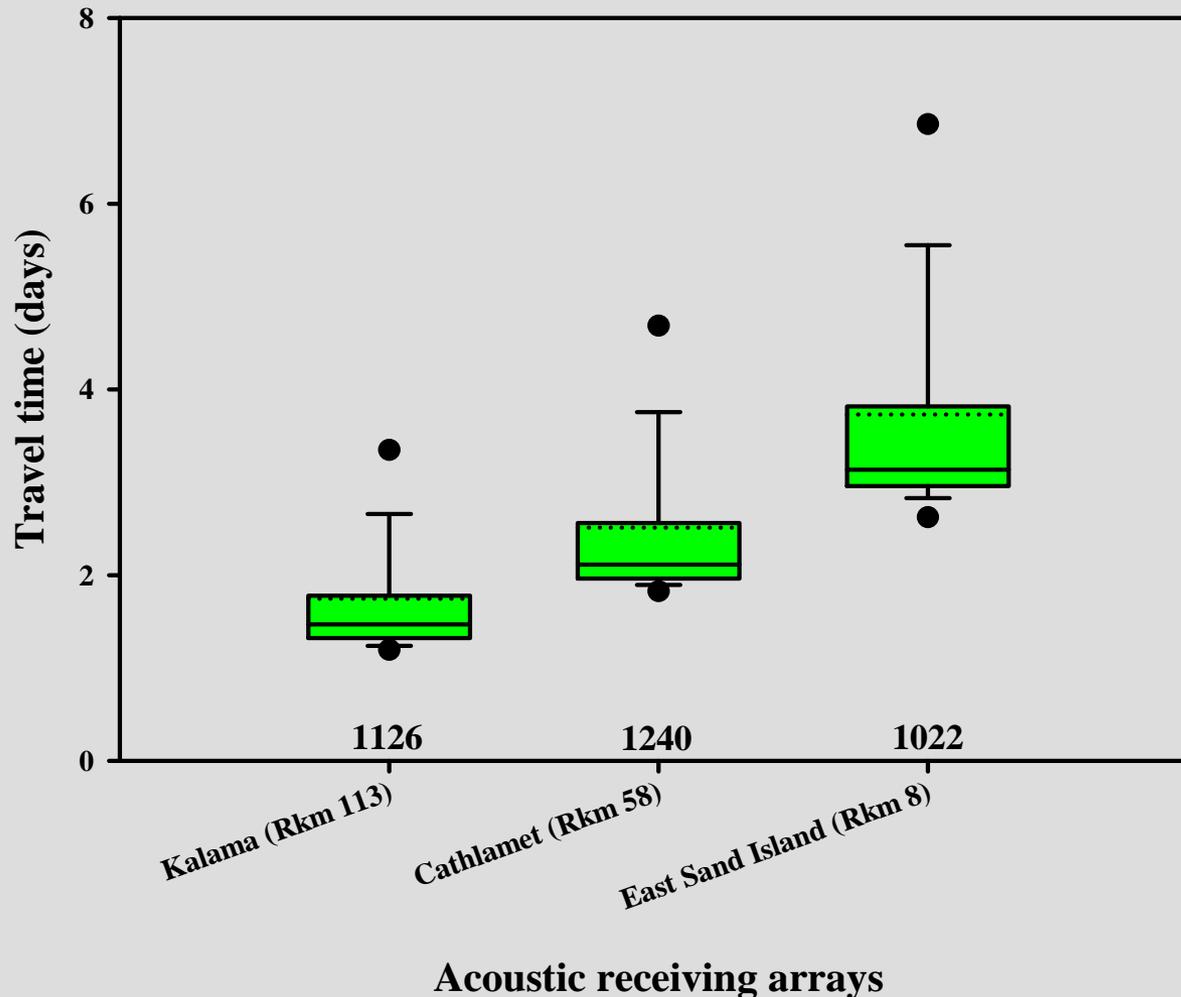
Yearling Chinook salmon



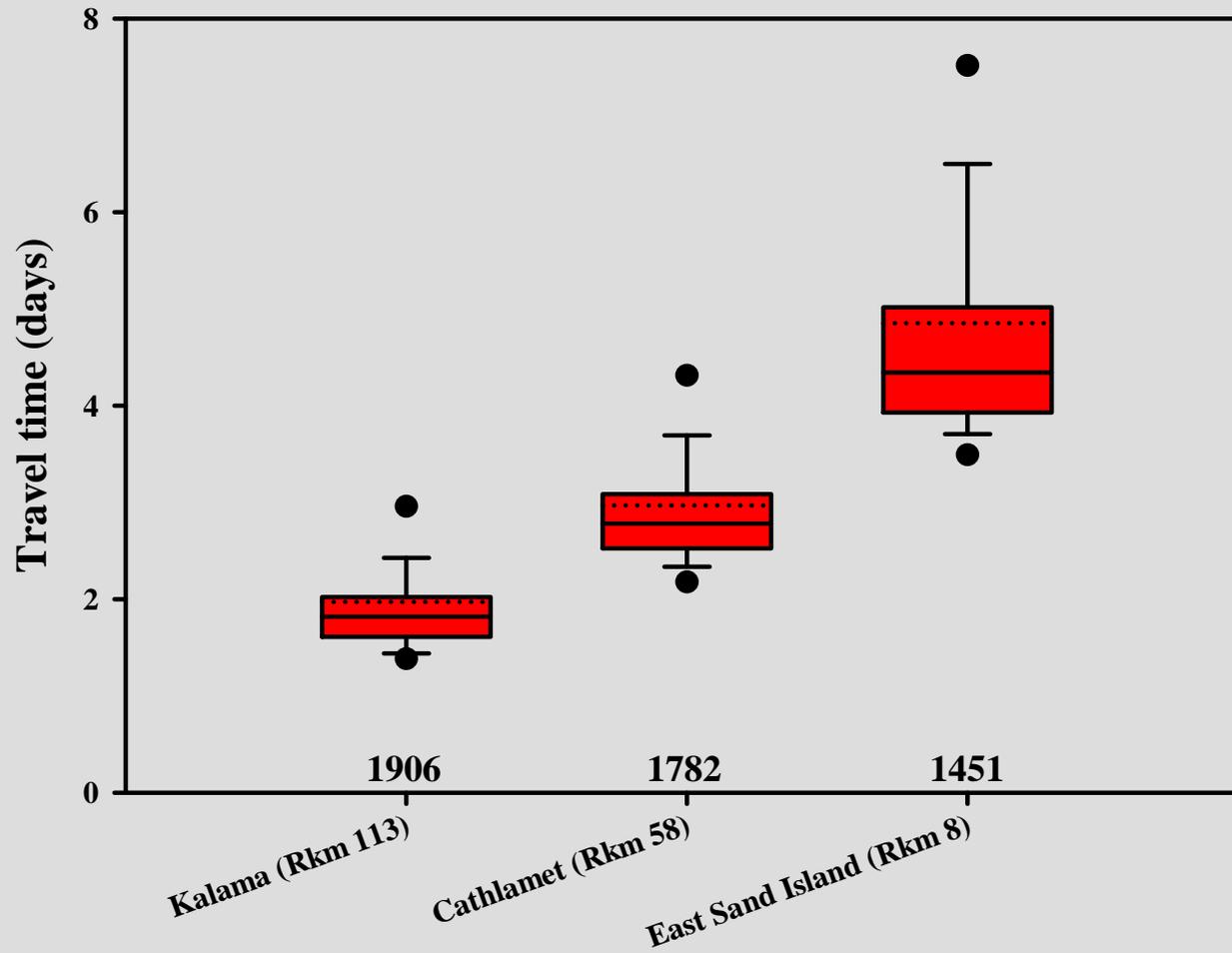
Subyearling Chinook salmon



Yearling travel time from BON to East Sand Island was ~ 3 days

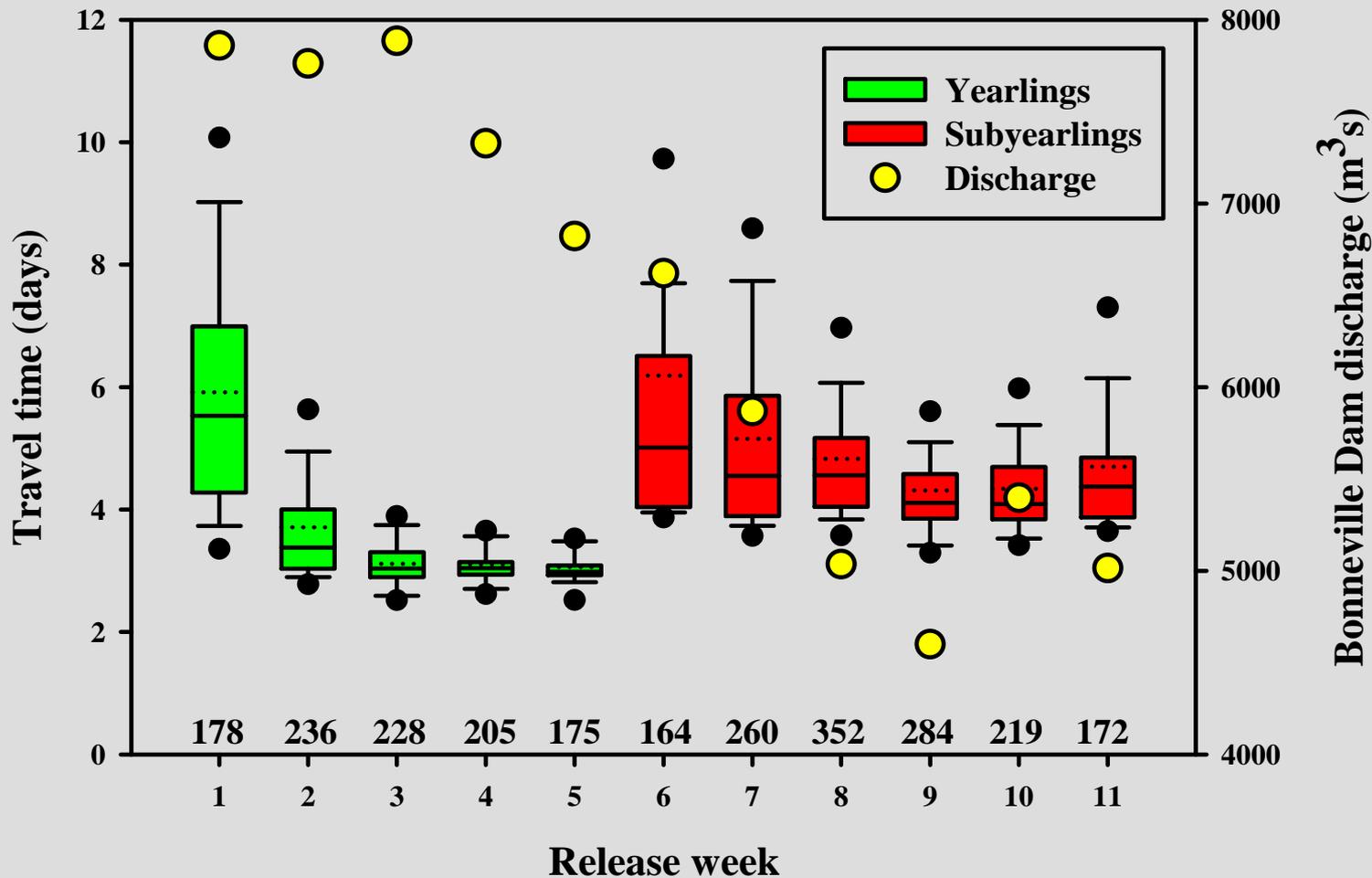


Subyearling travel time from BON to East Sand Island was ~ 4 days



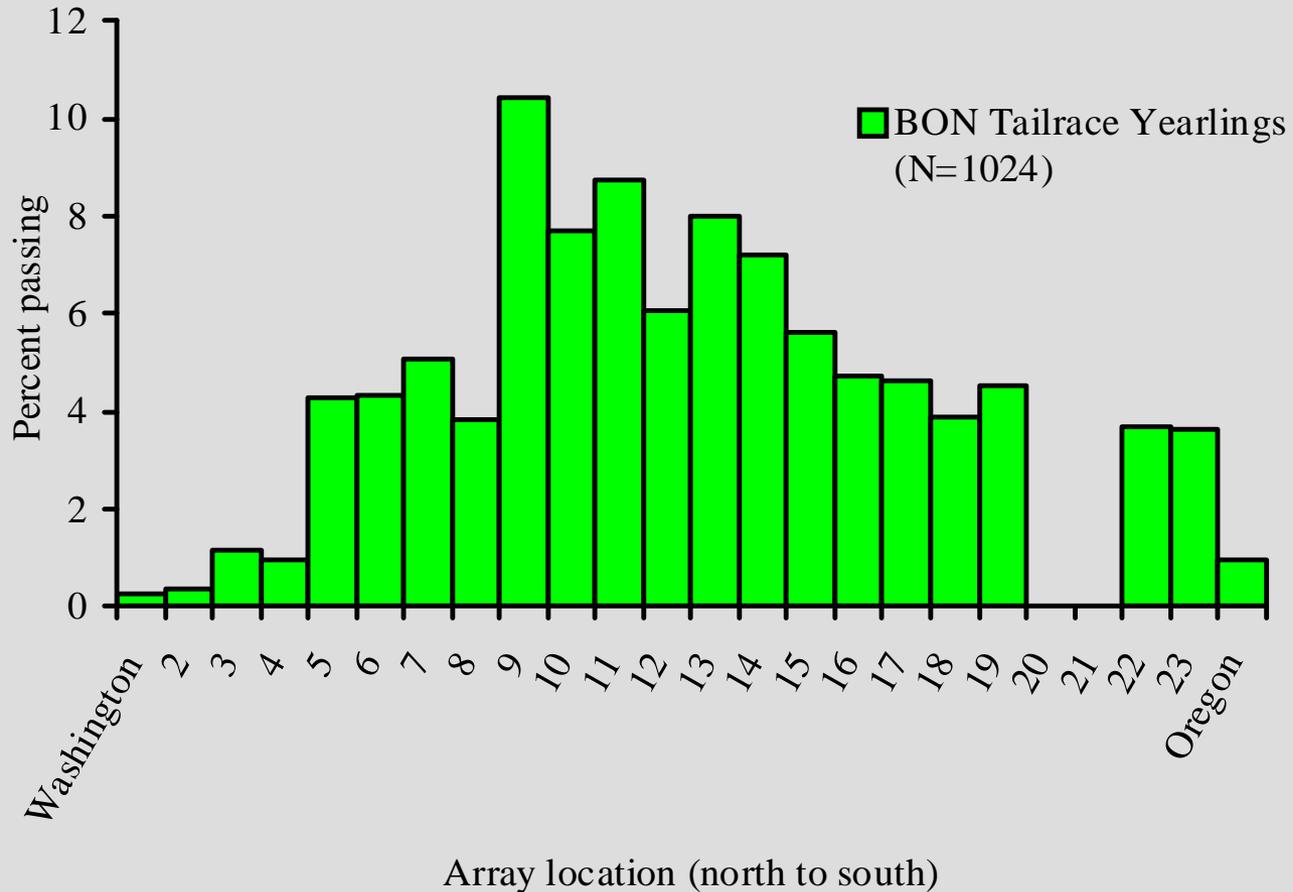
Acoustic receiving arrays

Travel Time Declined as Week Increased

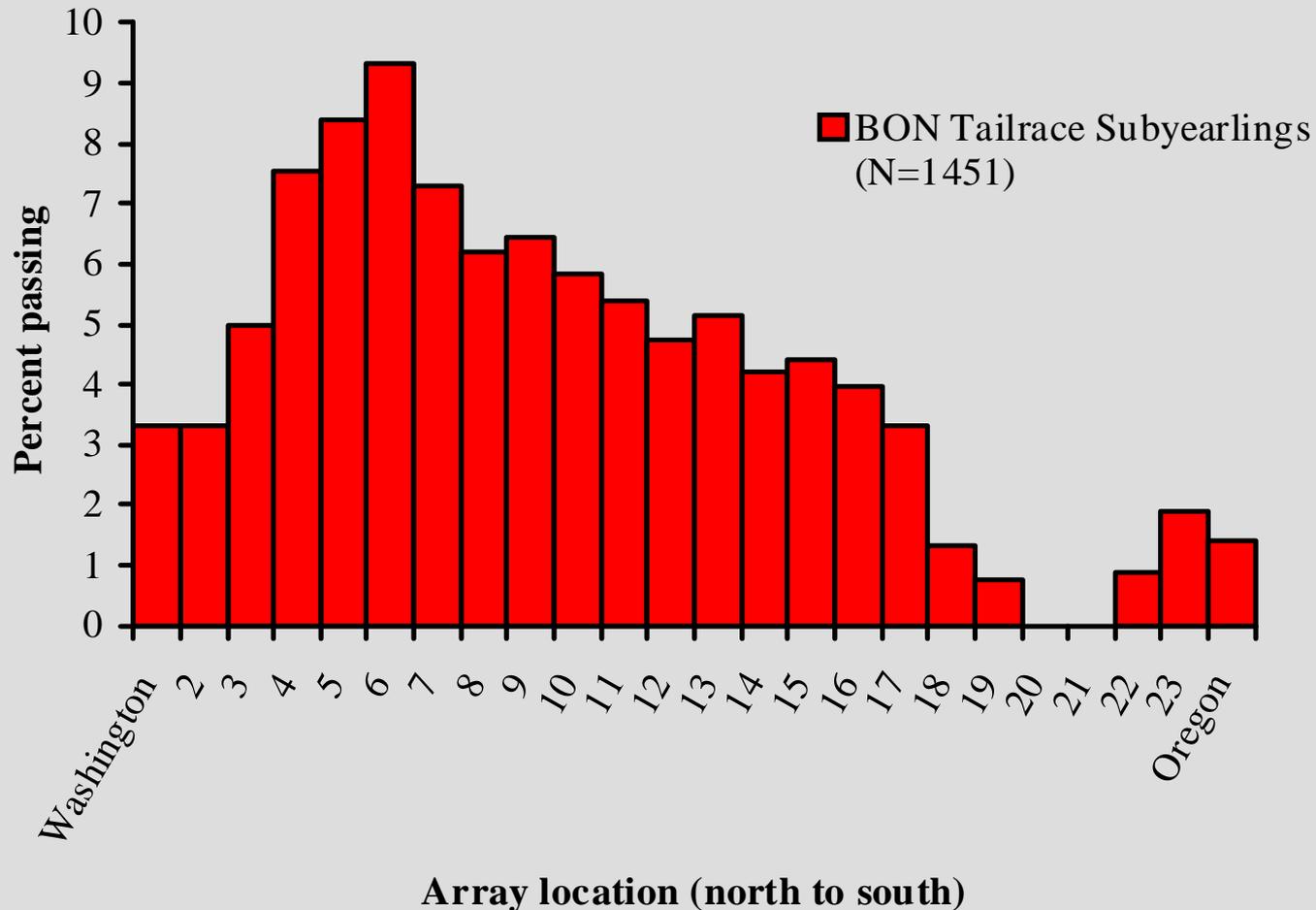


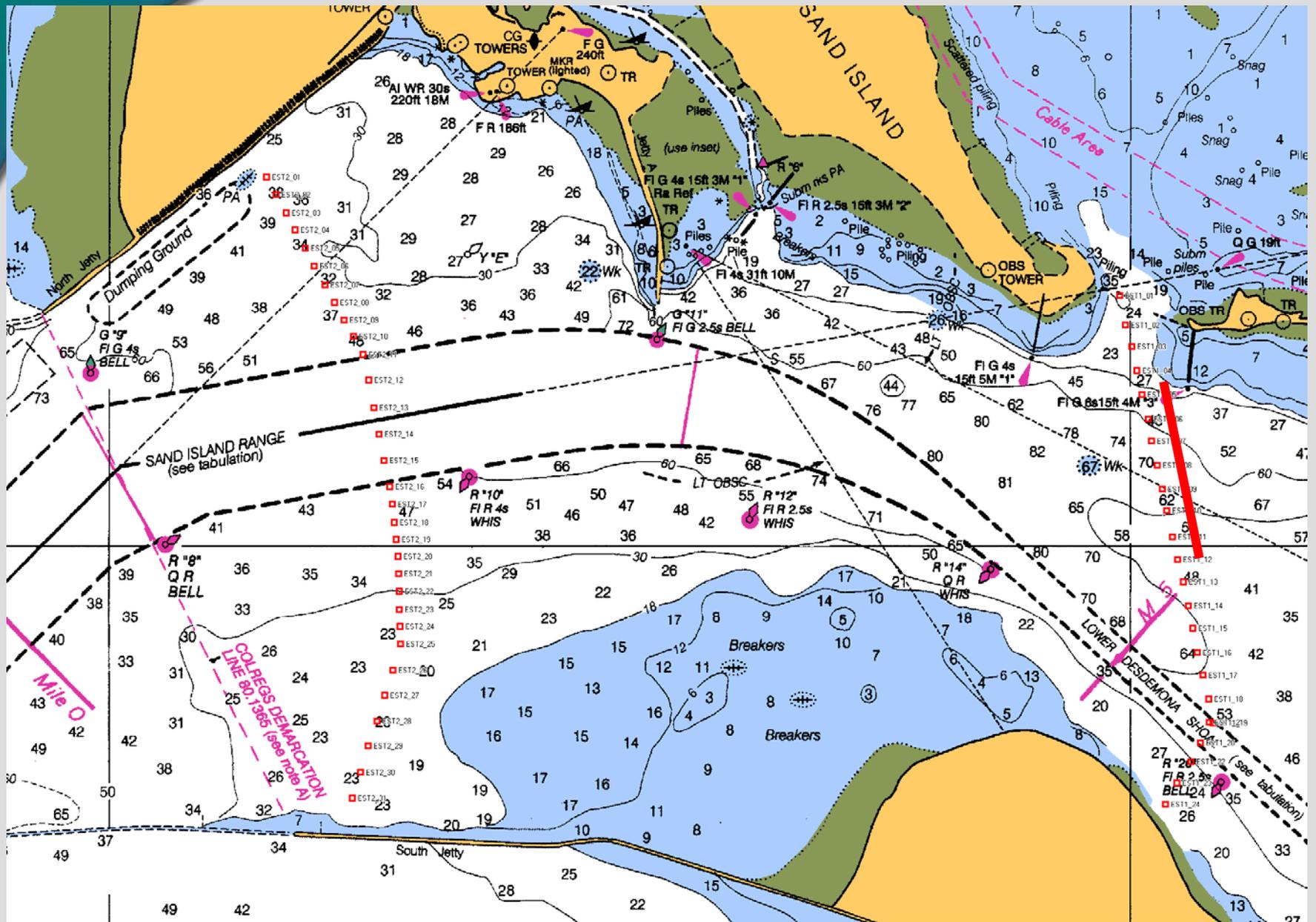
Bonneville Dam tailrace to East Sand Island

More yearling Chinook passed East Sand Island on the Washington side of the Navigation Channel

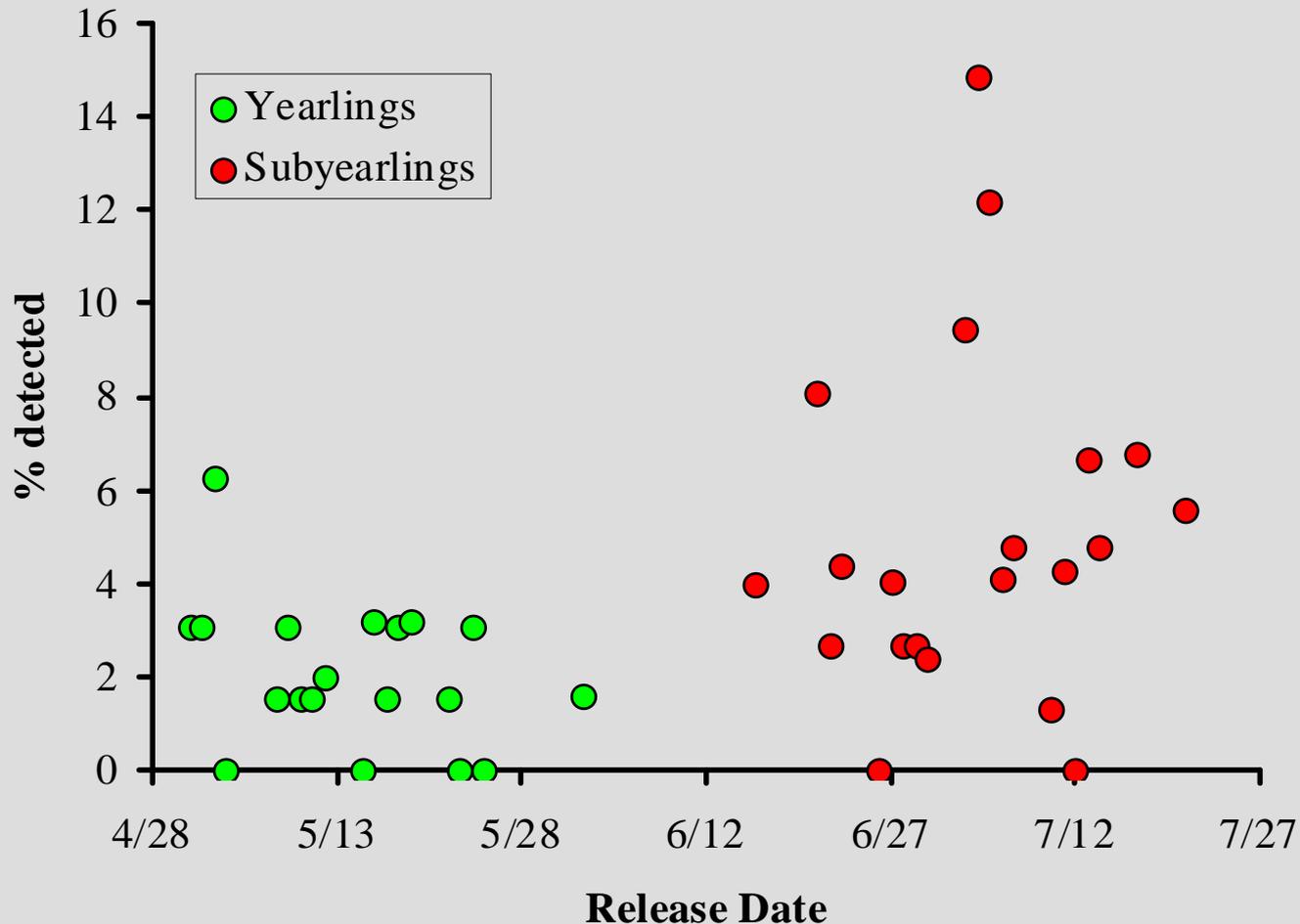


Also – more Subyearlings passed East Sand Island on the Washington side of the channel

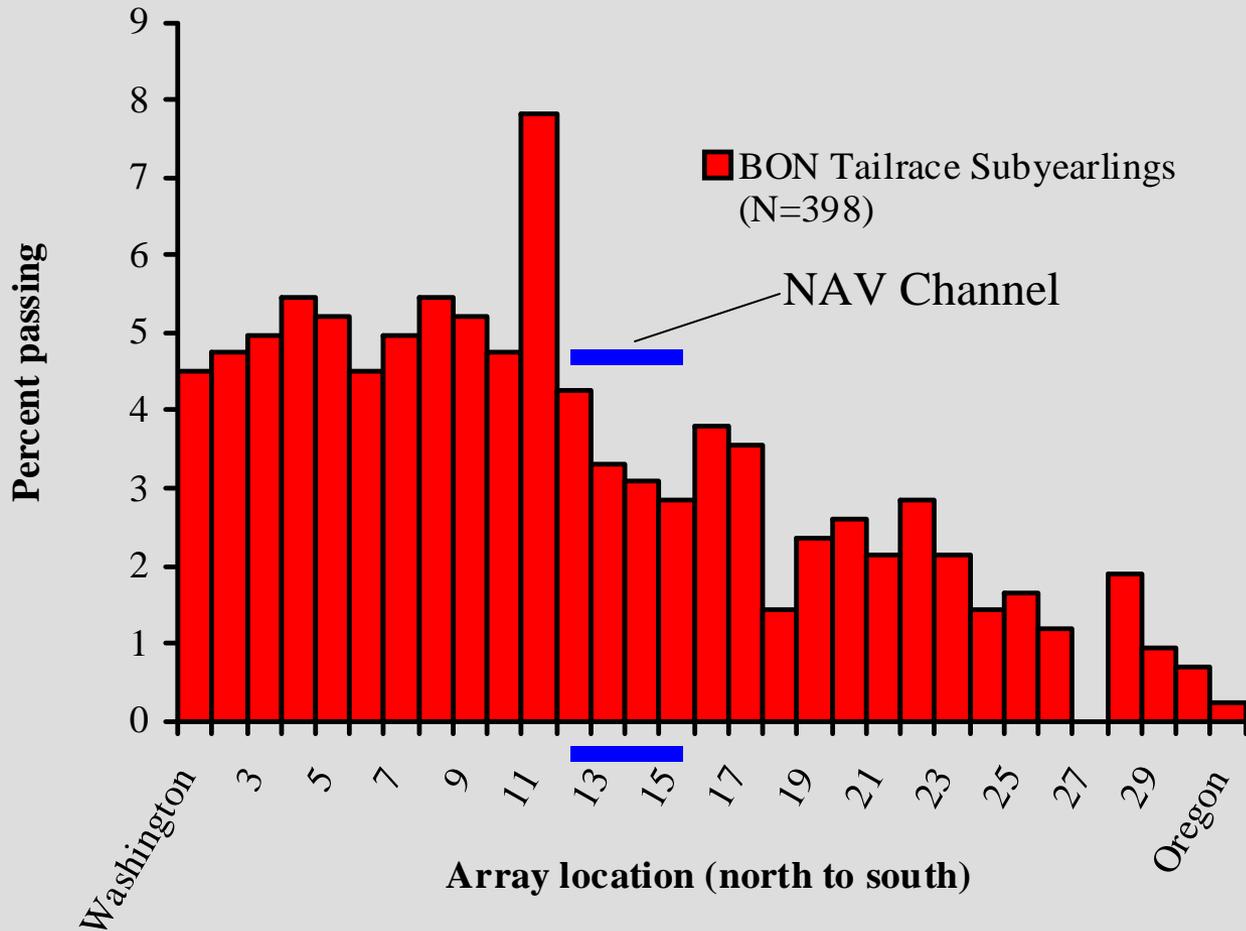




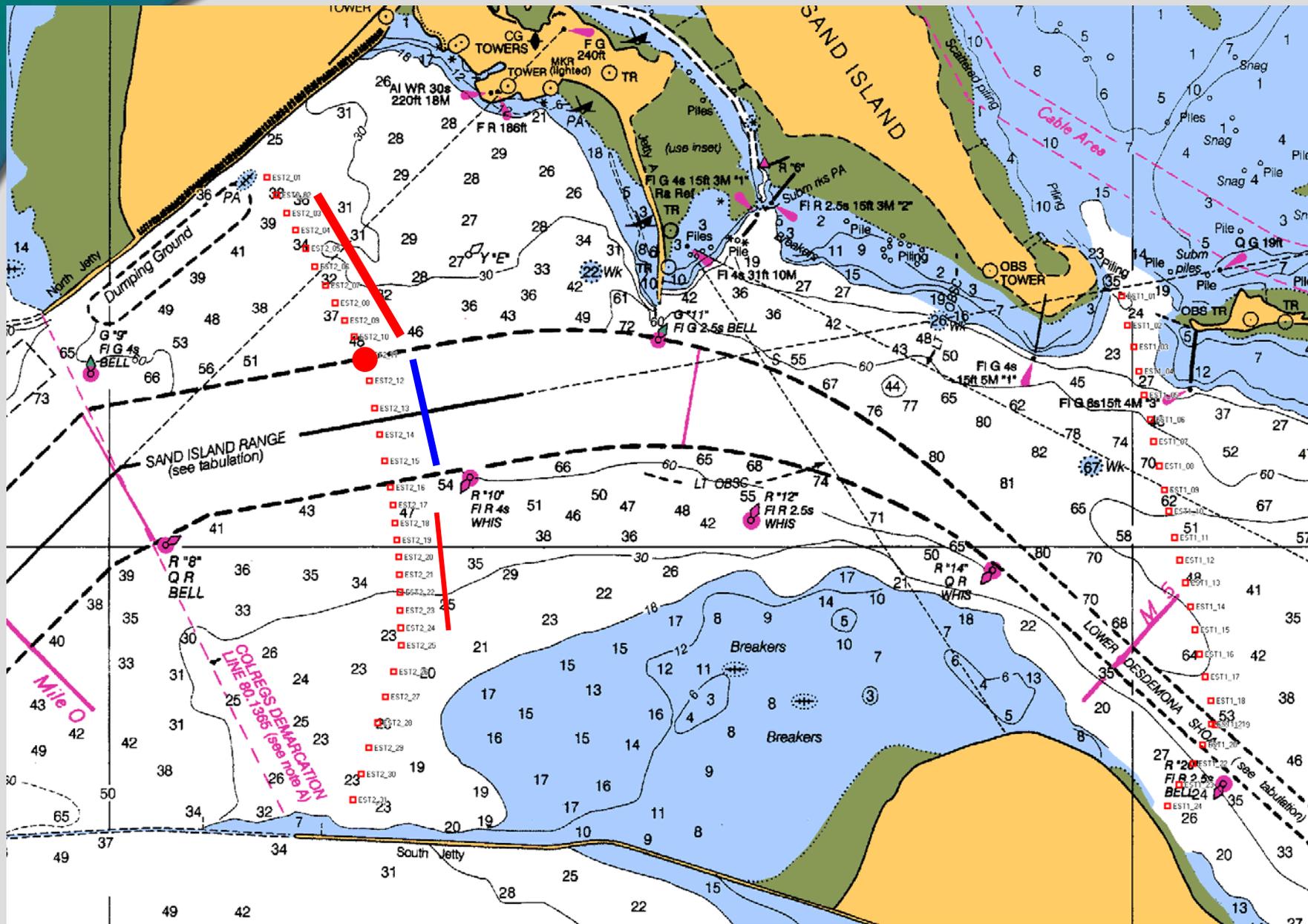
A higher percentage of PIT tags from subyearlings were detected on the bird islands



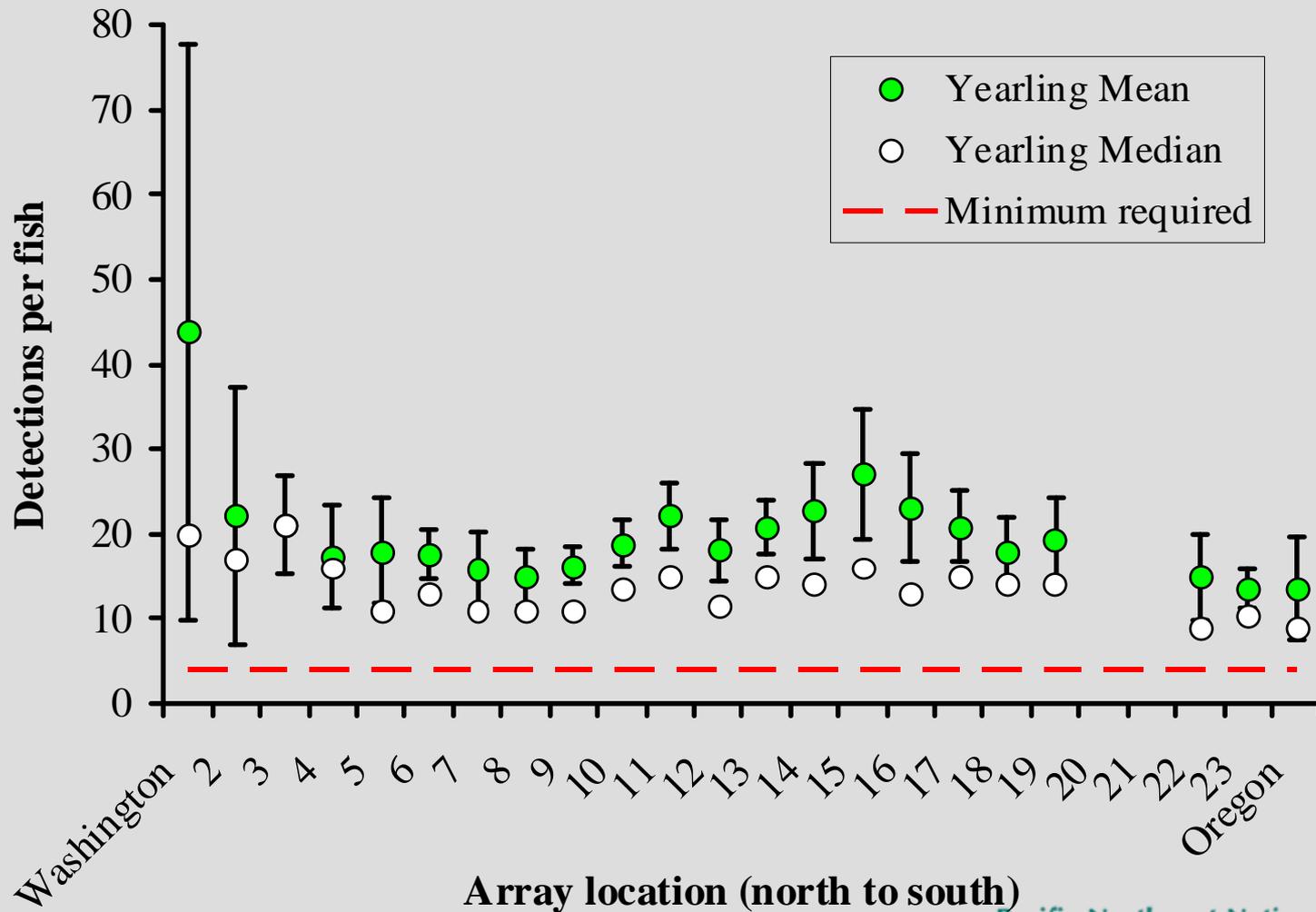
More subyearlings passed on the Washington side of the Navigation Channel on the CR Bar



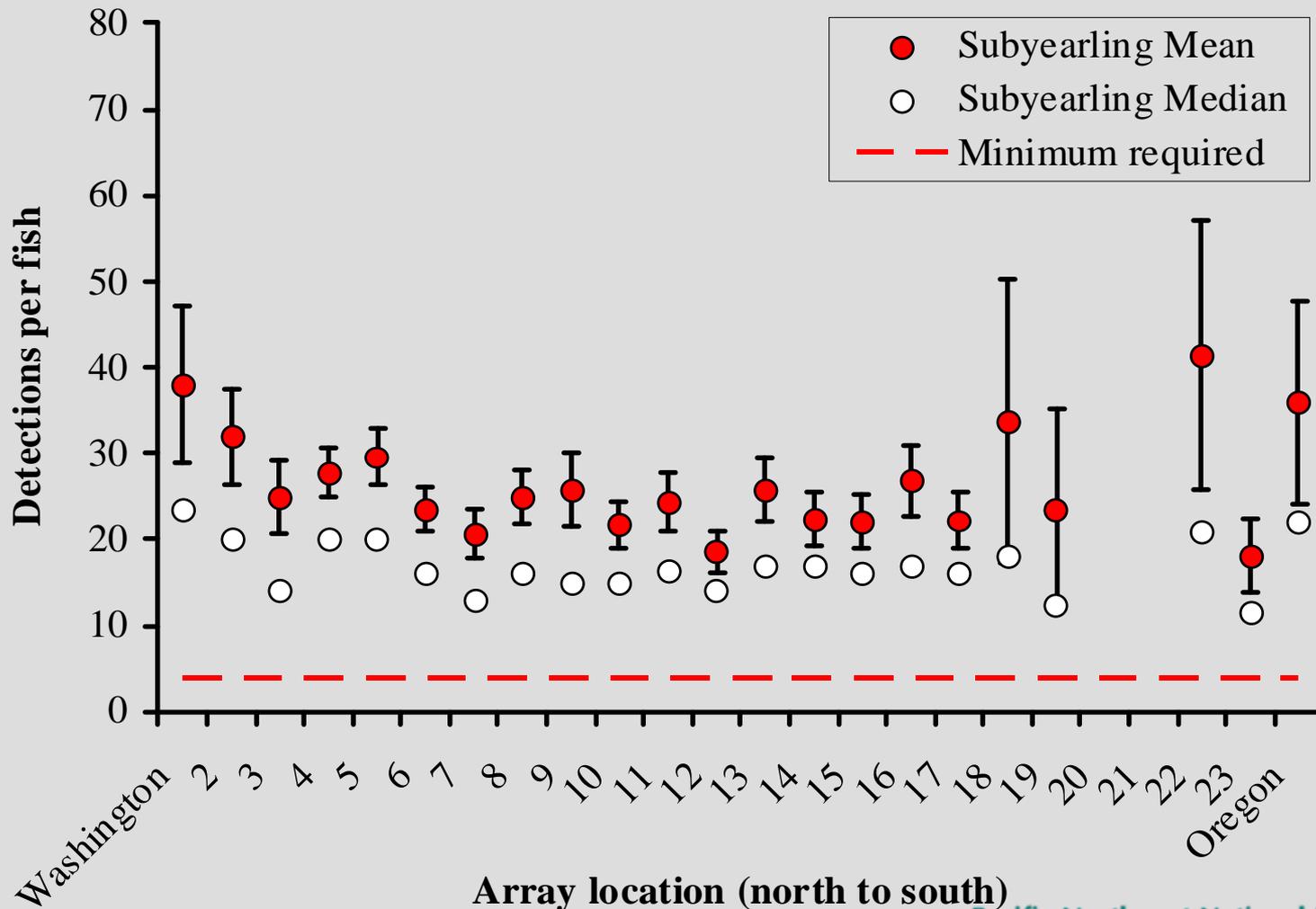
For time periods when nodes were deployed in the NAV channel



Number of detections per Yearling Chinook similar across entire 1° array



Number of detections per subyearling Chinook similar across entire 1° array



Conclusions

- ▶ Yearling and subyearling Chinook salmon survival was generally high between Bonneville Dam and Cathlamet – except late subyearling groups
- ▶ Lowest reach survival was in the final 50 km
- ▶ Yearling and subyearling Chinook used side channel migration routes and travel time to MCR was similar between routes
- ▶ Cross channel distribution was skewed toward WA side of the navigation channel – closer to the bird colonies
- ▶ Bird predation losses appeared to be higher on subyearlings
- ▶ This information is useful for beginning to understand latent mortality due to passage through the FCRPS
- ▶ Data analyses – ongoing.....

Acknowledgements

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