

Impacts of Avian Predation on Salmonid Smolts from the Columbia and Snake Rivers

Daniel D. Roby¹, Allen Evans², Nathan Hostetter¹, Ken Collis², Donald E. Lyons¹,
Mike Hawbecker², Lauren Reinalda¹, and Jessica Y. Adkins¹

Caspian terns and double-crested cormorants are the two bird species responsible for most losses of salmonid smolts to avian predators along the mid-Columbia River. The largest breeding colony of Caspian terns on the Mid-Columbia in 2007 was on Crescent Island (Rkm 510 in the McNary Pool); only 355 pairs nested there, down 21% from 2006 and fewer than recorded previously. Salmonid smolts represented 69% of Crescent Island tern prey in 2007, up from 63% in 2006. The largest colony of double-crested cormorants on the Mid-Columbia was on Foundation Island (Rkm 518 in McNary Pool), where at least 335 pairs nested in 2007; salmonids represented 10-20% of their diet. Despite the lower proportion of salmonids in the diet, smolt PIT tag recoveries on-colony indicated that, for the first time since our study began, predation rates on smolts were greater for Foundation cormorants (7,554 tags) than for Crescent terns (5,141 tags). We also detected an unexpectedly high number of smolt PIT tags (2,653) on a California gull colony in The Dalles Pool. Condition scoring of 6,255 steelhead that were PIT-tagged and released at Lower Monumental Dam indicated that those smolts exhibiting some external damage were 1.4 times more likely to be consumed by avian predators in McNary Pool compared to undamaged smolts. These results, plus the condition of PIT-tagged steelhead that were subsequently detected at lower Columbia River dams, suggest that some smolt mortality due to avian predators is compensatory, and not all avian predation mortality is additive.

¹USGS-Oregon Cooperative Fish & Wildlife Research Unit, 104 Nash Hall,
Oregon State University, Corvallis OR 97331
E-mail: daniel.robby@orst.edu

²Real Time Research, Inc., 52 SW Roosevelt Avenue, Bend OR 97702
E-mail: aevans@realtimeresearch.org