

Challenges of estimating king salmon

While the Nushagak River sonar site provides reliable estimates for sockeye salmon, it is less adept as a tool for estimating king salmon escapement. Due to limited detection ranges and king salmon migration patterns, the site's sonar only counts a proportion of the king salmon that swim past. While a full count is ideal, fisheries biologists can use a partial count as an index to manage the fishery so long as the site counts the same proportion from year to year. To determine whether the site counts a consistent proportion of king salmon, ADF&G launched an extensive three-year tagging project in 2011. To learn more about the project visit ADF&G's sonar Web site: www.AlaskaFisheriesSonar.org

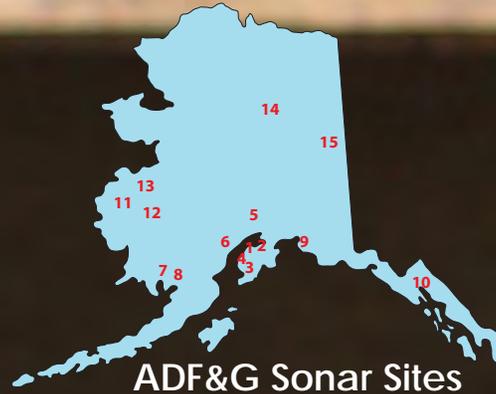


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Increase in king salmon goals in 2012

In December of 2012, ADF&G fisheries biologists will propose an increase in Nushagak king salmon escapement goal numbers. In recommending the increase, biologists do not intend to allow more king salmon to escape upstream, but to change the way they report king salmon counts from Bendix units to DIDSON units. Just as converting a 50-mile speed limit into an 80-kilometer speed limit increases the number on speed limit signs, but not the actual speed at which you are allowed to travel, converting from Bendix to DIDSON units will increase the goal number, but not king salmon escapement. Bendix and DIDSON count kings differently because DIDSON counts a larger proportion of the king salmon that migrate past the sonar site.

Have a question, comment or suggestion?
Contact us by phone, e-mail or snail mail.



ADF&G Sonar Sites

- | | | |
|-------------------|-------------|-------------------|
| 1. Kenai (RM 8.6) | 6. Crescent | 11. Yukon (Pilot) |
| 2. Kenai (RM 19) | 7. Nushagak | 12. Aniak |
| 3. Anchor | 8. Kvichak | 13. Anvik |
| 4. Kasilof | 9. Copper | 14. Sheenjek |
| 5. Yentna | 10. Chilkat | 15. Yukon (Eagle) |

Nushagak River Sonar



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To learn more about the Nushagak River salmon sonar site and other ADF&G sonar sites visit our Web site: www.AlaskaFisheriesSonar.org

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Nushagak River Salmon Sonar

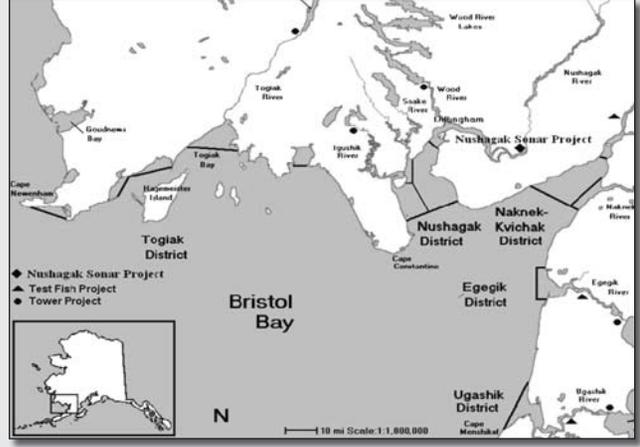
How biologists use sonar to generate Nushagak River sockeye and king estimates





The Nushagak River contributes to the world's largest wild sockeye salmon fishery—Bristol Bay and supports robust populations of chum, king, coho and pink salmon. But the river may be best known for its king salmon. The Nushagak River hosts one of Alaska's biggest king salmon runs and produces more king salmon than any other river in the Bristol Bay region. The Alaska Department of Fish and Game Nushagak River sonar site was designed to estimate sockeye escapement, but the king salmon data the site also collects draws strong interest from the sport fishing community.

Where the site is located



The sonar site is located along the lower Nushagak River, 25 miles upstream of the commercial fishery and 2.5 miles downstream of Portage Creek. The sonar site consists of two counting stations located diagonally across from one another on the banks of the river. At each of the site's two stations, a sonar transducer is submerged just below the river water's surface next to the bank.



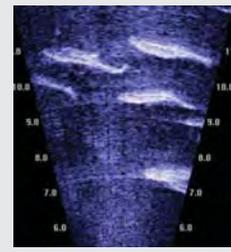
Species monitored

Sonar site operations begin around June 3 and continue until July 20 to correspond with sockeye, king and chum salmon migrations. To make the best use of limited resources, the site does not monitor pink and coho salmon migrations in August and September. The sonar site has not been a strong tool for estimating escapement for pink and coho salmon.



Nushagak River sonar operations

To detect salmon the Nushagak River site uses a type of sonar technology known DIDSON, which uses sound waves to detect and produce ultra-sound like video of fish.



ADF&G has been using sonar to monitor salmon on the Nushagak River since 1979. For more than 25 years the site relied on Bendix sonar equipment (upper left and right), which printed estimate data on a ticker tape. In 2006, the site transitioned to DIDSON equipment (lower left and right) to generate escapement estimates.



Inriver Gillnets

Sonar cannot identify whether the fish it detects are sockeye, king or chum salmon. To separate sonar-detected fish by species, the Nushagak River sonar site relies on inriver gillnets. Throughout the field season, sonar site crew drift inriver gillnets for two to three periods a day. Fisheries biologists then examine the proportion of each species in the gillnet catches to determine how many of the sonar-detected fish should be counted as sockeye, king and chum salmon. The crew drift the inriver gillnets just downstream of the sonar transducers so that the catches closely represent the fish passing through the sonar beam.



We install a partial weir extending from the submerged DIDSON transducer to shore to prevent fish from swimming behind the transducer where they cannot be detected.

