

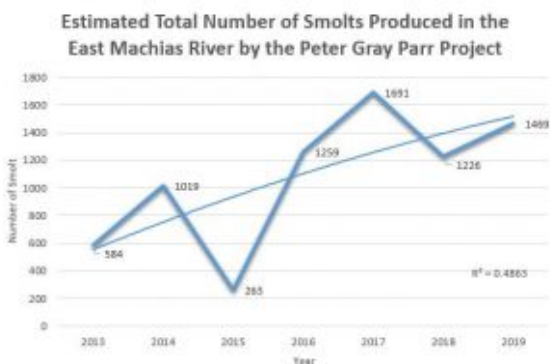
Smolt Trapping

2019: Total smolt captures = 220. Population Estimate 1289 +/- 233 with an estimated 180 smolts produced below the trapping site = 1469 smolts.

2018: Total smolt captures = 197. Population Estimate 1049 +/- 186 with an estimated 177 smolts produced below the trapping site = 1226 smolts.

2017: Total smolt captures = 260. Population Estimate 1501 +/- 253 with an estimated 190 smolts below the trapping site = 1691 smolts.

2016: Total smolt captures = 206. Population Estimate – 1223 +/- 297 plus an estimated 36 smolts grown below the trapping site = 1259 smolts.



These smolt trap total numbers indicate the number of smolts captured at the smolt trap operated by the Downeast Salmon Federation and the Maine Department of Marine Resources at the Jacksonville bridge on Rt. 191 on the East Machias River.

“Hatchery” indicates fish that were reared at the Peter Gray Hatchery and marked with an adipose fin clip; “Wild” indicates smolts that were not marked and were naturally reared;

“Recaptured” indicate smolts that were captured, released upstream, and re-captured in the trap as part of this mark-recapture study design for smolt trapping.



Working up the fish

As part of the Peter Gray Parr Project, it is important that we follow up on our activities with some degree of assessment. This allows us to “check in” on our fish and see how they are doing.

As fish culturists and guardians of many thousands of tiny fish, DSF staff put a lot of time and effort into caring for the Atlantic salmon in our Peter Gray Hatchery. Like any guardian, we want what is best for our young ones and we want them to be successful. However, once we stock them into the stream to survive on their own, we cannot call them up to check in on them and see how they are doing or meet for coffee on a Sunday afternoon.

Still, for this project it is very important that we do check in on our little salmon from time to time, just to make sure they are doing okay, eating their macroinvertebrates and not getting into trouble. The Downeast Salmon Federation is doing something new here in Maine when it comes to Atlantic salmon restoration. We are stocking a lot of fall [parr](#) and we have to make sure that this is not having a negative impact on other species, or on the very population of, salmon we are trying to restore.

One way we can check in on our fish is by trapping them as they leave the river as smolt. In the salmon lifecycle, juveniles generally spend two years in freshwater before migrating out to the ocean as smolt. This emigration gives us an opportunity to sample a portion of the entire population of salmon within the watershed at a single



location with relatively little effort. To trap these emigrating smolts, DSF, along with Department of Marine Resources (DMR) staff and with equipment from NOAA Fisheries, uses what is called a rotary screw trap.

This trap is made up of three basic parts – a cone, pontoons and a live car. The cone sits on its side in the river with the wide end facing up-stream. pontoons on either side keep half of the cone above water. At the back of the trap, the narrow end of the cone fits into a live car which holds the fish until someone tends the trap. When the rotary screw trap is operating, the water moving through the cone causes the cone to spin. As fish move downstream, some will end up in the cone where they are funneled into the live car at the back of the trap. These traps are tended at least once per day. All non-salmon fish are counted and released there at the trap. The salmon population is estimated using a mark-recapture study.

All salmon are measured, weighed, checked for tags or markings. The fish are then marked with a small tail fin clip and released upstream. The number of these marked fish that we re-capture will tell us how efficiently the rotary screw traps are fishing. Using this efficiency number, we can determine what percentage of the population we actually captured in our traps.



Smolt traps on the East Machias

Taking this even further, the capture percentage is used to estimate the overall size of the outgoing smolt population. Because all of our fish from DSF's Peter Gray Hatchery are marked before release, we know which ones are ours and this helps determine what survival was like in the river, it also tells us what is leaving the river so we can get an idea of ocean survival when the adults return to spawn.

For the East Machias Peter Gray Parr Project, we run two rotary screw traps at the Jacksonville Bridge where Rt. 191 crosses the main stem of the East Machias River. This allows staff to calculate the number of salmon smolts that are leaving the entire watershed, excluding the Gardner Lake branch.