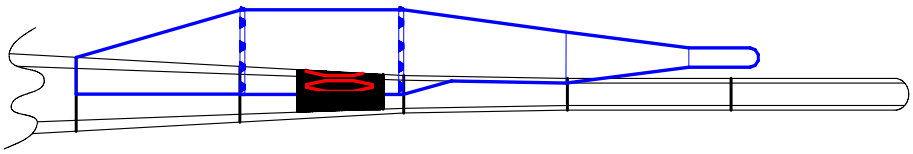
2007 A Season Salmon Excluder EFP Update



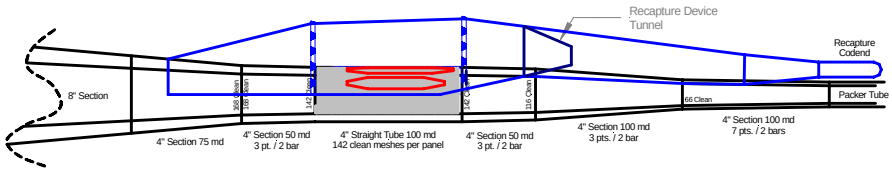
John Gruver, United Catcher Boats
John Gauvin, Marine Conservation Alliance Foundation

Vessel

- F/V Pacific Prince
  - Inshore catcher vessel.
  - Horsepower: 3,700 on twin 3512B Caterpillar main engines (1850 hp each).
  - 149 feet LOA x 35 feet in beam.
  - 476 mt fish hold capacity
  - Swan 68WB Midwater Trawls

Excluder Designs

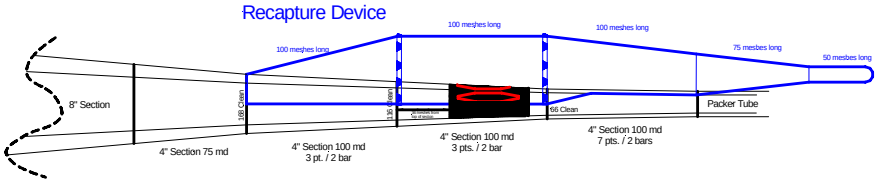
- Test 2 “Flapper” style excluders
  - One constructed of only diamond mesh netting located 350 meshes ahead of the codend.



Installation of Diamond mesh Flapper style salmon excluder in
Pacific Prince Swan MW Trawl with Recapture Net
A Season 2007

Excluder Designs

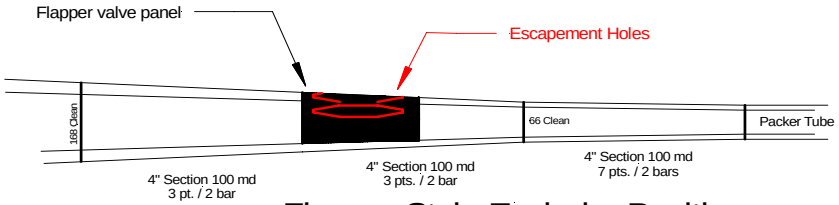
- Test 2 “Flapper” style excluders
  - One constructed of only diamond mesh netting located 350 meshes ahead of the codend.
  - Second constructed of a combination of diamond and square mesh netting located 230 meshes ahead of the codend.



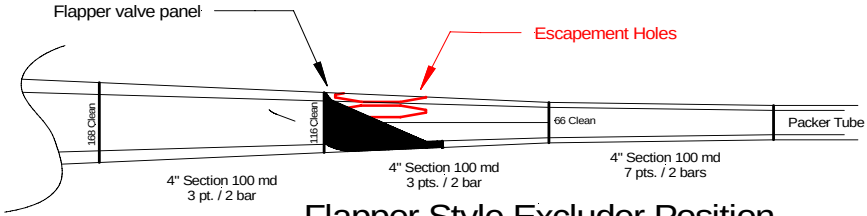
F/V Pacific Prince Trials Sq. Mesh Flapper Panel
2007 A Season Trials
Flapper Valve Excluder Located at the
. 98 Mesh Count per Panel Position - Swan MW Trawl

Excluder Designs

- Test 2 “Flapper” style excluders
  - One constructed of only diamond mesh netting located 350 meshes ahead of the codend.
  - Second constructed of a combination of diamond and square mesh netting located 230 meshes ahead of the codend.
  - Both devices are weighted in a manner so they will sink inside the trawl intermediate during “slowdowns”, allowing fish access to the escape portals.



Flapper Style Excluder Position While Towing - note that Flapper Panel held against the inside walls of the trawl intermeadiate by water flow.



Flapper Style Excluder Position During Slowdown - note that Flapper Panel has dropped due to the reduced water flow and has collapsed forming a "ramp" that guides salmon swimming forward up and out the escapement holes.

Goals for the A season

- Find a device that avoids the “bulging’ issues created by previous tunnel and funnel excluders
- Concentrate on utilizing “slowdowns”; situations created by hauling the doors back to the boat and reducing vessel speed to minimum levels - < 2 knots.

Trip #1 - Sea Trial

- Utilized underwater cameras and sonar to determine:
  - If excluders function as anticipated
  - Correct weighting of excluders
  - If “door up” turnarounds are equivalent to normal slowdown
  - Recapture net clearances and shaping
- Clear up handling and placement issues for camera, sonar, and recapture net & codend.

Sea Trial Results

- Diamond mesh device required redistribution of weight and additional weight
- Square mesh device required no changes
- Door up turnarounds equivalent to slowdowns
- Recapture nets looked good
- Adjustments were made and were then held constant for the remaining trips

Preliminary Results

Through Trip #6

- After 3 trips and 16 “good” tows, it was decided to concentrate the remaining work on the square mesh excluder.
  - Initial data indicated the square mesh device had 3 to 4 times the escapement of the diamond mesh device.
  - Location in proximity to the codend seemed the main difference, not the mesh orientation.

Preliminary Results

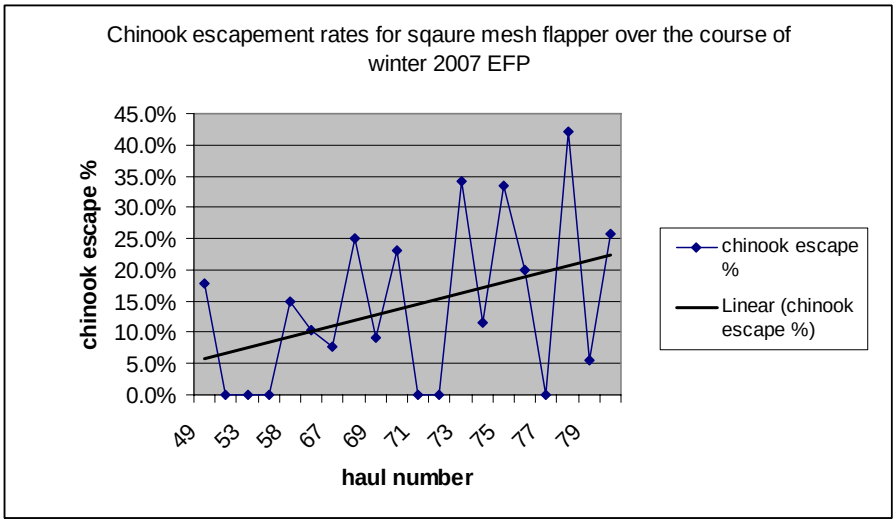
Through Trip #6

- To date the square mesh device has excluded 18% of the salmon.
- Results are inconsistent, escapement ranges from 0% to 42%
- Possible explanations for data range:
  - Recirculation of salmon between main net and recapture net.
  - Sea and current conditions collapsing the recapture net.
  - Sea and current conditions impact on slowdowns.

Preliminary Results

Through Trip #6

- Groundfish loss to date is .44%
- No bulging issues observed


Chinook escapement rates for sqaure mesh flapper over the course of winter 2007 EFP
chinook escape %
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
49
53
58
67
69
71
73
75
77
79
haul number
chinook escape %
Linear (chinook escape %)