Migration Timing and Survival of PIT-tagged Adult Salmonids from the Columbia River Estuary to Bonneville Dam, 2014

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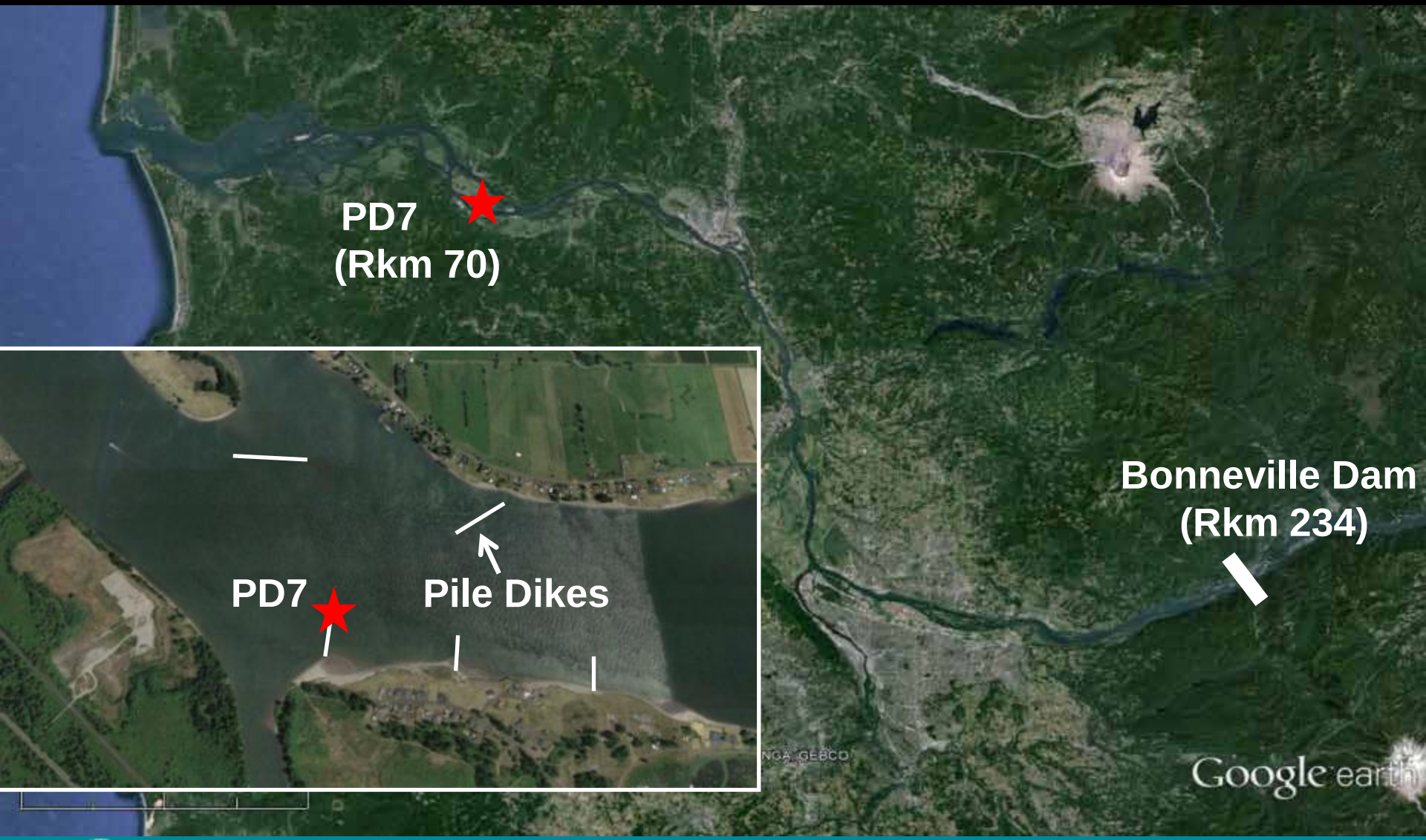
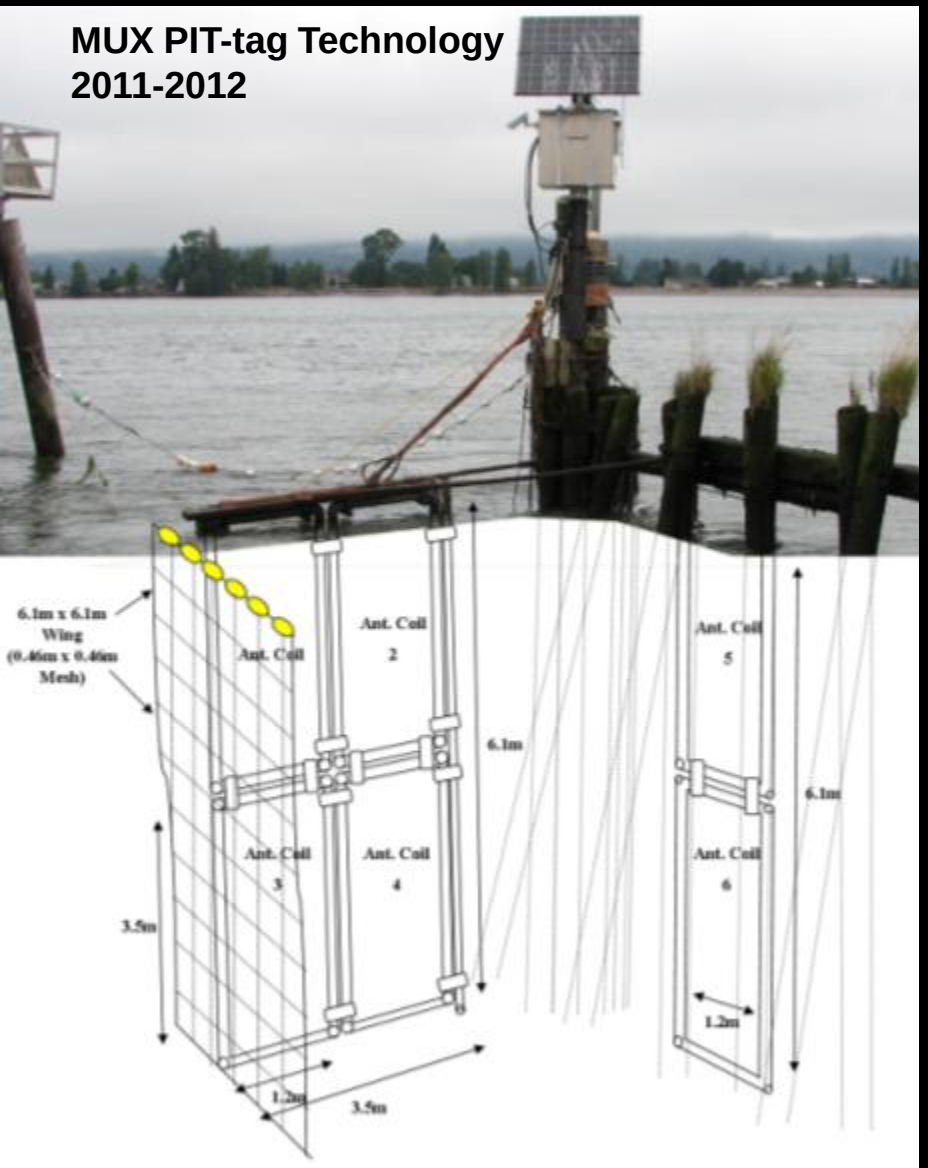
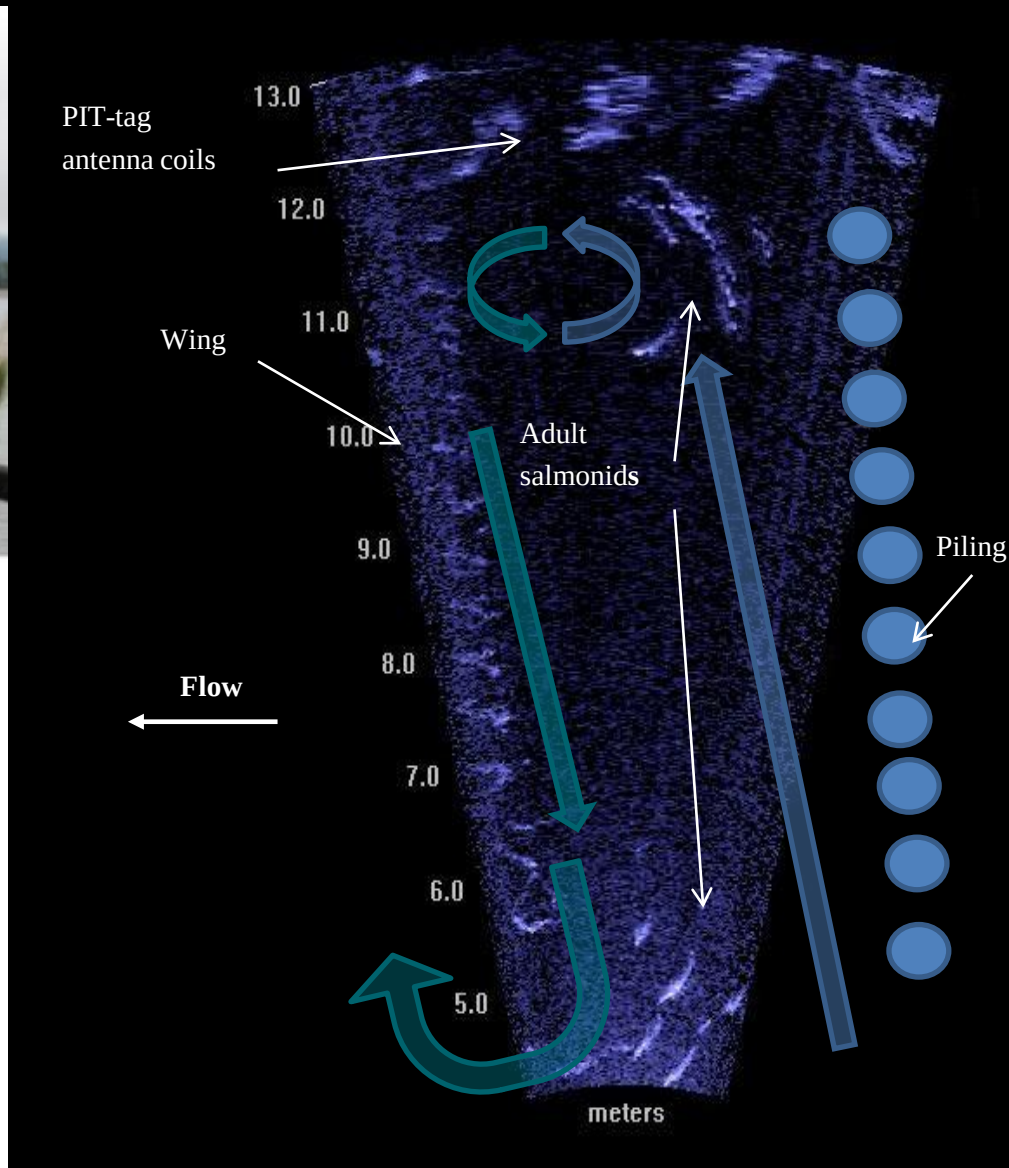
NOAA FISHERIES

Columbia River Estuary and PD7

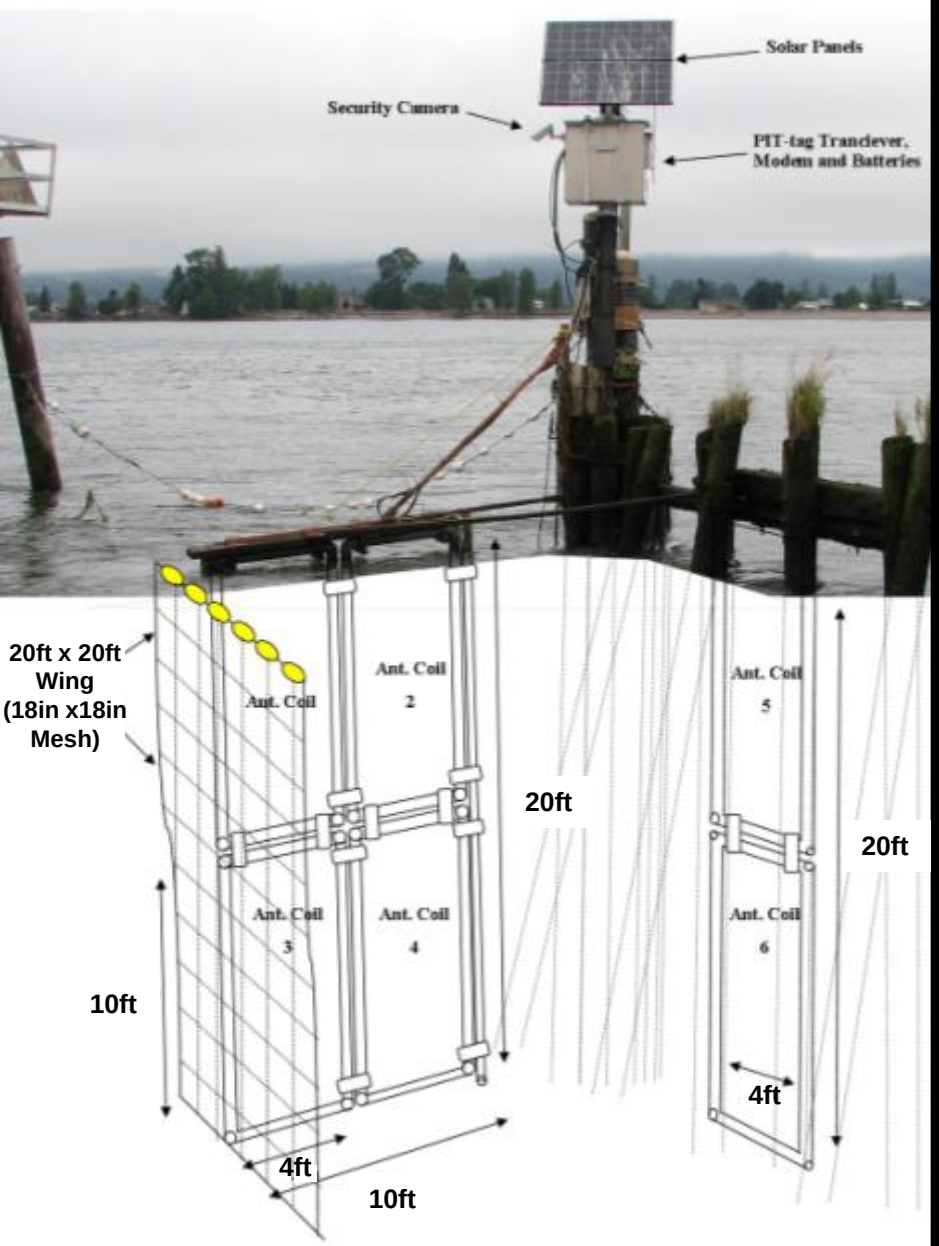


Site Configuration and Fish Avoidance Behavior, 2012

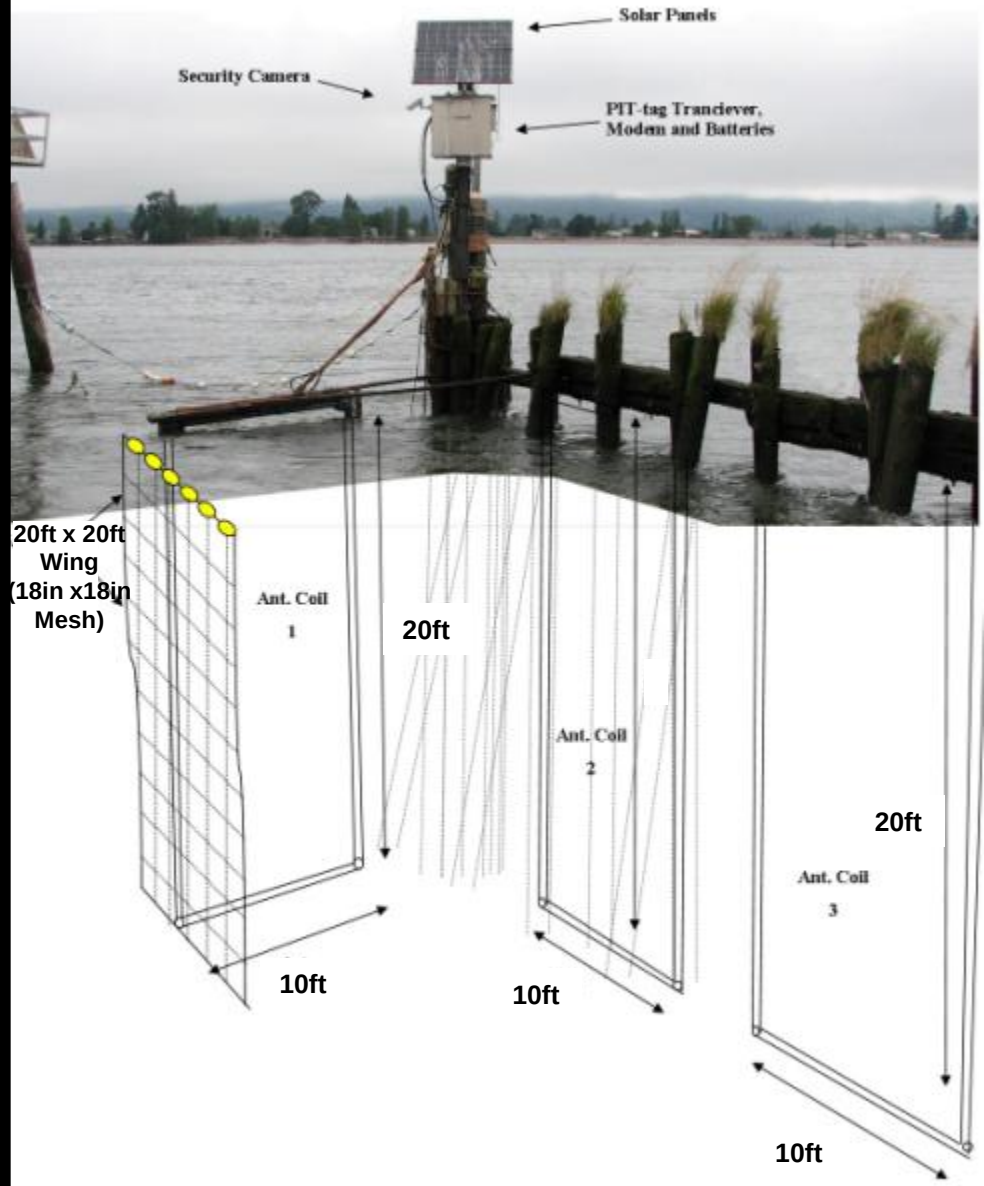




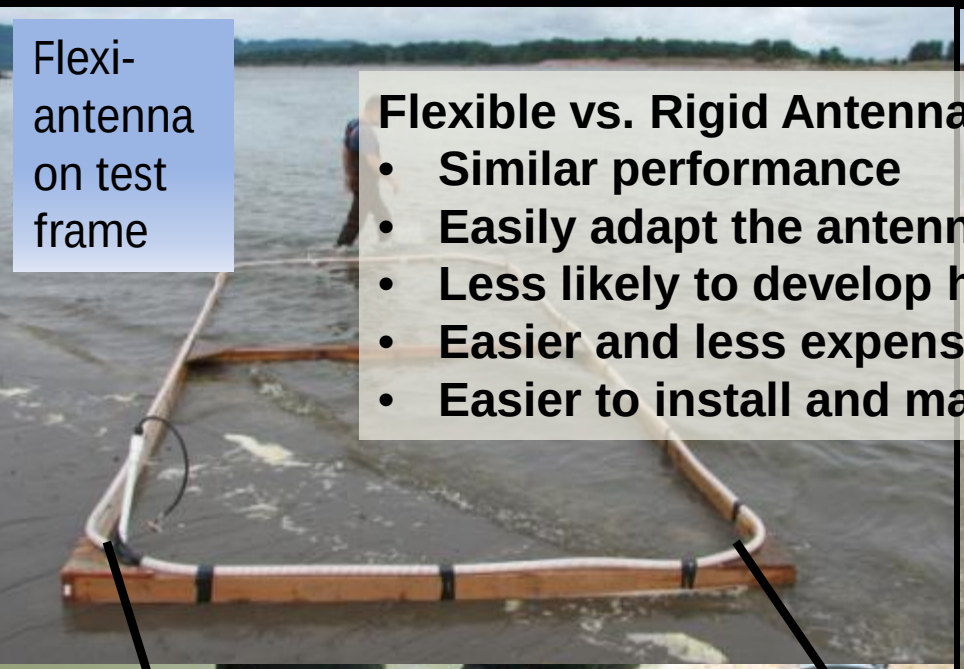
2012 PD7 Configuration
MUX PIT-tag Technology



2013 PD7 Configuration
FS 1001 PIT-tag Technology

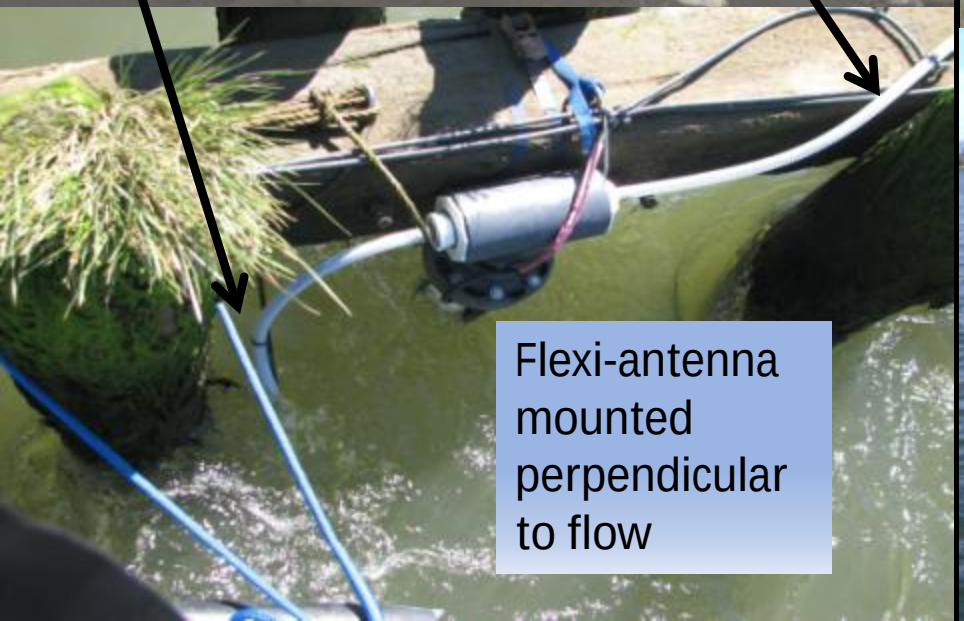


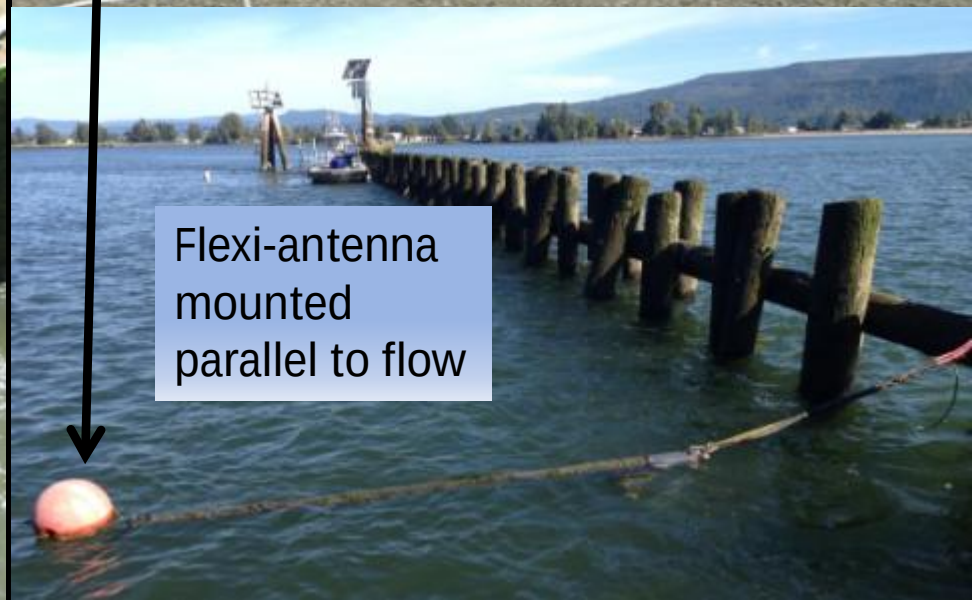
Flexible Antenna Design and Implementation



Flexible vs. Rigid Antennas

- **Similar performance**
- **Easily adapt the antenna to the environment**
- **Less likely to develop housing fractures**
- **Easier and less expensive to build**
- **Easier to install and maintain**

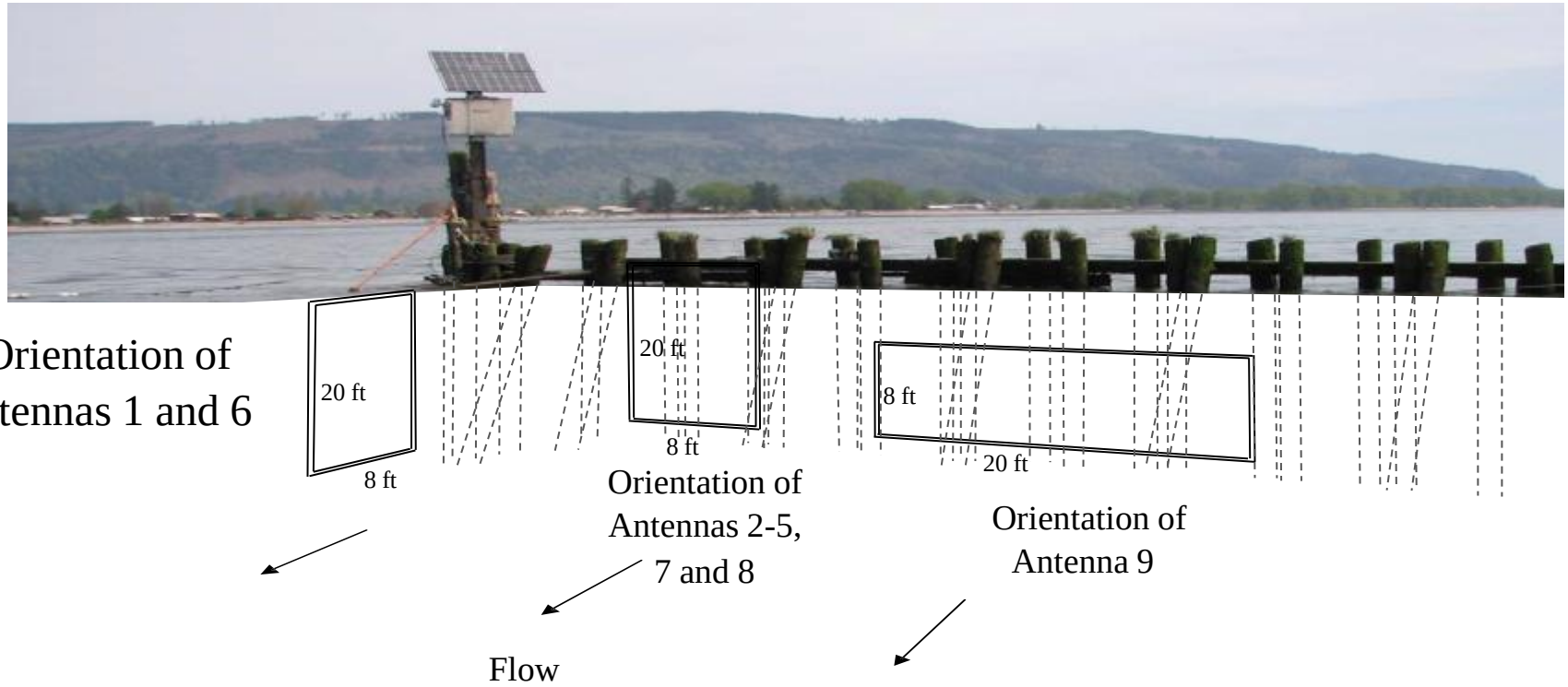


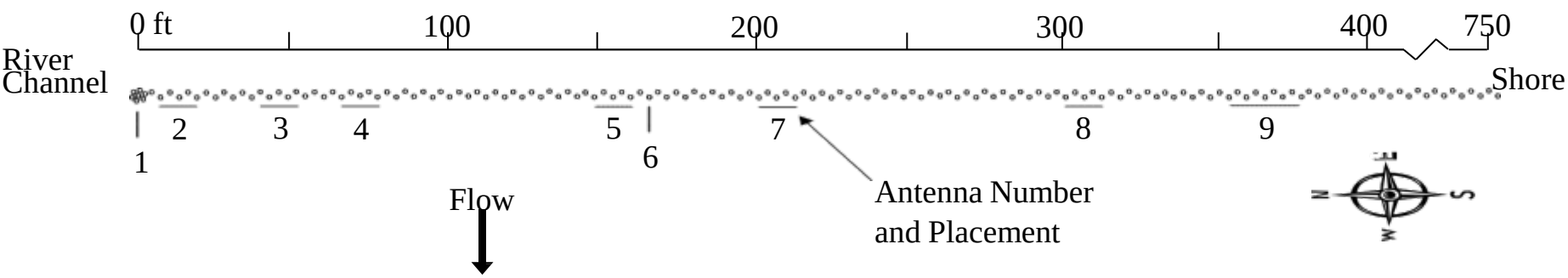


Objectives 2014

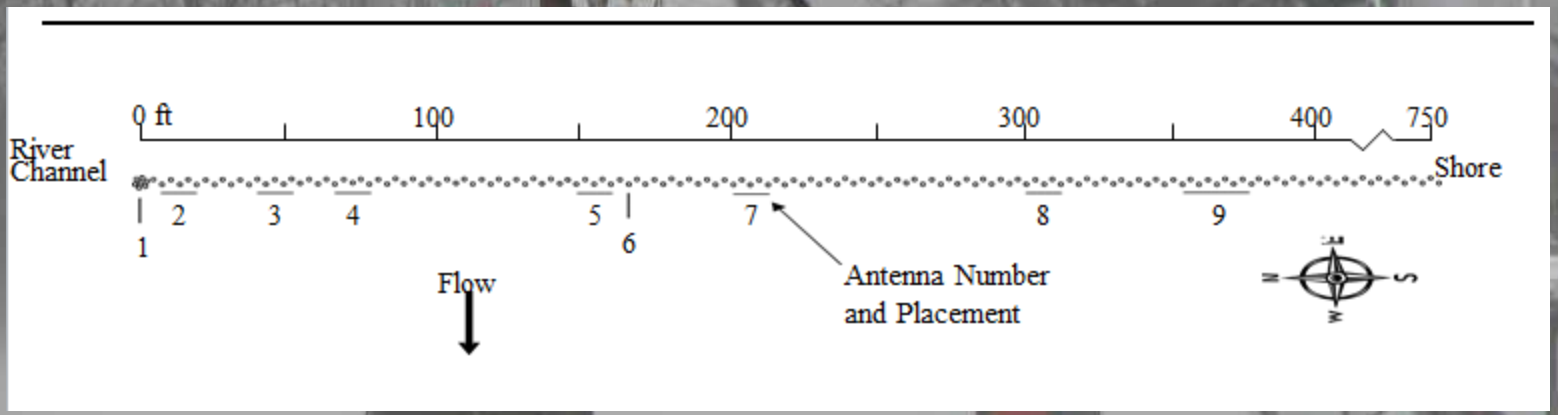
- Expand coverage along the dike and improve detection efficiency of PIT-tagged adult salmonids
- Document migration timing to the estuary of all adult salmonid species and run-types
- Document travel time PD7 to Bonneville Dam each run
- Estimate survival PD7 to Bonneville Dam for each run
- Evaluate PIT-tag juvenile salmonid detection efficiency and composition compared to trawl samples in thalweg
- Document presence and residence of white sturgeon

PD7 Antenna Orientations and Placement 2014





Coil Efficiencies



	Coil Number									
Salmonids	01	02	03	04	05	06	07	08	09	Total
All adults	107	4	3	2	3	28	0	6	10	163
All Jacks	21	0	0	0	1	4	2	7	1	36
Percent total	64.3	2.0	1.5	1.0	2.0	16.1	1.0	6.5	5.5	199
All juveniles	40	36	17	14	28	22	21	29	21	228
Percent total	17.5	15.8	7.5	6.1	12.3	9.6	9.2	12.7	9.2	

Detection Efficiency for Adults and Jacks Destined for Bonneville

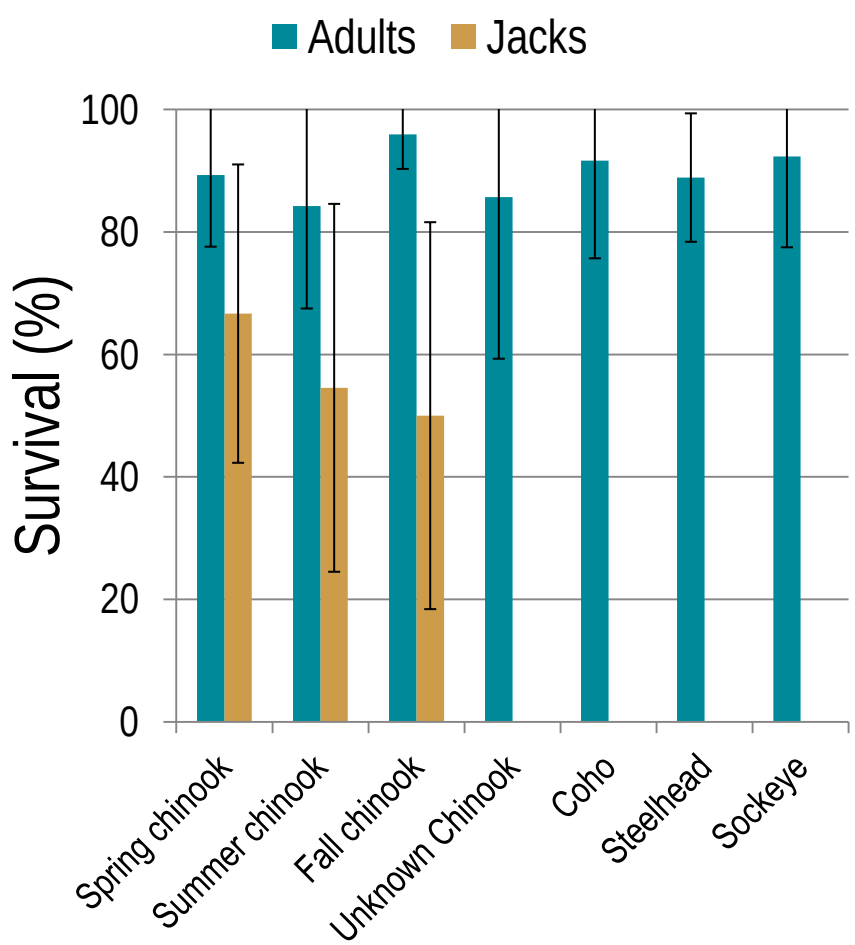
2014

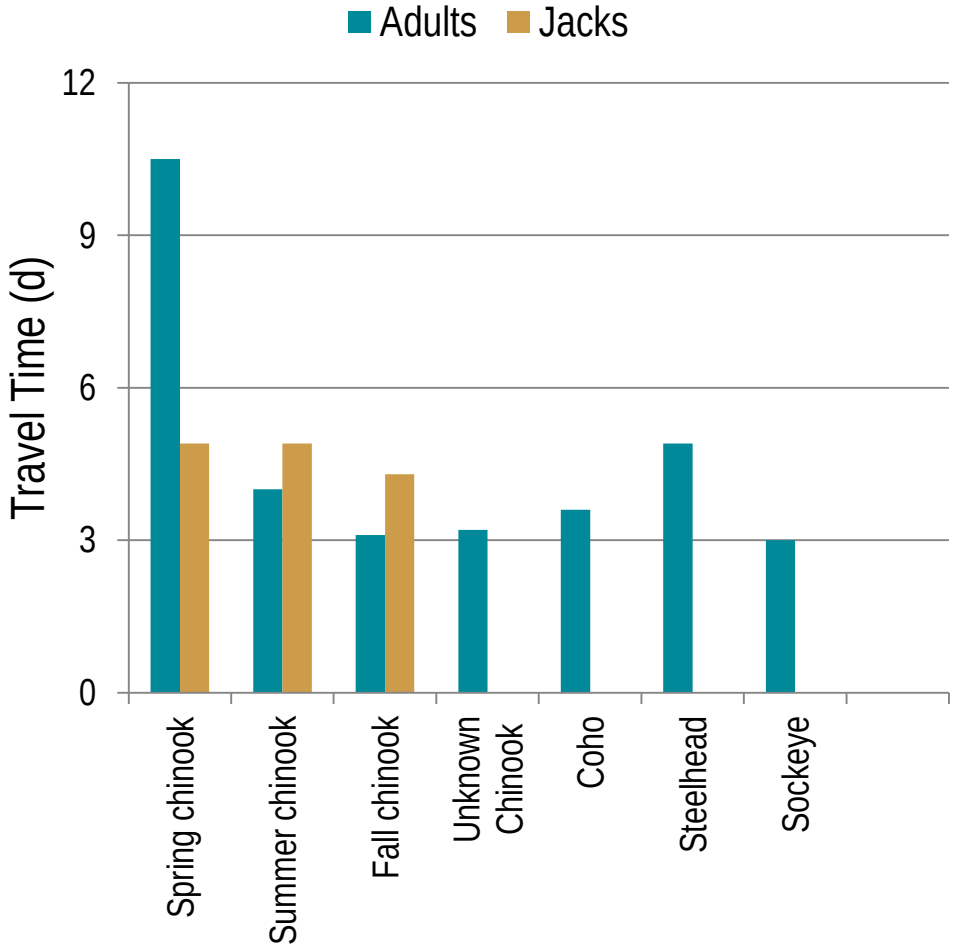
Species/Run	PD7 (N)	Bon (N)	%
Spring Chinook	43	4,645	0.9
Summer Chinook	30	2,113	1.4
Fall Chinook	59	6,311	0.9
Unk Chinook	6	1,280	0.5
Coho	12	3,316	0.4
Steelhead	36	7,662	0.5
Sockeye	13	650	2.0
Total	199	25,977	0.8

2013

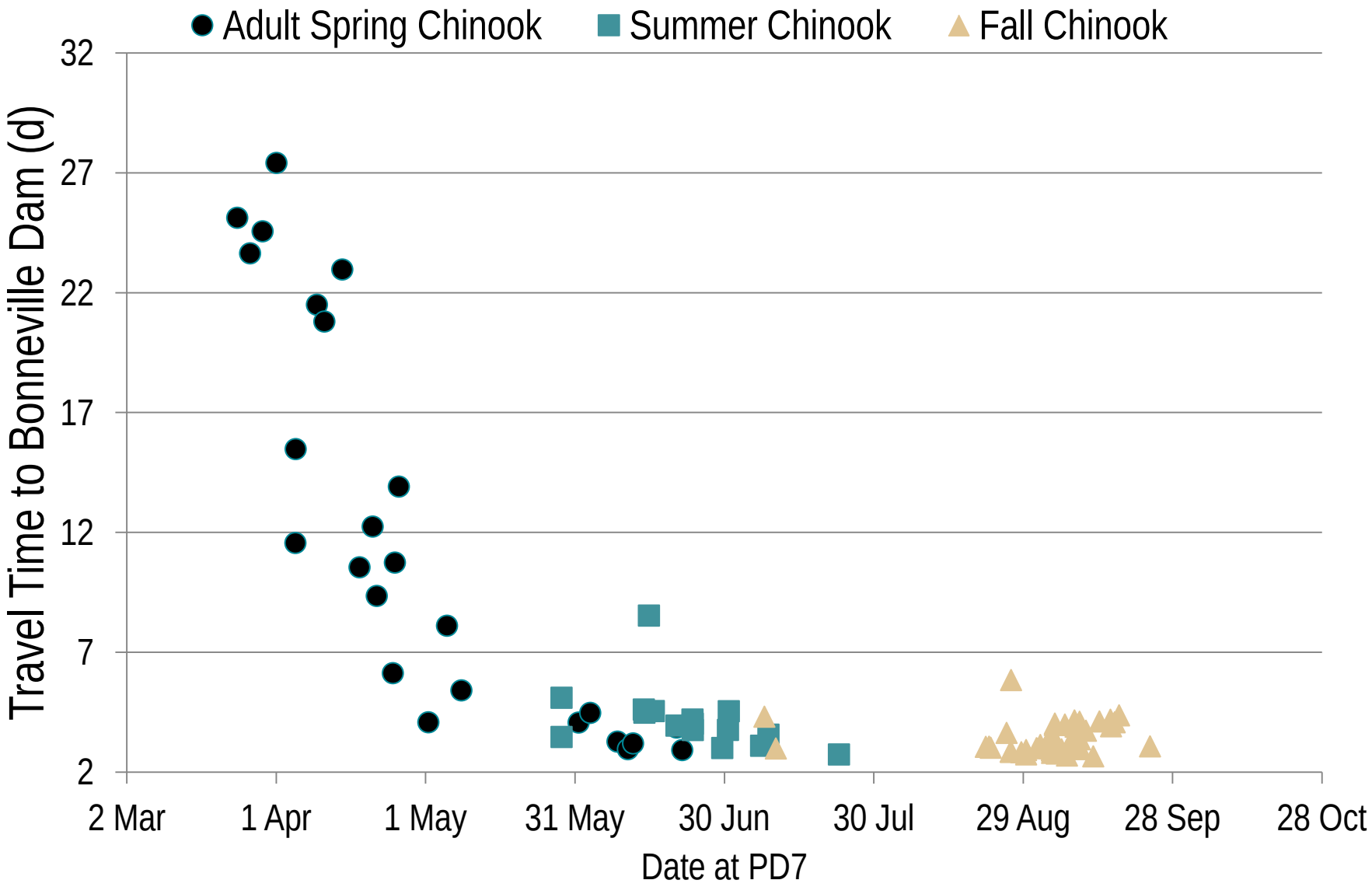
Species/Run	PD7 (N)	Bon (N)	%
Spring Chinook	96	4,630	2.1
Summer Chinook	104	3,673	2.8
Fall Chinook	106	8,860	1.2
Unk Chinook	-	--	--
Coho	3	694	0.4
Steelhead	53	5,789	0.9
Sockeye	12	384	3.1
Total	374	24,030	1.6

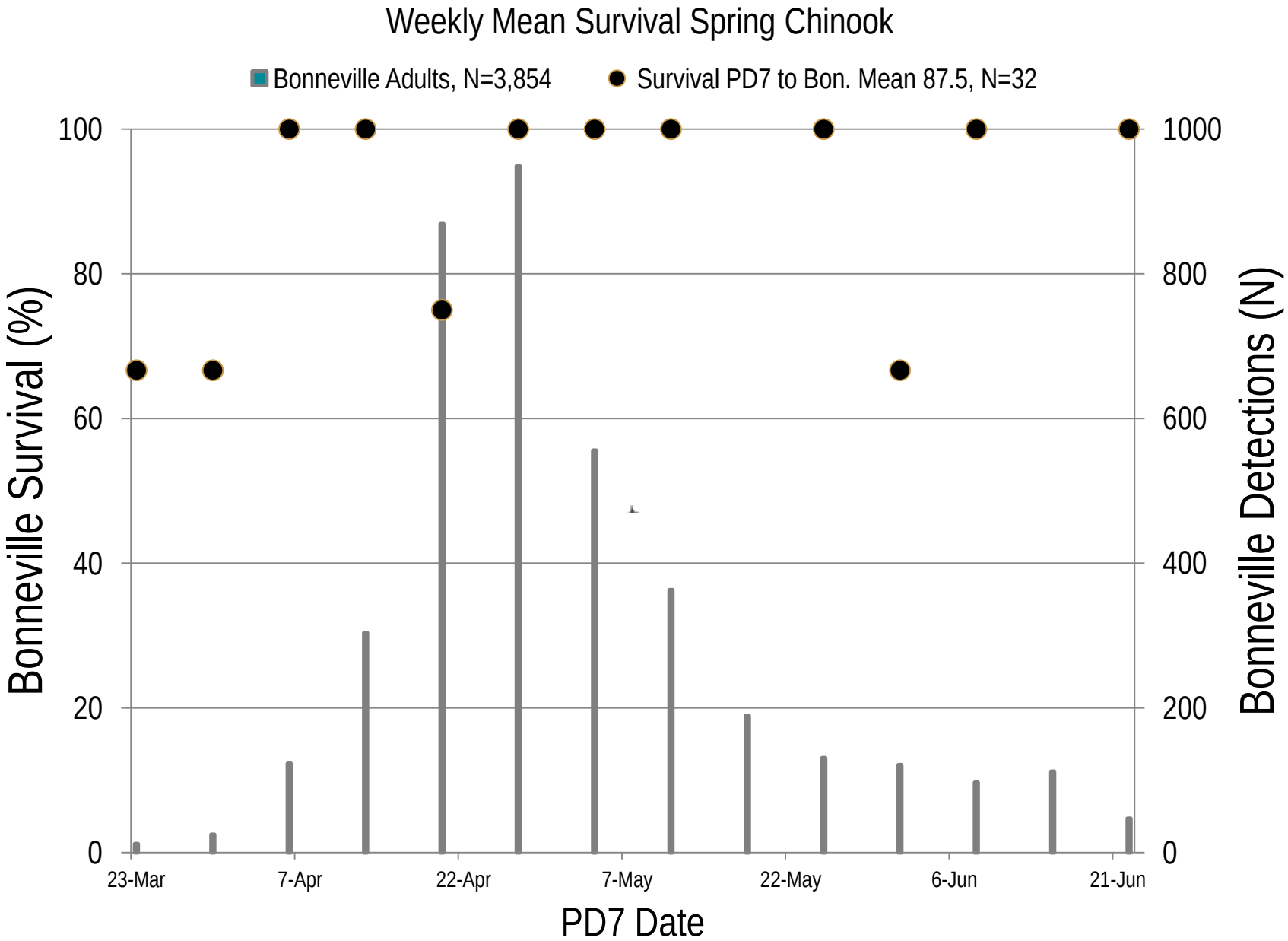
PD7 to Bonneville Dam 2014





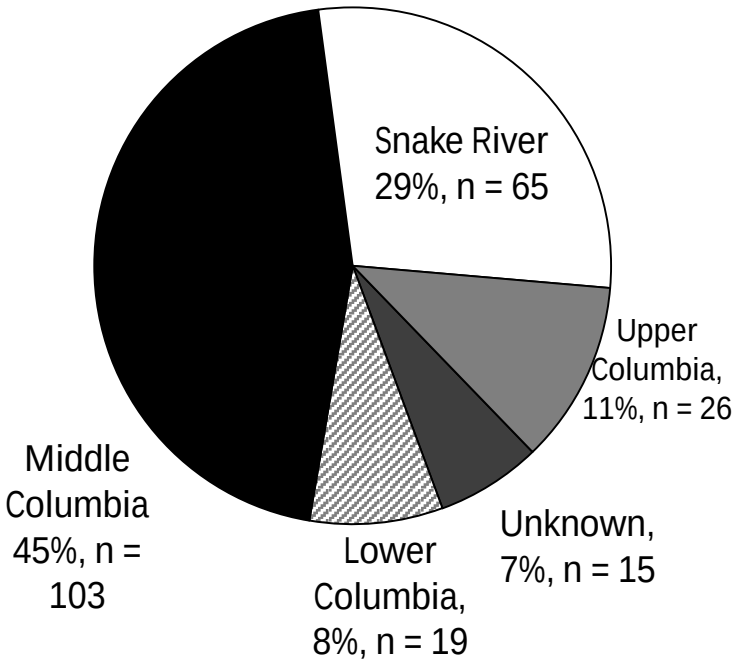
Travel Time PD7 to Bonneville Dam, 2014



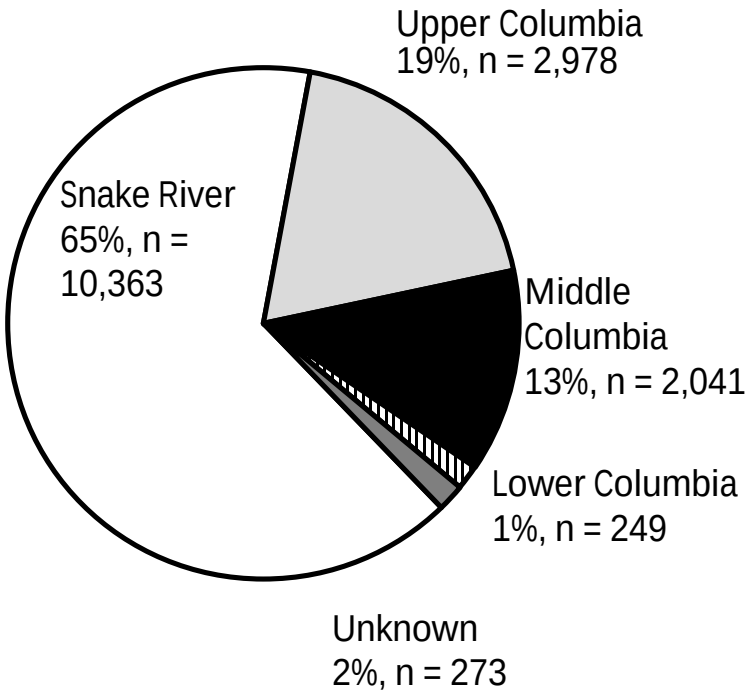

Weekly Mean Survival Spring Chinook
Bonneville Adults, N=3,854
Survival PD7 to Bon. Mean 87.5, N=32
Bonneville Survival (%)
Bonneville Detections (N)
100
80
60
40
20
0
1000
800
600
400
200
0
23-Mar
7-Apr
22-Apr
7-May
22-May
6-Jun
21-Jun
PD7 Date

Juvenile Salmonids

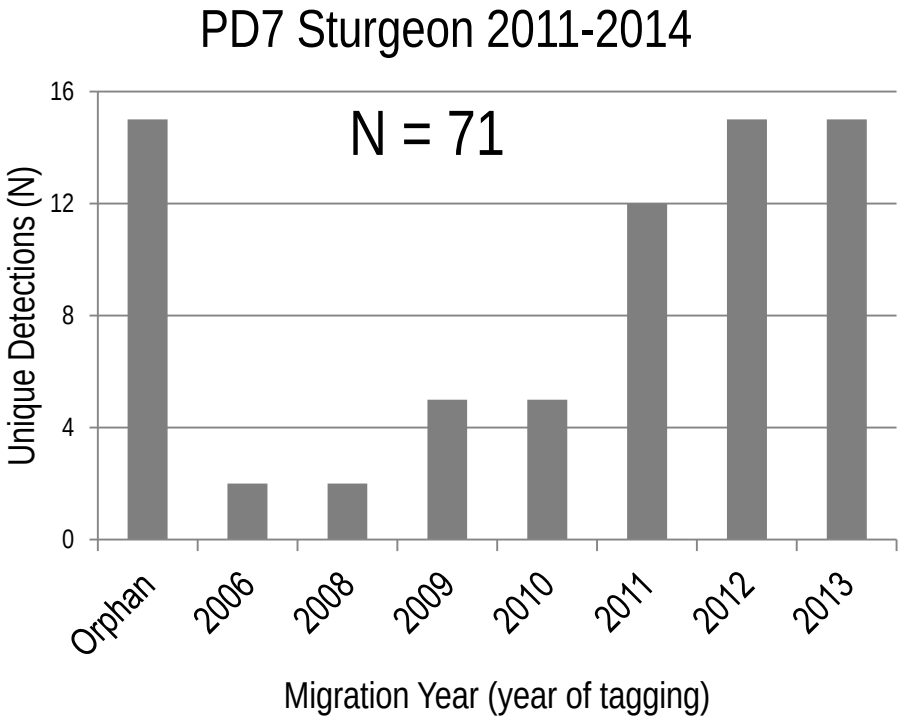
Source of juvenile salmonids detected at PD7, 2014
N = 228

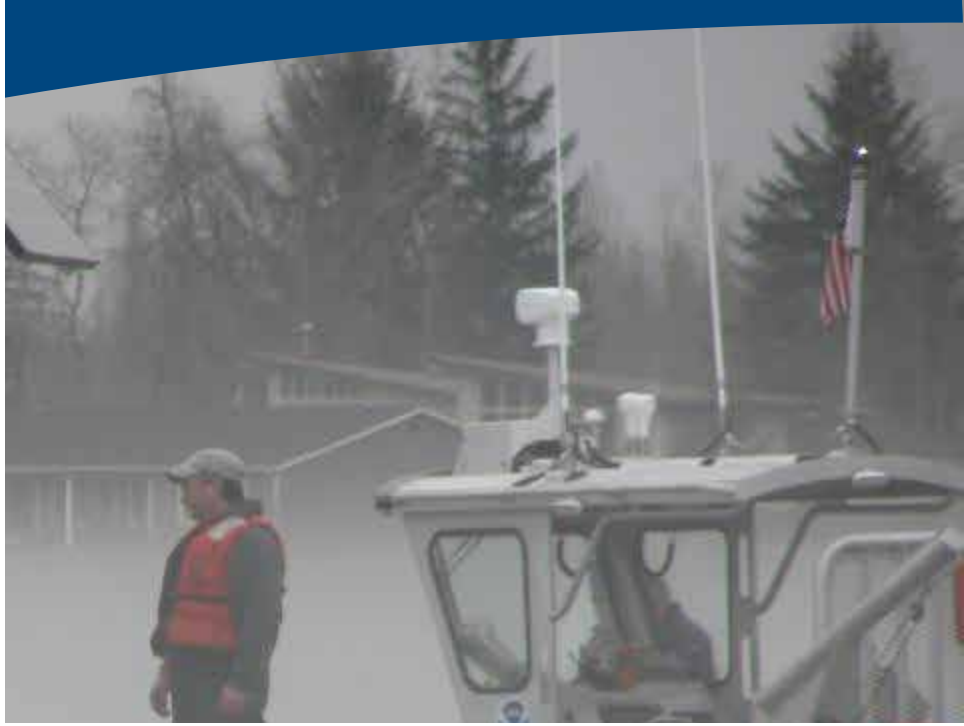


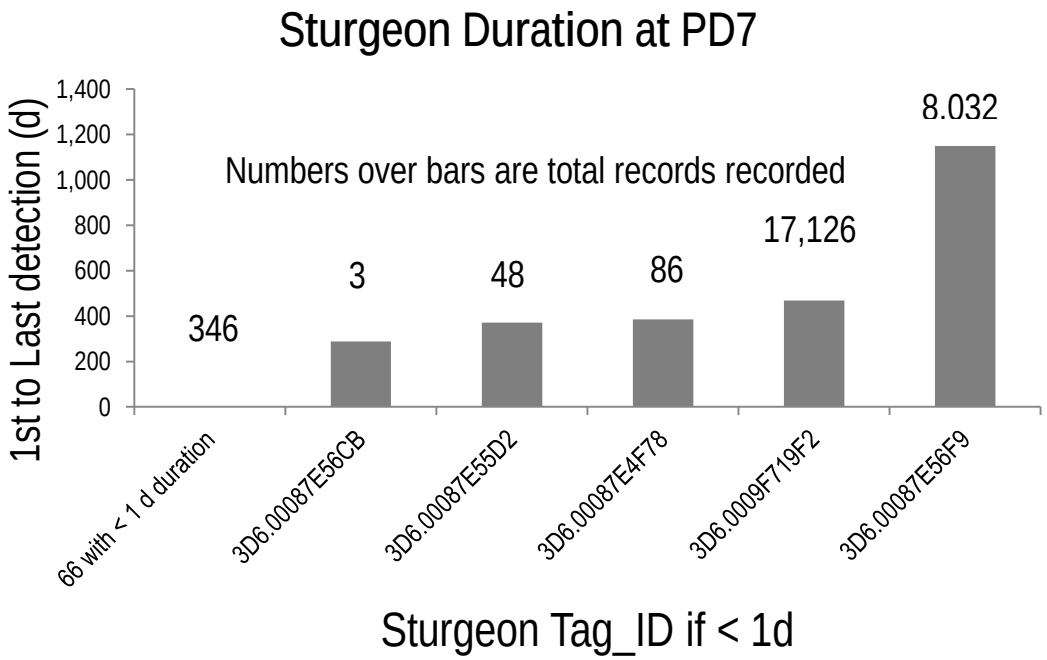
Source of juvenile salmonids detected in the estuary trawl, 2014
N = 15,904



PD7 vs TWX







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Acknowledgements

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Questions