

PIT tag Interrogation Site: Prosser (PRO) Chandler Dam, Prosser WA.

Recent effects on PIT tag interrogation system caused by the introduction of Full Duplex (FDX) tagged Lamprey.

22 May 2017

Background:

The Yakama Nation fisheries (YN), are PIT tagging adult lamprey and releasing them downstream of Chandler Dam near the OIE Hwy Bridge. The number of fish tagged are 50 per week, released every Thursday for 5 weeks. It was confirmed that these fish are tagged with either one 12mm or one 9 mm tag. The first release group was on 20 April 2017, the last release was on 11 May 2017.

The degradation of the PRO Adult PIT system was first discovered by PTAGIS O&M staff during the course of daily report checking and system evaluations. It became priority for on-site investigation on 1 May 2017, when transceiver timer tags and hit rates were approaching zero. Upon further investigation, we were made aware that the YIN were tagging lamprey and met the YN staff on-site to better understand the scope of their study, along with how and why the PIT system was being adversely effected. .

Description of problem:

Adult Lamprey PIT tagged with full duplex (FDX) tags are entering the outside confines of the counting window and potentially creating tag collisions with FDX tagged salmonids. The lamprey can stay in this area for quite some time. When this occurs, the detection rates for salmonids is greatly reduced, and quite possibly to zero detection rate.

Details:

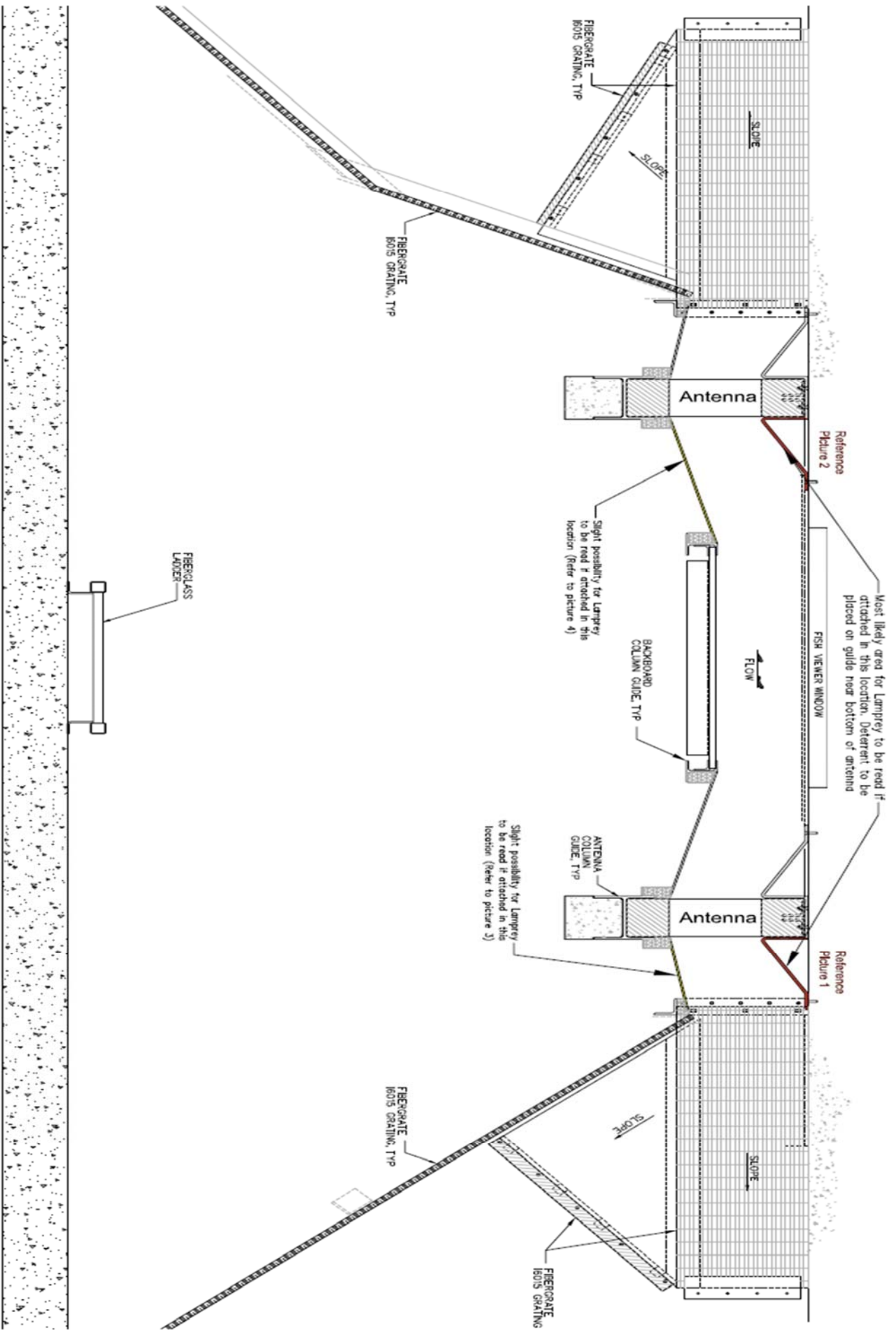
Tagged lamprey are swimming through the picket leads, (in this case grating was used in place of conventional pickets), therefore ending up in the slack water area behind the counting window backboard. The tagged lamprey attach themselves to all areas within and are being detected by the two PIT tag antennas located directly up and downstream of the counting window. The biological opinion is the lamprey are seeking calm, slow moving water as a resting place, hence swimming into the area behind the counting window.

It is possible the Lamprey are unable to volitionally leave this area due to debris build up on the trash racks. The ladder is dewatered for debris removal. Any fish in this area are removed at this time.

Note: *Although the lamprey are not within the counting window passage route, the PIT antenna field extends slightly into the areas of mention. If a lamprey resides close enough to these areas the tagged lamprey will be read by the PIT tag readers.*

Top View

PRO Right Ladder



Drawing 1.

- Highlights in RED are critical areas that deterrent measures should be considered.
- Highlights in YELLOW are cautionary areas that deterrent measures should be considered.



Picture 1. Upstream area of counting window, arrow shows antenna guide.



Picture 2 and 4. Downstream area of counting window, upstream side of antenna guide.



Picture 3. Upstream area of counting window.



Picture 5. Area where lamprey are holding up.



Picture 6. Areas where lamprey are squeezing through the grating.

Impact on Adult Salmonid detection efficiencies:

As recently discovered, the presence of these FDX tagged lamprey within the confines of the counting window, **has and will** greatly impact detection rates of transiting FDX tagged salmonids due to tag collisions between the salmonids and the lamprey.

A negative impact to the PIT tag system should be expected until this study is concluded. PTAGIS O&M have talked with the YN researcher and upon notification from PTAGIS, they have agreed to remove any tagged lamprey from the affected area.

Possible solutions:

- Tag lamprey with HDX tags instead of FDX. Turn on “Reader Dual Mode FDX/HDX” detection.
 - With this solution, there is still a slight possibility of missing FDX tags.
- Install lamprey attachment deterrents in specified areas, reference Drawing 1. See Pictures 1,2,3,4 ,
- Enhance the passage over the dam with a half-duplex Lamprey Passage System (LPS) that routes the lamprey away from the counting window passage route. Examples would be Bonneville WA. Shore LPS and 3 Mile Dam LPS on the Umatilla River.

- Install perforated barriers on the downstream side of the counting window gratings to keep lamprey from entering.
 - This may not be possible due to heavy debris build up within the counting window area.