

Tawanis Testart

From: Hanna, Bruce [Bruce.Hanna@dfo-mpo.gc.ca]
Sent: June 25, 2009 8:51 AM
To: Perry, Lisa [Yel]; Michele Culhane; Tawanis Testart
Subject: FW: Trudel Creek Pike HSI Curve

FYI

From: Linda Zurkirchen [mailto:LindaZ@cambriagordon.com]
Sent: Thursday, June 18, 2009 1:11 PM
To: Hanna, Bruce
Cc: Johnson, Nicola; Shane Uren; Claire H. Smith; Jason Cote
Subject: FW: Trudel Creek Pike HSI Curve

Hi Bruce – below please find clarification to the questions/comments. Let us know if you/DFO have any further clarification requests or would like further discussion/explanation on any items.

Cheers,
Linda

From: Jason Cote
Sent: June 18, 2009 9:51 AM
To: Linda Zurkirchen
Subject: Trudel Creek Pike HSI Curve

Linda,

Below are my comments to the DFO questions raised by Mr. Evans, assuming that these comments were based on the Appendix H Reasonableness Test of the Trudel Creek Fish and Fish Habitat Effects Assessment (March 2008). In addition, we should note that the indicator species were reviewed and approved by DFO in 2007 and the HSI curves were also reviewed and amended based on DFO feedback in 2007.

1. The term “preferred habitat conditions” for the purposes of this assessment refers to the suitable depth and velocity conditions, as presented in the Habitat Suitability Index (HSI) curves, by a particular species and lifestage. The WUA is an indication of the amount of habitat (in hectares) that meets the suitable depth and velocity conditions (or preferred habitat conditions) – in this case northern pike spawning. The paragraph that Mr. Evans is referring to was written from the perspective of declining flows (i.e. 200 cms to 40 to 15 to 0). The last sentence of the paragraph is the sentence of interest in Mr. Evans’ question. The intent of the sentence is that at flows of 40 – 15 cms the WUA declines. At flows <10 cms (between 10 cms and 4 cms) the WUA (or preferred habitat conditions) increase. Possible clarification of the last sentence in the paragraph could be “At lower discharge rates (<10 cms), water velocities and depths within the mainstem channel would be reduced, resulting in an increase in suitable habitat conditions for northern pike spawning”.
2. As described above, the perspective of this paragraph is from the declining flows. Therefore the document should read that “From discharges of 40 cms to 15 cms, the WUA declines”. This is consistent with Mr. Evans interpretation of the graph where there is an increase in WUA from 15 cms to 40 cms.
3. Mr. Evans accurately identified what was confirmed by the WUA model – that pike spawning habitat is relatively poor in Reaches 1 and 2. To provide a holistic assessment, lake whitefish and walleye were also included in the assessment, as these three species and the selected life-stages cover the range of habitat types and physical conditions of the entire system from creek source to the confluence with the Taltson River. The WUA model provides a quantitative tool to conduct the EA and indicates that there is a status quo (of limited suitable habitat) between the changes of northern pike spawning habitat in Reaches 1 and 2. This would not have been quantified without the WUA model. On a side note, fish assessment and sampling programs conducted in Trudel Creek also confirm that pike habitat (rearing and spawning) is relatively poor in Reaches 1 and 2, and low numbers of fish were caught in these areas.

4. Based on field observations and transect data, the WUA changes between 80 cms and 150 cms would be a condition of bench habitats along the stream margins becoming wetted. Between 80 cms and ~150 cms the WUA increase as these bench habitats become wetted. As discharges continue to increase (~150 cms to 200 cms) the depths associated with the benches continues to increase and are no longer within the suitable habitat conditions, as identified in the HSI curves. Therefore, the WUA between ~150 cms to 200 cms decreases.

I hope this assists in clarifying and answering Mr. Evans questions.

Cheers,
Jason

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From: Hanna, Bruce [<mailto:Bruce.Hanna@dfo-mpo.gc.ca>]
Sent: June 5, 2009 2:26 PM
To: Linda Zurkirchen
Cc: Johnson, Nicola
Subject: FW: Trudel Creek Pike HSI Curve

Hi Linda,

Below are some comments and clarification requests from one of our biologists in Alberta who has a lot of experience with Instream Flow Needs.

Have a good weekend.

Bruce

From: Evans, Dave
Sent: Friday, June 05, 2009 12:27 PM
To: Hanna, Bruce
Subject: Trudel Creek Pike HSI Curve

Hi Bruce,

I went over the HSI curves on Trudel Creek for northern pike (spawning) and have the following comments:

- The peak WUA (14 ha) is reached at approximately 40 cms based on Figure 1 and likely corresponds to water inundating the "shallow benches" plus any remaining habitat in the main channel. The consultant discusses how the "preferred habitat conditions" are at lower discharge rates (<10 cms) which requires further explanation (perhaps water recedes too fast for incubation and emergence of eggs??). My interpretation of the graph is between approximately 4 cms to 10 cms the WUA actually declines from 10 ha to 8 ha or about 20% of the available spawning habitat. Considering reaches 1 and 2 provide almost no pike spawning habitat this could be critical for the survival of pike in this area.
- The consultant also suggests that between discharge values of 15 and 40 cms WUA values are anticipated to decline. According to Figure 1 the WUA doubles from approximately 7 ha at 15 cms to 14 ha at 40 cms. Again clarification is required.
- The fact that reaches 1 and 2 show no response between flow and pike spawning habitat indicates that perhaps pike spawning is not the best species and/or lifestage to model. An alternative explanation is that reaches 1 and

2 were perhaps not the best sections selected for study (i.e. not pike habitat). The fish collection data from these reaches seems to support that hypothesis. Again, my standard warning for using pike spawning curves for flowing water to determine IFN values applies.

- Lastly, there is no mention of the increase in WUA between 80 cms and 150 cms. I am not sure if there is a habitat reason for this change or if it is a result of the model. Some clarification would be helpful.

Was there any follow up monitoring on the site to validate the model and its ability to accurately predict pike spawning potential?

Hope this helps. Let me know if you have any questions.

Dave

Dave Evans

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