Muddying the Waters?

The 'Bounding Box Approach' to Critical Habitat Identification

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The Bounding Box Approach is an unusual new approach developed by Fisheries and Oceans Canada to designate critical habitat for aquatic species at risk. But it is hard to see how it will make any meaningful contribution to species at risk recovery, other than to add one more unnecessary level of complexity, confusion and expense.

According to Canada's *Species at Risk Act* (SARA) critical habitat is "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the Recovery Strategy or in an action plan for the species." It is a requirement under Section 49 of SARA that the Recovery Strategy and Action Plan for a given species include the identification of that species' critical habitat to the extent possible based on available information. Under SARA, it is illegal to destroy any part of the critical habitat for species at risk, which gives the Government of Canada the power to impose restrictions on human development projects and associated construction activities.

Fisheries and Oceans Canada (DFO) is the ministry responsible for administering SARA for at-risk aquatic species. Despite the requirement for DFO to include the identification of critical habitat for aquatic species at risk, definition of critical habitat is not always easy to understand or implement in practice. This is concerning, because if defining critical habitat is complicated – even for those with a background in fish ecology – then how can we expect project proponents (e.g. logging companies), typically without the required expertise, to behave appropriately or regulate their own operations in aquatic critical habitat?

The SARA recovery strategies for two of Alberta's native cold water trout species – Athabasca rainbow trout and westslope cutthroat trout – include critical habitat definitions with a specific provision which seems to only add confusion or complication. The location of critical habitat for both has been identified using what's bizarrely known as the 'Bounding Box Approach'. This seems to be a DFO-specific approach, not to be found in a broader search of available literature for identifying aquatic critical habitats. According to DFO, the Bounding Box Approach is useful when habitat features and their attributes can be described but their exact location varies yearly or knowledge of their specific location is not available. To identify a particular site as critical habitat, it must be within the 'bounding box' and represent the described functions, features, and attributes within that bounding box as described in the Recovery Strategy. DFO states that it is not possible to identify all specific locations that contain these specific functions, features, and attributes for critical habitat – and that studies will be conducted to address these gaps in their understanding.

If this sounds confusing to you, you're not alone! The Bounding Box Approach seems to indicate that to designate a given area of a watercourse as critical habitat, some form of on-the-ground assessment is required.

As an example, Table 4 of the Athabasca rainbow trout recovery strategy contains a list of locations identified as critical habitat. This includes two locations within Moon Creek, part of the Berland River watershed in west-central Alberta. In addition to being included in Table 4 of the recovery strategy, DFO's aquatic species at risk mapping tool, available on their website, also lists Moon Creek as containing Athabasca rainbow trout critical habitat. But despite Moon Creek's inclusion as critical habitat in both examples, that doesn't guarantee any protections for critical habitat along the Moon Creek, since – according to the Bounding Box Approach – a field assessment would be necessary to determine the presence of those functions, features, and attributes.

Instead of taking a precautionary approach by designating critical habitat within the entirety of Moon Creek to ensure adequate protections for any potential Athabasca rainbow trout critical habitat, DFO has taken a more complicated – and seemingly weaker – approach. DFO requires project proponents with proposed activities in or near aquatic habitats to identify any critical habitat for aquatic species at risk that may be impacted by their project, but without any enforcement or surveillance mechanisms to ensure completion of a watershed assessment. Implementing the Bounding Box Approach rather than a blanket protection for a watershed means that, to designate critical habitat, a proponent needs to determine the presence of those specific functions, features, and attributes in almost every case, increasing the time and financial cost. However, the lack of enforcement means that proponents could get away without an assessment so long as they never get caught. The Bounding Box Approach enables a hypothetical situation wherein a project proponent could knowingly destroy critical habitat, only to claim that none of the relevant features existed in the first place, prior to the activities which destroyed them.

AWA has reached out to experts for their opinion on the Bounding Box Approach,

including Drew Yewchuck and Shaun Fluker, two lawyers from the University of Calgary, retired aquatic ecologist Dave Mayhood, and Lorne Fitch, a retired fish and wildlife biologist. All four heavily criticised the Bounding Box Approach and were confused as to when, how, and why it came to be used. According to Fluker, the Bounding Box Approach seems to appear in 2019, when the critical habitat description for westslope cutthroat trout suddenly used the term without any prior mention of the concept. There seems to be no peer-reviewed scientific literature for this approach, which has led experts to assume it is a policy concept with no grounding in scientific evidence.

Dave Mayhood agrees that the Bounding Box Approach makes no ecological sense. The approach considers critical habitat as consisting of discrete sites within a watercourse, in which critical life history functions take place at particular times and can move. This ignores the fact that the entire stream is essential to maintaining those discrete sites for their use by at-risk species. Mayhood feels, for example, that it is absurd to treat juvenile rearing habitat as separate from the rest of the stream, especially when the location of this habitat could be constantly changing with changing hydrology. The entire watercourse and upstream watershed should be considered as critical habitat as it is either directly occupied by fish or it indirectly affects the features that are used by fish. Fish populations cannot live with only discrete parts of the stream designated as critical habitat; they need the whole stream, all the time.

Lorne Fitch feels that what is driving the bounding box concept is an assumption that critical habitat moves because trout move as well. This creates a situation where trout occupancy is required for habitat to be designated as critical habitat. Fitch feels that the Bounding Box Approach is an attempt to create the narrowest possible definition of critical habitat to give the illusion that critical habitat is being protected, when that is far from reality. It intentionally muddies those waters by requiring proponents to determine whether or not a stream segment is critical to a specific life-stage of trout on the day of examination. The Bounding Box Approach seems to be less ecological than it is administrative, relieving DFO of the decision-making responsibility for designating critical habitat themselves, and leaving it up to proponents.

A section of Apetowun Creek near Hinton Alberta. This watercourse is listed in the SARA recovery strategy for Athabasca rainbow trout as an "area within which critical habitat is found". © P Meintzer

We questioned DFO about the advantages of the Bounding Box Approach during a native trout rehabilitation workshop hosted by Cows & Fish and Trout Unlimited Canada in March 2022. DFO responded that the new approach gives it more flexibility in aquatic environments where we don't always know the exact location of critical habitat. Critical habitat could move from year to year, and DFO didn't want to identify specific locations in one year, when the next year that location might not serve as critical habitat any longer. DFO acknowledged that applying appropriate protection is tricky for aquatic species, but they believe that the Bounding Box Approach provides greater protection for native trout and takes a more 'precautionary' approach than identifying static segments of a watershed.

AWA disagrees that it provides stronger protection for Alberta's at-risk native trout species. Yes, the approach allows different locations within a watercourse to be identified as critical habitat in subsequent years if those features and attributes have moved in the interim. However, all of those functions, features, and attributes would be protected to a greater degree if the entire watershed was given some form of blanket protection – significantly reducing the time and costs associated with targeted watershed assessments. We are concerned that the Bounding Box Approach has the potential to create added confusion and complexity in the identification of critical habitat for both Athabasca rainbow trout and cutthroat trout. This added complexity will result in increased costs to project proponents, and without adequate enforcement mechanisms in place to guarantee compliance, this will likely lead to the further destruction of the habitat necessary for the survival and recovery of Alberta's imperilled fish.

The present reality of Alberta's several at-risk native trout species is that their historical range has been fragmented to the point where their distribution is now restricted only to short reaches and small streams near the headwaters. These are the locations where trout will make their last stand and every single metre of stream is crucial to their survival. The Bounding Box Approach seems to be informed by administrative convenience rather than scientific rigour and is ill-equipped to provide the protection that a SARA listing requires. A better approach would be to designate the entire length of streams as Critical Habitat which – to trout – it is.