**Conversion Rate Tools**

2024-07-09, 11am-12pm

Webex meeting

**Agenda**

1. **Welcome & introductions (5 minutes)**
2. **Overview of existing conversion rate tools (5 minutes)**
   1. DART tool (<https://www.cbr.washington.edu/dart/query/pitadult_conrate>)
   2. OneFishTwoFish tools
      1. Adult Salmonid Reach Conversion/Loss Rates (HTML/javascript web app)

<https://www.onefishtwofish.net/viz/ConversionRate2.html>

* + 1. Adult Salmonid FCRPS Reach Conversion and Delay (Shiny app)

<https://salmonetics.shinyapps.io/ConversionRate/>

* 1. Blane’s method

1. **List potential next steps of development (10 minutes)**
   1. Development of multiple conversion rate tools   
      that would be made available on DART is possible,  
      while a conversion rate method for one standard metric   
      is being discussed and determined.
   2. Document the differences, similarities, and purposes   
      of each of the four or more conversion rate tools.
   3. Determine what detailed methods need refinement presently,   
      and what can be refined in the future.
   4. DART and/or OneFishTwoFish work(s) with Blane   
      to document, code, automate the workflow for   
      Blane’s method for integration into DART.
   5. Further development of OneFishTwoFish tools,   
      then work with DART for integration, and  
      DART edits & troubleshoots tools for final deployment on DART; or
   6. DART looks into what’s needed for interoperability  
      of OneFishTwoFish tools, then works with OneFishTwoFish   
      for any further development and integration into DART,   
      and DART edits & troubleshoots tools for final deployment on DART.
   7. Other ideas?
2. **Discussion of what is needed / preferred (15 minutes)**
   1. Discuss, drawing from list under agenda item #3
   2. Timeline (months/years)
   3. Funding (existing/new)
   4. Other ideas?
3. **Deciding on next steps, if possible (15 minutes)**

(including recap of next steps agreed upon, if possible, towards end of meeting)

1. **Additional comments / questions for future consideration (5 minutes)**

To briefly recap from previous meetings:

* There are a few different methods of estimating conversion rates:
  + Blane's method
  + DART (<https://www.cbr.washington.edu/dart/query/pitadult_conrate>)
  + OneFishTwoFish (<https://www.onefishtwofish.net/viz/ConversionRate3.html>)
  + OneFishTwoFish Shiny app (<https://salmonetics.shinyapps.io/ConversionRate2/>)
* There is interest in:
  + Having a singular, regionally accessible landing page for conversion rate tools.
  + Developing Blane's method into an online tool and integrating it into DART.
  + Integrating OneFishTwoFish conversion rate tools into DART.
  + Determining a conversion rate method for one standard metric.
  + Still offering multiple methods of conversion rates for comparison.
* Some things to consider (and decide) on include:
  + Who leads these efforts or co-leads different aspects of efforts
    - (e.g., online tools; consensus of one standard metric)
  + Which tools get developed and integrated into DART
    - (including clear objectives & utilities of each tool, UI/UX and human-centered design for accessibility)
  + Refinement of any related methods needed (e.g., harvest estimates)
  + How and when to share prototype tool(s) to the region for feedback
  + Timeline and funding

**Meeting notes**

1. **Welcome & introductions (5 minutes)**

Jennifer: Welcome everyone. I believe some of you have already attended some meetings about conversion rate tools last year, which Russell led. Last March, Jody met with me to discuss conversion rate tools, which eventually led to me planning this meeting. I am happy to help where I can, and I don’t have to be the one leading meetings in the future.

The goals of this meeting are to help get everyone on the same page of what’s been developed for conversion rates tools and where to go from here. There is interest in access to these tools and interest in a standard metric for conversion rates.

Introductions:

**Jennifer Gosselin**: Senior Research Scientist at Columbia Basin Research, School of Aquatic & Fishery Sciences at the University of Washington; PI of DART

**Brian Maschhoff**: Scientific Data Consultant to BPA, Salmonetics, OneFishTwoFish.

**Jody Lando**: BPA Research, Monitoring and Evaluation Lead

**Russell Scranton**: BPA Fish & Wildlife, Policy & Planning Division

**Christine Petersen**: BPA Fish & Wildlife, COR/CO

**Ben Haussman**: BPA Fish & Wildlife

**Carolina Andes**: BPA Fish & Wildlife

**Blane Bellerud**: NOAA Fisheries Biologist, Regional Manager

**Cindy Studebaker**: USACE, NW Division

**Chris Peery**: Fish Biologist, USACE, Walla Walla Division

**Lisa Wright**: USACE, TMT

**Douglas Baus**: USACE, TMT

**Dan Feil:** USACE fish policy

**Susannah Iltis**: Web Computing Specialist, CBR, SAFS, UW; develops online tools for DART

1. **Overview of existing conversion rate tools (5 minutes)**
   1. DART (<https://www.cbr.washington.edu/dart/query/pitadult_conrate>)
   2. OneFishTwoFish tools (ConversionRate3 and Shiny app ConversionRate2)
      1. Adult Salmonid Reach Conversion/Loss Rates (HTML/javascript web app)

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* 1. Blane’s method

When was it developed?

What data does it use?

What kinds of outputs can users see or hear about?

Susannah

* Started in 2003
* Minijack exclusion introduced 2011
* Other user-controlled filter options, e.g., transportation, introduced over the years
* Calculation is simple upstream detections/downstream detections based on user selections to define a reach and population (species, run, rear type, transport status, detected upstream status). No corrections for harvest, straying, or other.
* Uses PTAGIS data set as implemented by DART with DART Life Stage Filter identifying adult detections
* Web Results:
  + Standard: annual calculation for all available years based on user selection
  + Comparisons: Transport vs. In-River; Species, Run, Rear Type; Reaches
  + Output: Graph, Table, Supplemental details for year, release site combination

Brian

* Presentation of need for in a different way; a response to need of more than what’s available
* Use of DART data
* Time series of various reaches compared on one screen
* Look in a given year how the reaches compare
* Then realized there are other questions / visualizatons
  + Shiny-based tool
  + Needed data on a per fish basis; get PTAGIS data, and not just DART
  + Data mining at a detailed level; groups of fishes, across season

Blane

* Early 2000s, running at about the same time when DART started
* Developed with Charlie Paulsen
* Shared with action agencies
* Upstream vs downstream
* Harvest from TAC
* Straying; transported and in-river fish; jacks/no jacks; etc.
* Distributed upon request

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Jennifer: If DART is involved from the start, that could help save some time on developments that are not compatible with DART structure.

Other ideas?

* 1. Russell: include covariates
     1. Flow
     2. Spill
     3. Temperature
     4. TDG
     5. Harvest
     6. PIT array

What are clear info needs?

* 1. Jennifer: Lisa Crozier could be included in finalizing methods and workflow of Blane’s method. Lisa and I have already published related studies. We are already working together on parts of Life Cycle Modeling related to Conversion Rates.

Blane: need to include her reviews; identifying which groups to include.

* 1. Blane: ESU? Smaller groups? Surrogates?
  2. Russell: Additional tool with PIT tags – tributaries
  3. Brian: what is conversion rate? Definition? Goals? Environmental covariates?

Document very well what fish are being used, the methods

Can allow users to download data set

1. **Discussion of what is needed / preferred (15 minutes)**
   1. Discuss, drawing from list under agenda item #3
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   3. Funding (existing/new)
   4. Other ideas?

**4a. Discuss**

Jennifer:

Clear objectives & utilities of each tool for particular audiences.

UI/UX and human-centered design for accessibility, also related the point above about users/audiences.

Once we determine who is involved, then determine how to collaborate and share documents: Sharepoint, Google Drive, GitHub, etc.

Russell:

* NOAA uses Google Drive
* BPA uses Sharepoint
* Perhaps best to use what works best for Blane, Brian, DART, and not so much BPA because the former is doing the bulk of the work.

Jennifer:

* GitHub could include documents, code, and discussions by topic under Issues

Jennifer:

* One team for development of online tools. Who leads?
* One team more focused on management and development of one standard metric. Who leads?

**4b. Timeline**

Jennifer:

Short-term: (within the rest of this calendar year)

* Conversion rates tools team (including Lisa Crozier) to meet with Blane.
* Document Blane’s methods.

Long-term: (starting this fall and into the next year or so)

* DART will be finished with some large projects that had been occurring over the last few years, and will have time to work on conversion rate tools.
* Include the code on the CBR Organization GitHub account (long-term for transparency of methods).
* Determination of standard metric for conversion rates.

Brian:

* maximize DART data
* worked with Susannah to get data; for fallback tool
* refine the api of what DART is
* then there’s the possibility for users/modelers using the same data
* Could develop an R package
* Transparent and reproducible

**4c. Funding**

Jennifer and Susannah:

No additional funding for DART needed if developed over the next couple of years.

* Faster development is probably not possible anyway because we have other tasks and responsibilities already.
* More funding and a new hire would not be any faster because we would need to train the new hire

(If there is a dedicated person for the analysis with covariates and refinement of methods, including harvest estimates, then additional funding may help.)

Blane:

* Audience for his methods clear: BiOp and performance standards.
* Working on write-up of methods currently.

Christine:

* Mixed in opinion on how much seek out TMT as a focus group.
* Delayed tool; algorithm for within-season, weekly conversion rates.

Blane:

* If include harvest, then more consideration may be needed for various audiences and data owners / model developers.

Russell:

* It seems like having two teams would help move things along. He can help co-lead.

1. **Deciding on next steps, if possible (15 minutes)**

**(including recap of next steps agreed upon, if possible, towards end of meeting)**

Jennifer: Start with some relatively easier decisions…

Google Drive? Who hosts?

* Paused to see if there are any volunteers or other thoughts.
* Jennifer will start it and can transfer to anyone else

Russell: BPA may have trouble accessing Google Drive because Chrome access is being removed; but can try and see if indeed blocked from usage

Jennifer: if so, we can try moving to another option

GitHub? Who hosts?

* Paused to see if there are any volunteers or other thoughts.
* Jennifer will start it and can transfer to anyone else

Teams? Who leads?

Blane:

* Need to be clear on the questions and usage

Jody:

* Regarding two groups, it can be setup for listening and thinking things over
* Echoing Blane’s remarks to have defined purpose
* Cannot just have the art of the possible
* Don’t have luxury in time or money
* Need to be clear on questions

Jennifer:

* The tools already developed are to some extent already focused on particular types of estimates, temporal scales, and objectives, and each have their own limitations.
* The co-leads of the two team could work closely together
* The technical side of things for documenting methods and developing online tools is a lot of work already and thus having someone lead this with devoted expertise could be more efficient
* For management, and particular management questions, another person could lead these efforts
* Both teams could overlap and the co-leads would work closely together
* Eventually over time, the two teams could merge into one team

Russell:

* Short-term documentation of methods is important, include data sets and definitions
* Development of online tools can be longer term

Jennifer:

* Wait for Jody to have internal meetings and see where to go from there?

Jody:

* Yes.

**Next steps:**

* Jennifer sets up Google Drive
* Jennifer sets up GitHub repo
* Wait for Jody et al. to have internal meetings on how to proceed: whether we have two teams with two co-leads working closely together, or some other option, or additional meetings

1. **Additional comments / questions for future consideration (5 minutes)**

Jennifer: USACE’s thoughts? Questions? (Thank you for your interest and for coming.)

Chris Peery: Interested from operations standpoint. Are we meeting the standards for the BiOp. Interested in Fisheries Management, but this should be secondary.

Cindy Studebaker: Agree with Jody’s comment about making these tools intentional and applicable to management…

Seems like TMT is key audience

Thank you all!