09:03:30 From Filippo Bellini : Hi all! from italy!
09:04:09 From Naoufel Tunisia : Hi all from Tunisia
09:04:31 From Elias Muhumuza : Hello Everyone! Greetings from Uganda. Elias.
09:04:52 From Kelly Hughes : Kia ora from New Zealand
09:04:54 From Gaspare Barbera - CREA : hi from Italia
09:05:08 From Bendik Eithun Halgunset : Hei from Norway
09:05:14 From Pao : This is so exciting, HELLO FROM SPAIN! :-D
09:05:24 From Maria Cheimonopoulou : Hello everybody from Greece!
09:05:28 From David Denoon : Hello from Scotland
09:05:29 From World Fish Migration Foundation : https://www.youtube.com/c/DamRemovalEurope
09:05:38 From World Fish Migration Foundation : Dam Removal Europe's Youtube link!
09:05:55 From Francisco Martinez Capel : Good evening to all, from Gandia (Spain)
09:05:57 From Shane Scott : Hello from Washington State, USA.
09:05:57 From World Fish Migration Foundation : Recordings will be available shortly after the webinar- we will send you all an email when they are ready!
09:05:57 From 8 Bob Gubernick, : Hello from Minnesota USA!
09:06:09 From david_buysse (INBO) : Hello from Belgium !
09:06:14 From NLanglois-Anderson : Hello from Ontario, Canada!!
09:06:21 From Kristina Makkay : Good morning from Canada, digging out from a 50 cm snowfall.
09:06:33 From Przemek : Hello from Poland
09:06:42 From Daniela Barbosa : Hello from Portugal!
09:06:45 From Ewa Ciepielewska : hi! Kraków, Poland here
09:06:46 From Viktoriia Shebanova : Hello from Ukraine!
09:07:07 From Sofia Spiridonidou : Hello from Greece!
09:07:14 From Alexandra Pappa | MedINA : Hi from Greece!
09:07:18 From Ben Lamb : Aloha from Darlington, Uk!
09:07:20 From Megan Lung NYS DEC Hudson River Estuary Program : We can see your notes :)
09:07:26 From Caprice Fasano : Greetings from Washington State USA
09:07:35 From Stéphane JOURDAN : Hello from France...
09:07:40 From Elliot Lindsay : greetings from snowy Calgary - Canada
09:07:48 From Carlos Rebelo da Silva - DRHI : Hi from Portugal!
09:07:52 From Lorenzo Quaglietta : Ciao from Italy!
09:07:53 From Joshua Royte : Greetings from Maine, USA
09:08:03 From Marius Panahon : Philipppines , Mabuhay!
09:08:12 From World Fish Migration Foundation : Welcome everyone!
09:08:16 From Margaret Lapinska ERCE Poland : hello to ALL from Poland :-)
09:08:23 From Carrie Banks, DER : Hello from Massachusetts, USA! Nice to see local as well as international friends.
09:08:25 From Alan Graham TRT : Hi from Nottingham England
09:08:28 From Jess Hartley - Bridgend County Borough Council : prynhawn da from Wales, UK!
09:08:31 From Hans Støvern : Greetings from Norway :)

09:08:50 From Iván Mota : Hello from Spain!!
09:08:53 From Mark Weinhold : Hello from Colorado, USA
09:08:54 From Marija Sabolić : Greetings from Croatia!
09:09:42 From Jakob A : Greetings from Rostock in Germany :d
09:10:09 From Tyler Kreider : Hello from Pennsylvania, USA!
09:10:10 From 1_ööle janson : Hellou from Estonia :)
09:10:22 From Kate Snaddon : Greetings from Cape Town, South Africa.
09:10:29 From Geoffrey M. Goll, P.E., Princeton Hydro : Good day from Pennsylvania, USA.
09:10:30 From Julie Butler USFWS : Hello from Vermont, USA.
09:11:01 From Emily Hall : Hello from New York, USA
09:11:16 From Albertas : Greetings from Lithuania
09:12:26 From france werochowski antoine : hello from france
09:12:30 From Marcin Piekarski : Hello from Poland
09:12:46 From Jukka Tuohino, POPELY : Hi from Finland!
09:12:48 From Monti Aguirre/International Rivers : Greetings from International Rivers
09:12:57 From Excellence Akeredolu : Hello from Nigeria
09:13:10 From Lars Gezelius Sweden : Hej from Sweden!
09:13:13 From Hilary Foster : Hi Everyone, is anybody else having problems with the slides freezing? I think I'm several slides behind on my screen.
09:13:14 From Humbulani : Good day, Humbulani Munzhelele from South Africa (University of Venda).
09:13:17 From Ilya Trombitsky : Greetings from Moldova!
09:13:40 From Mika Sivil : Hi from Finland!
09:13:53 From Mario Eliezer Valladares : Hi Everyone, from Honduras C.A.
09:14:04 From Yan Soares : Hi from Brazil
09:14:20 From World Fish Migration Foundation To Yurena.Lorenzo_Wetlands Internatioanl Europe(privately) : Hi Yurena, can you turn on your camera when Nat is almost done? It will only let me spotlight you if your camera in on
09:14:21 From Roos : hi from the Netherlands!
09:14:32 From Mario Cipollone - Rewilding Apennines : Hi from Italy!
09:14:59 From Richard : Hello from the east coast of Canada- Province of Newfoundland and Labrador
09:15:00 From World Fish Migration Foundation To Carlos Garcia de Leaniz(privately) : Hi Carlos, can you turn on your camera when it’s almost your turn to speak? It will only let me spotlight you if your camera is on 🙂
09:15:26 From World Fish Migration Foundation To Carlos Garcia de Leaniz(privately) : And if you can tell Steph this, that would be excellent!
09:17:05 From Marco Leidel : Hello, can you provide more information on the alternatives to culverts? Thanks
09:17:53 From Ghaamid Abdulbasat : Thank you for nice presentation but I would like to know more about connection between culvert design and climate change.
09:18:36 From Harald Norway : I missed the part where he went through

the solutions. can someone fill me in?
09:18:38 From Przemek : Many Thanks Nat. The solutions are not only large-size culverts, but most of all bridge structures
09:21:55 From A. Münzinger : Fords can be natural structures in the bottom of rivers, therefore how can they be considered as barriers? Or are you talking only about artificial fords? How do you distinguish both?
09:23:02 From Steph Januchowski-Hartley : Good point, fords are definitely there and we will share a bit about how we are finding culverts, bridges, and fords in the UK - but so far fords are less abundant than culverts or bridges (so far).
09:23:05 From Joshua Royte : Undersized culverts plus beavers and other debris jams can = impoundments/ponding, but mostly temporary and localized.
09:23:34 From David Denoon : Is UK data inclusive of England, Wales, Scotland and Northern Island?
09:23:51 From Jenny Sanders : Carlos, can you tell us more about this citizen science barrier tracker and how it works? Is it an app? Are the volunteers trained?
09:24:17 From Steph Januchowski-Hartley : @ David D. the UK data we have mapped for road-river crossings is only Wales, Scotland, England, not NI.
09:24:41 From Joshua Royte : Barrier tracker app for cell phones: https://amber.international/category/barrier-tracker-app/
09:24:52 From Jenny Sanders : Thank you!
09:24:53 From Oly Lowe : https://play.google.com/store/apps/details?id=com.natural_apptitude.amber&hl=en_GB&gl=US
09:25:28 From Francisco Martinez Capel : Is there any plan to make barrier tracker available for Windows 10? I'd find it better to see the maps, etc.
09:25:37 From 7 - Dan Cenderelli : Climate should be considered in the design of the road-stream crossing structure especially the design discharge (typically the Q100 discharge). In general, when you size the culvert to bankfull channel dimensions it will have the hydraulic capacity to accommodate modeled hydrologic change from climate change.
09:27:17 From A. Münzinger : Is the length of a culvert important for fish migration? Can a culvert with sufficient water depth be considered as a baariere?
09:28:45 From Steph Januchowski-Hartley : @ A Munzinger, good question! Length matters :) There are many considerations of the culvert design and condition not just sufficient water depth, we will share a bit about this in our video and I guess others will share more about this too a bit later. :)
09:29:04 From Mark Weinhold : Length is important when considering velocity. It's like running on a treadmill. The longer the culvert, the more likely a fish is to reach exhaustion and not be able to pass.
09:29:24 From Sofia Perä : If there is no place for fish to rest within the culvert the length matters.
09:31:11 From 7 - Dan Cenderelli : The length of the culvert is an important consideration on whether an undersized culvert is a barrier

for fish migration. Long culverts with high velocities can cause fish to become exhausted before they can migrate through the undersized. culvert. This isn't a problem for a stream simulation designed culvert.
09:31:18 From Humbulani : Is there any documented effects of culverts in relation to fish predation intensity and levels of invasiveness in these third order streams?
09:32:21 From Val Ouellet : is there comparison is small culverts impact in headwater vs culvert in higher river order? like bigger culvert etc?
09:32:34 From Julie Butler USFWS : Culbergs! Nicely phrased!
09:32:45 From Steph Januchowski-Hartley : i am muted
09:32:49 From Steph Januchowski-Hartley : and can't unmute myself :)
09:32:52 From World Fish Migration Foundation To Steph Januchowski-Hartley(privately) : You can unmute now!
09:33:10 From Oly Lowe : Culvert length is irrelevant in that it still doesn't address the wider issues of culverts - the impact on geomorphology and sediment transport and therefore habitat degradation for example
09:33:14 From Diaconu DC : Greetings from Romania, Daniel Diaconu.
09:33:31 From Joshua Royte : Only know from experience, that there is a lot of predation in the plunge pool below the undersized cul verts, invasive exotic predatory fish, racoons, predatory birds, and fishermen.
09:33:45 From Merryn : Hi everyone from sunny Swansea :-)
09:34:20 From Oly Lowe : I can hear but its quiet
09:37:43 From A. Münzinger : What are the chararcteristics used to distinguish between culvert and bridge? What are the definitions?
09:40:14 From Ruben van Treeck : Cut-out Carrie is super cool!
09:40:16 From Joshua Royte : Video with animation - wow! what a Great way to make this work interesting, artistic, and fun!
09:41:13 From Lorenzo Quaglietta : Yeah, very nice! :)
09:41:36 From L. Podstrelená : I absolutely agree with Mr. Royte. Great work, thank you. Greetings from Slovakia:)
09:42:07 From Emilie Bourloutski : That was fun! Thanks for the video
09:42:08 From TizianaGobbin : Indeed! Well done!
09:42:19 From Mark Weinhold : Nicely done!
09:42:20 From 7 - Dan Cenderelli : Culverts are usually embedded in the roadfilll. The culvert and the roadfill around it bear the weight of the roadway and the vehicles using it. A bridge has support structures beneath it and is open to the bridge deck/roadway.
09:42:38 From lesya.loyko@forza.org.ua : Cool video! Great approach!
09:42:42 From Scoica Darius : May the Fish … nice work
09:42:49 From annewinge : Tanks for informativ animation!
09:42:51 From Lydia Alvanou : Absolutely amazing and so inspired approach!
09:43:06 From Jussi-Tapio Roininen : Do you classify if the culvert is in man made ditch or in natural stream?
09:43:12 From Nat Gillespie : Outstanding video, and some great quotes for us to use too

09:43:43 From Flavio Orru : Cool !!! Optimal communicative approach
09:43:54 From Hailu Menale : what a lovely video it is? wow ... it much worth than a days lecture
09:44:17 From A. Münzinger : -7 according to this comment there is no deffference between both crssing constructions for fish migration?
09:44:21 From Pierre Sagnes - OFB : the French method to estimate the ability for different fish species to swim upstream through culverts can be found at:https://professionnels.ofb.fr/en/node/731
09:44:39 From Joshua Royte : We have to differentiate between a culvert for a stream and cross-drain..which only flows during storm flow and then dries up. It needs to meet the local definition of a stream. We assume any stream can carry fish, unless proven otherwise.
09:46:54 From Julie Butler USFWS : Uh oh...did we lose him?
09:46:54 From Mika Sivil : I can´t see the presentation
09:47:01 From Steph Januchowski-Hartley : @ Jussi-Tapio Q: Do you classify if the culvert is in man made ditch or in natural stream? Yes, in UK we are trying to. This is challenging here because well... MANY things are now ditches/channels and arguably quite far from 'natural'.
09:47:48 From Scoica Darius : Bob is back :))
09:47:50 From Scoica Darius : yess
09:47:51 From World Fish Migration Foundation : Yay!
09:48:27 From Steph Januchowski-Hartley : @ Nat Gillespie, thanks! Would be amazing to chat culverts sometime! :) You are a FIRE Lab team Culvert Hero :)
09:49:25 From Teri Ridley DFO : Have Bob stop showing himself live and just the presentation, that helps with low bandwidth.
09:50:07 From Emilie Bourloutski : oh how cool that you are live!
09:51:12 From World Fish Migration Foundation To 8 Bob Gubernick, (privately) : Hi Bob! Maybe next time you give your presentation, try turning off your video. It could help with the internet issues
09:51:20 From 8 Bob Gubernick, : OK I am back in herman. I will leave my camera off to minimize bandwidth
09:52:18 From Romain Bellier : are you gonna to do the river morphology too ?
09:52:31 From Steph Januchowski-Hartley : Glad everyone liked Ceri :) If helpful we could share a short summary document as to how we created the video, including the different pieces. I'd say relatively low tech, but Daphne who did the cutting and editing might disagree with me :) If you are keen to learn more about it you can keep in touch: s.r.januchowski@swansea.ac.uk and our team can follow-up. Thanks!
09:54:05 From World Fish Migration Foundation To 8 Bob Gubernick, (privately) : I have your powerpoint as well, in case you need me to share it for you
09:54:55 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : Lets give it a try andwithout my camera on. it should work fine like it did the other day
09:55:04 From World Fish Migration Foundation To 8 Bob Gubernick, (privately) : Ok sounds good!!

09:55:41 From Ruben van Treeck : Wow thats's fascinating!
09:55:51 From Pao : Wow, this is so cool to see it live, it is like doing a fieldtrip :-D
09:56:19 From Su Fanok : This is fantastic!
09:56:31 From Francisco Martinez Capel : PLease can you tell the municipality where this projects takes place, is it in Keswick? or just near the coast?
09:56:51 From france werochowski antoine : i look for river restoration video with adding piece of wood in channel (logjam…), if you have some, please contact me on rivierebfc@gmail.com
09:56:56 From Joshua Royte : Can that stone culvert be backwatered (build up the to make it more passible?
09:57:15 From Andrew Schofield (Environment Platform Wales) : Love the live presentation - look forward to seeing Luke alongside David Attenborough in the future !
09:57:46 From Lorenzo Quaglietta : hahah Amazing indeed! :)
09:57:51 From Jiri Musil : Great project!
09:57:52 From Nat Gillespie : Time to daylight that buried channel! What a comprehensive restoration project you are building! Really inspiring.
09:58:08 From Julie Butler USFWS : I hope we still get to hear from Bob!
09:58:14 From World Fish Migration Foundation : We will!
09:58:28 From Jonathan Turner : How did you get buy in from the landowner, who is going to lose some farmland?
09:58:31 From Matthijs de Vos : Thank you for this digital excursion in the Lake District!
09:58:35 From Eritz : Sounds great! Great project!!
09:58:39 From 8 Bob Gubernick, : Just waiting for another slot Julie
09:58:57 From Joshua Royte : +1 @Andrew, Luke for the next David A.
09:59:06 From Su Fanok : Great project and great way to effectively illustrate the field!
09:59:17 From Ruben van Treeck : Wow!! That's so encouragin!!
09:59:24 From Viktoriia Shebanova : Wow!!
09:59:36 From Sadman Rafid : If the river is opened up, will there be any run-offs from the nearby agricultural lands?
09:59:36 From Jenny Sanders : nice presentation, luke!
09:59:41 From Scoica Darius : Good Job River Trust :)
09:59:44 From George Cooper (EA Fisheries) : Great live presentation and project, thanks for sharing Luke! Keep up the great work, excited to see the finished project!
09:59:52 From Emilie Bourloutski : Very awesome to have a live report on the field, thank you!
09:59:55 From Lucies Phone : Great to see live!
10:00:01 From Richard Charman : Great idea doing that live!
10:00:04 From Natalia V : Great presentation, thank you!
10:00:05 From Viktoriia Shebanova : Great presentation, Luce! Thank you!
10:00:20 From World Fish Migration Foundation : Thanks Luke!!
10:00:56 From Tasaduq Shah : Wonderful to hav a live report... Thank

you...
10:01:40 From Eoghan : Incentives to landowners through a catchment based approach with multiple partners can subsidise farmers who "lose" farmland. they are producing ecosystem services instead.
10:04:55 From Sarah MacLeod : Can you decision tree for working through when to choose stream simulation vs. other options be shared with us?
10:05:21 From Sarah MacLeod : How steep can stream simulations be installed? Do you have mitigative measures to ensure no movement of materials above/inside the culvert?
10:05:34 From Oly Lowe : Surely the bed material within the culvert will be washed out in floods over time? As a Geomorphologist I know that outside of the culvert flood waters dissipate their energy over the floodplain – but in the culvert all the energy will be confined, thereby washing out the bed material within the culvert. Culverts need to be significantly oversized if natural bed material is to be retained.
10:06:22 From Oly Lowe : The oversized bottomless (arched) culverts look good
10:06:35 From Julie Butler USFWS : Stream Sim recommends 1.2 bankfull and open bottom structures which allow for natural transport of sediment upstream to downstream. If material is moved out of the structure, it will be replaced over time.
10:06:57 From 7 - Dan Cenderelli : If the objective is too provide unimpeded passage for fish and aquatic organisms for all flows and life stages, stream simulation is the preferred design approach.
10:07:53 From 7 - Dan Cenderelli : There is no slope limit for installing a stream simulation. They have been constructed on slopes as high as 15-20 percent.
10:08:12 From Oly Lowe : OK, so your suggesting 1.2x bankfull bottomless culverts
10:08:28 From Ian Luddington : Is there still a place for the "No Slope Design" that was part of the USFW guidelines for private proponents or proponents with less technical capacity?
10:10:02 From Carrie Banks, DER : Does the USFS have a recommended approach for road impounded wetlands?
10:10:44 From Ruben van Treeck : Sarah, we have built these up to 15 percent. In some cases we have added weir plates to hold key grade control materials, but typically that's not needed if we have designed the profile correctly.
10:10:54 From Ruben van Treeck : Hi Oly, Yes floodplain conveyance is important for the hydraulics inside the structure. Providing floodplain relief structures may be necessary to control shear stress inside the structure. In general, the bed material is expected to move out of the structure and be replaced by material coming down the channel during floods. Larger materials for grade controls or bank lines are designed to be stable during the design flood.
10:10:55 From 7 - Dan Cenderelli : If the structure span is at least bankfull, embedded below the natural scour depth of the channel, and has bed material sized similar to the natural bed, the bed material

will not be washed out. Sediment transport continuity with a stream simulation culvert is in sync with the natural channel so material that moves out of the structure is replaced with the natural channel.
10:11:03 From Mark Weinhold : Hi Oly, Yes floodplain conveyance is important for the hydraulics inside the structure. Providing floodplain relief structures may be necessary to control shear stress inside the structure. In general, the bed material is expected to move out of the structure and be replaced by material coming down the channel during floods. Larger materials for grade controls or bank lines are designed to be stable during the design flood.
10:11:19 From Julie Butler USFWS : Yes, bottomless culverts when possible. As long as the vertical adjustment potential is understood, footers can be placed below scour line. Open bottom structures allow a continual streambed.
10:13:46 From Pierre Sagnes - OFB : Example (in French) of an approach used in France to size culverts in order to facilitate fish passage: http://oai.afbiodiversite.fr/cindocoai/download/PUBLI/75/1/2013_038.pdf_2578Ko
10:14:10 From Mark Weinhold : Thanks Pierre!
10:14:11 From 7 - Dan Cenderelli : Stream simulation is at least bankfull width and typically wider than bankfull to build stable banks. Some U..S agencies used 1.2 times bankfull width to size structures, but it isn't a criteria for the USDA Forest Service stream simulation methodology.
10:15:03 From Sarah MacLeod : Ruben - do you have examples of profiles applied to high slope simulated streams I could refer to?
10:17:41 From Monica Mazur - City of Kitchener (Canada) : Guidelines for stream naturalization and fish passages in Quebec (in French): https://www.foretprivee.ca/wp-content/uploads/2016/05/Lignes_dir_traversees_QC_2016-MPO.pdf
10:18:15 From Jiri Musil : Thanks Monica!
10:18:21 From Pierre Sagnes - OFB : Thanks Monica!
10:18:53 From Joshua Royte : With more severe strong storms, do we need to design road spill-over areas as well, like dam spillways that can handle what the culvert/bridge can't without eroding the road surface?
10:19:52 From Romain Bellier : thx Monica
10:19:58 From Nat Gillespie : @JoshuaRoyte - Yes designing road-crossings with specific "fail" points is a whole different presentation.
10:20:06 From Mark Weinhold : We always want to consider how a road will overtop and fail. We can minimize consequences of overtopping if we think about where it will happen.
10:20:12 From Elias Muhumuza : Thanks so much for sharing the link Monica.
10:20:31 From Ulrich Schwarz : I guess reducing of forest roads is the much better option. Where needed bridges are much better solution to manage flood flows.
10:20:43 From Steph Januchowski-Hartley : Bonjour Pierre! Oui! Le report c'est tres bien. We used it for this paper with Pablo Tedesco:

https://www.sciencedirect.com/science/article/pii/S0301479718313069
10:21:05 From 7 - Dan Cenderelli : As Bob shows in his presentation, the key aspect of sizing a structure is using a reference reach from the natural channel to determine the slope, width, embedment depth, and bed material for the replacement structure. Any type of structure (closed culvert, open-bottomed culvert) can be selected to meet the geomorphic and ecological objectives of stream simulation.
10:21:56 From A. Münzinger : According to this presentation culverts should be rebuilt but not removed?
10:22:20 From Luke WCRT To World Fish Migration Foundation(privately) : Hiya, will you be able to share the entire 'chat' transcript afterwards? I noticed some questions about the deculverting in Cumbria but have lost them from my screen (due to driving home I guess!), and would like to answer them :)
10:22:36 From Julie Butler USFWS : The USFWS in our area tends to push for open bottom structures when appropriate but does support the installation of closed culvert as long as it is installed correctly using reference reach information.
10:23:04 From Emilie Bourloutski : thank you for the presentation Bob :)
10:23:05 From Sean Morrison : Brilliant Bob, very interesting
10:23:20 From Steph Januchowski-Hartley : Thank you Bob!
10:23:25 From Ruben van Treeck : go to www.menti.com and enter the code: 8561 2854
10:23:41 From Su Fanok : Great presentation Bob, as always. How do you recommend accommodating for anticipated impacts from Climate Change?
10:23:42 From Amare Mezgebu : excellent work
10:23:43 From Jiri Musil : Thanks for presentation Bob.
10:23:54 From Jussi-Tapio Roininen : Great and interesting presentation. Thanks.
10:23:56 From Paco Martinez (UPV) : Amazing and practical presentation, would you send the references to manuals of the Stream sim ?
10:24:04 From Amare Mezgebu : excellent work Bob
10:24:24 From Ruben van Treeck : go to www.menti.com and enter the code: 8561 2854
10:24:42 From Daphne Ioanna Giannoulatou : I can’t see the link also…
10:25:04 From Daphne Ioanna Giannoulatou : thanks
10:25:16 From World Fish Migration Foundation : https://www.menti.com/bbh6mi2z8w
10:25:46 From Steph Januchowski-Hartley : go to www.menti.com and enter the code: 8561 2854
10:27:24 From france werochowski antoine : i look for river restoration video with adding piece of wood in channel (logjam…), if you have some, please contact me on rivierebfc@gmail.com
10:28:30 From Christopher Borowski, Trout Unlimited Canada, Guelph Ontario : Other: Working with landowners
10:28:30 From Alan Graham TRT : Landowner reluctance
10:28:32 From David Reynolds : Laziness/willingness

10:28:35 From Polona Pengal REVIVO : willingnes of public administration
10:28:38 From Lucies Phone : Landowner
10:28:40 From Jon Grey (Wild Trout Trust) : stakeholder buy in an obstacle for removing
10:28:41 From Jakob A : I believe if more people were aware, than funding wouldn’t be a problem.
10:28:43 From Elliot Lindsay : failure to apply the related legislation
10:28:44 From Øyvind Sundet To World Fish Migration Foundation(privately) : Other:unwilling land owners
10:28:44 From David O'Brien : Other – working with landonwers
10:28:45 From Chris Meredith : agreement from asset owners
10:28:48 From E. Leonetti : Multiple agencies involved
10:28:53 From Lev Dahl : Other = Landowner issues
10:28:53 From Luke WCRT : This mentimeter system is amazing!
10:28:54 From Jonė Leščinskaitė : Legislation
10:28:56 From Carrie Banks, DER : Project Managers, permitting, funding timelines
10:28:57 From Cailey McCutcheon : Other – priority is given to not disturbing the road
10:28:58 From Luiz Silva : lack of regulation/policies for culvert construction.
10:29:00 From Brian Coghlan : Statutory Legislation
10:29:01 From Lorenzo Quaglietta : Does Awareness includes Policy makers willingness?
10:29:09 From JANDREWS : Other – working from landowners
10:29:15 From Frederic Casals UdL - SIBIC (Life INVASAQUA) : Other: Just ignored by administration
10:29:17 From Dave Hughes : Definitely agree that landowner agreement is a huge obstacle
10:29:21 From Scoica Darius : Thanks Bob for the presentation! good
10:29:22 From Iakovos Tziortzis (CY) : Administrative/local authorities willingness
10:29:22 From Oly Lowe : Landowner reluctance is an issue, but largely because its the cheapest (initially) and they are unaware/uncaring of the issues
10:29:22 From Eoghan C : Lack of Stakeholder engagement is an issue
10:29:25 From Adrian Dowding : Other = getting landowner or stakeholders to accept that something needs to be done
10:29:33 From Cristian Tetelea : other: different owners and responsibilities on culverts
10:29:37 From france werochowski antoine : sometimes, we replace culvert, but with low ingener preparation, it means that sometimes they are disrupting afterall
10:29:42 From Mark Barnard : Technical design standards - designers will only desigmn to what they need to do. It is usually very simple - X% to allow for climate change. Until design standards are updated to include for best practice little will change
10:29:47 From John Hollowed : I find political will and priority as

one of the biggest obstacles for dealing with culverts.
10:29:54 From Amy Horstman : Transportation funding often targets bridge replacement, not failing culverts. We fund much of our work (culvert to bridge at over ~$1M US each) with conservation funds not transportation funds.
10:30:01 From Sean Morrison : With so many culverts located higher up the catchment, there is a perceived problem with cost/benefit
10:30:06 From Marek Elas : In PL the biggest problem are law, policy and reluctance of authorities
10:30:12 From Sophie Gott : Political will to allocate resources and changing the attitude of landowners
10:30:22 From Chris Farmer : Road engineers are difficult to convince of an alternative solution.
10:30:31 From Lígia Vaz de Figueiredo – GEOTA : difficulty in process implementation
10:30:50 From George Cooper (EA Fisheries) : Land Owner Permissions
10:31:17 From Mike Morris : eBioAtlas – Global freshwater biodiversity monitoring programme. https://ebioatlas.org IUCN and NatureMetrics are using environmental DNA to fill global freshwater biodiversity knowledge gaps – we are looking for support and more partners so please get in touch mike.morris@naturemetrics.co.uk
10:31:40 From World Fish Migration Foundation To Luke WCRT(privately) : Hi! Yes, what's a good email to send the chat transcript to? Also if you private message Ruben Van Treeck, you can ask him if he saved any of those specific questions
10:31:57 From World Fish Migration Foundation To Luke WCRT(privately) : He's working on a document saving questions for the Q&A at the end
10:32:02 From Alan Black (WSDOT) Hydraulics : Sequencing work (work downstream to upstream) to avoid downstream flood impacts
10:32:48 From Paco Martinez (UPV) : If possible, please provide the main reference/s, for practical application of the Stream Sim. Method; thanks!
10:32:56 From Luke WCRT To World Fish Migration Foundation(privately) : Great, thanks! luke@westcumbriariverstrust,org would be great, or perhaps Ruben will make available anyway?
10:33:00 From WFMF Herman Wanningen : We will start again in 2 minutes
10:33:06 From france werochowski antoine : i look for river restoration video with adding piece of wood in channel (logjam…) to show these methods in france, if you have some, please contact me on rivierebfc@gmail.com
10:33:34 From Joachim Björkman : How do authorities in other countries use the Water Framework Directive as a "driver" to force the use of passable culverts when land owners are seeking permission for exchanging culverts?
10:33:39 From Bruno Mendonca : Thanks Mike! Are we gonna see presentation of new methods of monitoring fish movement?
10:33:42 From Oyvind Fjeldseth – Noregs Jeger og Fiskarforbund : Funding is often "easy", the real challenge often comes Down to the bureaucratic processes, and getting all permits etc in place. A road

often has many users, and "removing" it, even for a shorter period, often creates great resistance among the owners of the road
10:34:11 From Thomas Ruud : Hi!
If I can be so bold, we actually have a solution for fish migration through culverts called flexi baffles. This is for culverts that can't be removed/opened (ex. under roads). And the entrance and outlet of the culvert must of course be reachable for fish (no high drops). So, if the culvert is not passable because of gradient and length, we install baffles in the culverts that creates a kind of "fish ladder" inside the culvert. In Norway we have (so far) mostly used the baffles to help sea trout through culverts and up to spawning areas. However, the usage of these baffles is almost endless.
Sincerely
Thomas Ruud
Sweco Norway
Thomas.ruud@sweco.no
10:34:54 From Amy Horstman : Stream simulation guidelines (USFS): https://www.fs.fed.us/eng/pubs/pdf/StreamSimulation/hi_res/%20FullDoc.pdf
10:35:23 From Derek Marks--Tulalip : Thomas--baffles are a stop-gap measure.
10:36:04 From Greg Glitzer : Loving this entire program. Many thanks for assembling it!
10:36:33 From Paco Martinez (UPV) : thanks for the link!
10:38:40 From mark k : Are recording's going to be available- may have some conflicts
10:39:04 From 7 - Dan Cenderelli : Select Stream Simulation References
Stream Simulation Working Group. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings. U.S. Department of Agriculture, Forest Service, San Dimas Technology and Development Center. Publication 0877-1801. www.fs.fed.us/eng/pubs/pdf/StreamSimulation/index.shtml.
Cenderelli, D.A.; Clarkin, K.; Gubernick, R.A.; Weinhold, M. 2011. Stream Simulation for Aquatic Organism Passage at Road-Stream Crossings. Transportation Research Record: Journal of the Transportation Research Board, No. 2203. Transportation Research Board of the National Academies. Washington, D.C. pp. 36–45. DOI: 10.3141/2203-05.
https://journals.sagepub.com/doi/abs/10.3141/2203-05
Gillespie, N.; Unthank, A., Campbell, L.; Anderson, P.; Gubernick, R.; Weinhold, M.; Cenderelli, D.; Austin, B.; McKinley, D.; Wells, S.; Rowan, J., Davis, C.; Hudy, M.; Bowden, A.; Singler, A.; Fretz, E.; Levine, J.; Kirn, R. 2014. Flood Effects on Road–Stream Crossing Infr
10:39:10 From Ruben van Treeck : The whole webinar is being recorded and will be made available online later.
10:39:13 From World Fish Migration Foundation : @mark, yes! You will be able to find recordings on the Dam Removal Europe Youtube channel: https://www.youtube.com/c/DamRemovalEurope
10:39:45 From 7 - Dan Cenderelli : Stream Simulation Working Group. 2008. Stream Simulation: An Ecological Approach to Providing Passage

for Aquatic Organisms at Road-Stream Crossings. U.S. Department of Agriculture, Forest Service, San Dimas Technology and Development Center. Publication 0877-1801. www.fs.fed.us/eng/pubs/pdf/StreamSimulation/index.shtml.
10:39:51 From Mark Weinhold : Thanks Thomas. You are right that baffles can help with upstream passage of adult fish and are sometimes our only alternative. We use them as a last resort and hope for more comprehensive solutions since baffles are often barriers to juvenile migration or for weak swimming fish that can't jump.
10:40:05 From 7 - Dan Cenderelli : Cenderelli, D.A.; Clarkin, K.; Gubernick, R.A.; Weinhold, M. 2011. Stream Simulation for Aquatic Organism Passage at Road-Stream Crossings. Transportation Research Record: Journal of the Transportation Research Board, No. 2203. Transportation Research Board of the National Academies. Washington, D.C. pp. 36–45. DOI: 10.3141/2203-05. https://journals.sagepub.com/doi/abs/10.3141/2203-05
10:40:15 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : Derek thank you for stating that baffles are stop gap measures. I do use baffles and hydraulic design. it depends on the ecological value, habitat quantity and quality. baffles are a tool. what you want to make sure is in natural especially in the upper watershed natural impediments only are passable at certain flows as is the case with baffles. What I have found is in many cases they are asynchronous so the fish get thru the culvert and are stalled upstream until they get flows for passage over the natural impediment.
10:40:19 From 7 - Dan Cenderelli : Gillespie, N.; Unthank, A., Campbell, L.; Anderson, P.; Gubernick, R.; Weinhold, M.; Cenderelli, D.; Austin, B.; McKinley, D.; Wells, S.; Rowan, J., Davis, C.; Hudy, M.; Bowden, A.; Singler, A.; Fretz, E.; Levine, J.; Kirn, R. 2014. Flood Effects on Road–Stream Crossing Infrastructure: Economic and Ecological Benefits of Stream Simulation Designs. Fisheries. Volume 39. Pages 62-75. http://fisheries.org/docs/wp/AFS-Fisheries-Magazine-February-2014.pdf
10:41:07 From World Fish Migration Foundation To 8 Bob Gubernick, (privately) : Hi Bob- your last message went to directly to me! Make sure you click “everyone in meeting”
10:41:28 From Mark Weinhold : Beautiful video!
10:41:45 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : OK can you copy and share the message?
10:41:50 From Su Fanok : Echo that - beautiful video!
10:41:52 From World Fish Migration Foundation To 8 Bob Gubernick, (privately) : Will do!
10:41:56 From Scoica Darius : Great Work!!
10:42:15 From Jiri Musil : Thanks a lot for all the links.
10:42:16 From World Fish Migration Foundation : From Bob (accidentally sent in private message): Derek thank you for stating that baffles are stop gap measures. I do use baffles and hydraulic design. it depends on the ecological value, habitat quantity and quality. baffles are a tool. what you want to make sure is in natural especially in the upper watershed natural impediments only are passable at certain flows as is

the case with baffles. What I have found is in many cases they are asynchronous so the fish get thru the culvert and are stalled upstream until they get flows for passage over the natural impediment.
10:42:40 From france werochowski antoine : please send us the video link of this beautiful video
10:43:27 From Happy Culvert : We need more rembar projects!
10:43:46 From Happy Culvert : remibar
10:44:01 From Pao : I agree Happy Culvert!
10:45:01 From Julie Butler USFWS : Lovely videos. And they worked, too!
10:45:03 From Derek Marks--Tulalip : The watershed approach is great, if that's what Remibar is doing.
10:45:48 From Eoghan C : Great presentation. Why was it easier to work with multiple agencies over in Sweden? environment agency, forestry bodies and county administration boards etc
10:46:20 From Eoghan C : and how many years did it take to measure the results after the restoration took place??
10:47:22 From Steph Januchowski-Hartley : Great presentation and evidence Sofia et al! Thank you!
10:47:44 From Iakovos Tziortzis (CY) : very inspiring. Great job
10:47:55 From Emilie Bourloutski : great presentation and videos :)
10:48:09 From Amare Mezgebu : great presentation, great work
10:48:10 From Ida Schönfeldt-Meijer : Great presentation partner
10:48:11 From Carrie Banks, DER : Sofia so great to see you achieve your goal of 300 barriers! Would love to see and hear more about what you learned along the way.
10:48:27 From Paco Martinez (UPV) : Congrats!! very nice project!
10:48:30 From Jiri Musil : Very interesting project. Thanks for presentation Sofia!
10:48:55 From Oyvind Fjeldseth - Noregs Jeger og Fiskarforbund : They are Swedes!
10:49:00 From Eoghan C : in Ireland agencies work in their own silos, its a big problem
10:49:26 From Polona Pengal REVIVO : in Slovenia, the national Water Agency does not give a permit for measures like that :(
10:49:54 From Jiri Musil : Czech too :)
10:50:09 From Sini Javanainen : Perhaps in Sweden (and also here in Finland) governments etc. have taken these issues as part of their own programmes and interests.
10:50:18 From Lydia Alvanou : In Greece such initiatives are pure sci-fi!!!
10:50:58 From Derek Marks--Tulalip : We are improving in Washington State--it's just expensive!
10:51:10 From 8 Bob Gubernick, : https://www.fs.fed.us/biology/nsaec/ here is a link for our center with many publications and resources
10:52:18 From Paco Martinez (UPV) : thanks Bob!! very kind!
10:54:08 From Yurena.Lorenzo_Wetlands Internatioanl Europe : Great pic!
10:54:14 From Amy Horstman : Thanks for all the links! I am always looking for papers that document the process benefits of fish passage

at road crossings. We run into 'price fatigue' on our grant applications where evaluators may look at 'cost per mile opened' and overlook the full array of process-based benefits for the larger watershed.
10:54:15 From Sini Javanainen : I think raising awareness among ordinary people and decision makers is important to keep the work going.
10:55:42 From Sofia Perä : Antonine, here is the first film. I is the long version. The shorter version (the one I showed you) is not available on Youtube: https://www.youtube.com/watch?v=1CmzAFy_dTo
10:56:16 From Lars Gezelius Sweden : In Sweden the national fundings for restoration has increased dramaticly the last 10 yrs. much distributed to the county boards. Also the national Transport management agency has better enwironmental goal now. Water Framework directive is a strong driver in this. And: Swedes love dialogue and drink loads of coffea together... :-)
10:57:09 From Sofia Perä : Pao, yes- I remember! Remibar was on the agenda then as well. Thank you :)
10:58:04 From Steph Januchowski-Hartley : @Amy Horstman we did this work to look at cost return - it might be helpful? https://extension.unh.edu/sites/default/files/migrated_unmanaged_files/Resource006641_Rep9682.pdf
10:58:48 From 7 - Dan Cenderelli : Hi Amy. If you do a search on the cost benefits of stream simulation culverts, there will be a number of papers that may help address your question on process-based benefits for the larger watershed.
10:58:53 From Sofia Perä : Eoghan, I think Oqvind is on to something, we are Swede and we like to co-operate and gain consensus ;) :)
10:59:28 From WFMF Herman Wanningen : in sweden cooperation is in their culture
10:59:35 From Nat Gillespie : @Amy Horstman - and one culvert failure of course can cost a road agency what it would cost to upgrade many culverts
11:00:05 From Øyvind Sundet To World Fish Migration Foundation(privately) : A lot of the speakers have references to papers and articles in their presentations. It would be great if a list was made awailable after the webinar!
11:00:06 From WFMF Herman Wanningen : I feel an ABBA song coming up
11:00:22 From Sofia Perä : Sini, since all municipalities and government agencies have to work according to the Water Frame Directive it is easy to work together.
11:00:49 From Paco Martinez (UPV) : Is there any material from TNC for engineering students we could get in the web?
11:00:53 From World Fish Migration Foundation To Øyvind Sundet(privately) : Great idea! We'll compile these and include them in the follow-up email with the webinar link
11:01:58 From Oyvind Fjeldseth - Noregs Jeger og Fiskarforbund : I do think that we have given the Swedes enough positive comments now! That said - they are great neighbours! :-)
11:02:06 From Amy Horstman : @Nat - yes! Transportation departments

are our best advocates...its the biologists that get tired of the price tag. (Understandably, the price tags are high to keep funding these with conservation dollars. We are excited about the recent transportation bill!). Here is one of our most successful partnerships: http://www.salmonsuperhwy.org/
11:02:42 From WFMF Herman Wanningen : super presentation
11:02:43 From Steph Januchowski-Hartley : Really great to see how this work has advanced in the last decade Josh! Good on you all! Hope TNC keeps working on this. Seems like you will with all this investment.
11:02:47 From Emilie Bourloutski : thank you!
11:02:55 From Eoghan C : Very interesting Joshua, How do you make sure volunteers are competent to carry out monitoring of culverts etc?,
11:02:56 From 8 Bob Gubernick, : good job Josh
11:03:00 From Jiri Musil : Thanks!
11:03:12 From Mark Weinhold : Great presentation!
11:03:41 From Prisca : I have a question for all of you: do you have to deal with invasive excotic species (not only fish but also plants or crustacea) and made the descision to NOT connect small rivers.
11:03:47 From Julie Butler USFWS : https://www.fws.gov/northeast/fisheries/fishpassageengineering.html
11:04:23 From 7 - Dan Cenderelli : Nicely done Josh! I really enjoyed your presentation.
11:04:24 From Su Fanok : Another great presentation Josh! Love the holistic approach to education.
11:04:25 From Lars Gezelius Sweden : Johnn: Really hard to say, many, many years, more than 50 yrs? The coming yrs (20) most focus will be on the hydropower dams also..
11:04:30 From Pao : Fantastic presentation Josh, thank you so much, just perfect
11:05:33 From Paco Martinez (UPV) : Thanks for the link Julie!
11:06:29 From Kristina : Could we get the youtube link? It is not coming through for me, but I hope to watch it later.
11:06:34 From Paco Martinez (UPV) : Mark, that's a Great video for my students!!
11:06:56 From World Fish Migration Foundation : https://www.youtube.com/watch?v=4-DY5lfL_Yw&ab_channel=DamRemovalEurope
11:07:16 From World Fish Migration Foundation : This video is on YouTube on the dam removal Europe channel ^^
11:07:23 From Kristina : Thanks
11:08:07 From Heidi Keuler : Minnesota Guide for Stream Connectivity & Aquatic Organism Passage Through Culverts http://www.dot.state.mn.us/research/reports/2019/201902.pdf
11:08:12 From david_buysse (INBO) : This rocks !
11:08:31 From Sini Javanainen : @Lars Gezelius Sweden Here in South Karelia, Finland it took 20 years to start opening dams and now we getting our river freed in few years - perhaps culverts are coming soon after?
11:08:34 From Joshua Royte : Good question @Eoghan: The volunteer effort was not great, that's why we went to paid seasonal staff, June to October, train, check-in, data checking systems, and supervisor

reviewing data weekly. We developed good systems to ensure quality control we didn't have with volunteers.
11:09:31 From Heidi Keuler : Minnesota Department of Transportation: Culvert versus Bridge Selection Help https://www.dot.state.mn.us/bridge/hydraulics/Waterways/CulvertBridgeSelection_final.pdf
11:11:06 From Oly Lowe : I see North American folk are using the acronym AOP, what is this please?
11:11:23 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : Aquatic Organism Passage
11:11:24 From Rossa O'Briain : You're rockin it Mark 😎
11:11:26 From Margaret Lang : Aquatic Organism Passage
11:11:28 From Len : aquatic organism passage
11:11:32 From Jiri Musil : Whats going on with sound?
11:11:57 From Elliot Lindsay : great video Mark!
11:12:07 From Laura Tack : Really nice video Mark, great job!
11:12:08 From Emilie Bourloutski : Amazing video, thank you!
11:12:08 From Chris Farmer : Just what I was going to say the benefit for mammal passage - one day all culverts will be like this!
11:12:09 From david_buysse (INBO) : :-)
11:12:10 From Roos : and a great day to you too! thanks!
11:12:10 From Lorenzo Quaglietta : hahahah great vídeo indeed :D
11:12:12 From Paco Martinez (UPV) : Really good for all!
11:12:14 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : What a great Video Mark!
11:12:16 From Carrie Banks, DER : Nice video!
11:12:17 From Elliot Lindsay : Oscar nominee for leading culvertologist in a fish passage feature
11:12:19 From Jošt Sodnik : HIGH5 production :).
11:12:21 From Amare Mezgebu : really great
11:12:29 From NLanglois-Anderson : Good video, love the credits, lol!!
11:12:39 From Steph Januchowski-Hartley : Hi! Earlier someone asked "'How do authorities in other countries use the Water Framework Directive as a "driver" to force the use of passable culverts when land owners are seeking permission for exchanging culverts?' which would be useful to know, but we couldn't find an answer to it. - Anyone has thoughts / things to share?
11:12:44 From Scoica Darius : Thanks Mark, great video!
11:12:57 From Gill Banner-Stevens : Brilliant video , Mark!
11:13:04 From World Fish Migration Foundation : Great video!
11:13:31 From Joshua Royte : @Prisca - we map invasive species and put them in the prioritization models. eDNA will help improve this. When they are they downstream, but not upstream for instance, we need to connect a lot more upstream...and maybe not remove the downstream barrier to those invasive fish, In other cases the benefit of getting fish to headwaters is more important than what might be spreading fish that might be moved upstream (illegally) anyway.
11:14:24 From Steph Januchowski-Hartley : Thank you Mark, I will now adopt your title "Culvertologist"! Brilliant!
11:16:48 From Paco Martinez (UPV) : @Prisca - we made ourselves same question in the Iberian Centre for River Restoration, you can download

this report we hired,
11:16:50 From Paco Martinez (UPV) : https://www.dropbox.com/s/0bv9t1k521iws0a/2017_CIREFWETLANDS_River%20connectivity%20and%20dam%20removal%20versus%20invasive%20fish%20species%20in%20the%20Iberian%20Peninsula.pdf
11:17:39 From Paco Martinez (UPV) : the report is on balancing removal and invasive fish, I hope it helps
11:17:44 From Sini Javanainen : @Steph I think sometimes we set laws that force land owners to act one way or the other...
11:18:32 From David Denoon : could we have all these resources from chat collated at the end and set round? Struggling to keep up with chat and presentations. Thank you
11:18:46 From B. Mikus : hey, I do have an other nice link for praxis how to build culverts and refresh other barriers
https://rp-giessen.hessen.de/umwelt-natur/altlasten-boden-gew%C3%A4sser/oberirdische-gew%C3%A4sser/wanderhindernisse-an-kreuzungsbauwerke
until now it´s just available in german, but we are working on the english version. pleas contakt me if you are interested.

11:18:57 From Steph Januchowski-Hartley : @Sini thank you!
11:19:18 From Joshua Royte : @Prisca - water quality goes into the model too, at a course scale, but it doesn't always classify the smaller stream water quality, but for small drainages road density correlates really well with water quality - so we use road density and landcover as a fine-scale surrogate.
11:19:58 From World Fish Migration Foundation : @David, yes- we will work on consolidating the resources shared here and send them to you all in a follow-up email!
11:20:52 From Sofia Perä : Steph, all agencies and municipalities have to work with the Water Frame Directive and especially the County Administrative Boards are doing this in close co-operation with the Water Authorities since the Water Authorities are situated at the Administrative Boards.
11:21:15 From Ellis Selway : I would be interested to know if anyone has cost for removing culverts and replacing with clear span options? Sadly I think these options would be cost prohibited.
11:22:07 From Steph Januchowski-Hartley : @Sofia, thank you! That is helpful to know!
11:22:41 From Oly Lowe : Ellis - we have had private project reports that show that clear spans are cheaper than culverts over the life of the structure. Particularly when done so in line with industry guidance and Floods and Water Management Act
11:23:17 From Sofia Perä : Steph, all decisions made by the Environmental Court etc. need to take the WFD and the environmental quality standards in Sweden.
11:23:58 From Oly Lowe : One assumes that the cost benefit analysis can only be improved when you add in the environmental costs/impacts and benefits
11:24:10 From Steph Januchowski-Hartley : @Sofia that seems like a

powerful tool / combo
11:25:33 From Sofia Perä : Yes, but there are always exceptions to the rule... Others factors are taken into consideration when decisions are being made.
11:25:59 From A. Münzinger : so culverts are not removed but newly designed!
11:26:10 From Joshua Royte : @Ellis re: costs. A local concrete casting company 'invented' lower-cost modular pre-fabricated bridge spans and modular concrete open-bottom arches. It is profitable and other similar companies are developing approved solutions like this. They go mostly to local roads and large forest landowners. Good to encourage local innovation.
11:27:13 From Joshua Royte : https://www.precastmaine.com/
11:28:15 From Oyvind Fjeldseth - Noregs Jeger og Fiskarforbund : Great presentation!
11:28:22 From Oly Lowe : That's great josh!
11:28:33 From Bella Japoshvili (GEORGIA, Country) : Nice precentation. Thanks
11:28:45 From Steph Januchowski-Hartley : Thank you Jenny!
11:29:03 From Rieke Schons : @Jenny Jyrkankallio-Mikkola: Can you think of or give examples of any interacting effects of climate change with the culvert issue?
11:31:26 From Geoffrey M. Goll, P.E., Princeton Hydro : It is so good to see so many aquatic organism projects around the US and Europe. But, the presentations also delivered the message for how much more has to be done.
11:31:29 From A. Münzinger : I see Stéphane Weil but not the speaker
11:31:52 From Steph Januchowski-Hartley : @Rieke (if I can add before Jenny responds) ... poorly designed culverts wash out easily and can impact people by disrupting road connectivity / access for emergency services etc. If flows will increase or be more variable the structures can be impacted more severely and so while impacting nature also impacting people.
11:32:05 From Harald Almås NO : Maybe you have locked on to the speaker
11:32:38 From Brian Coghlan : https://assets.gov.ie/202422/d894fae7-4147-4595-b675-bae858c22755.pdf
11:32:45 From Brian Coghlan : DESIGN GUIDANCE For Fish Passage On Small Barriers
11:33:11 From Sonja Stendera : Wupper river , my home river ;)
11:35:18 From Jenny Jyrkankallio-Mikkola : @Rieke Thank you Steph, yes increased runoff will cause problems to poorly designed culverts, especially the old ones
11:36:00 From Joshua Royte : Love the French (thanks Stephane) making a plug for their regional cheeses 😋 as part of river restoration!
11:36:06 From Pao : Stéphane, could you please share the number of culverts you have per kilometer? I missed the number
11:36:37 From Julia Pschera : 1.5
11:36:56 From Pao : Thank you Julia!
11:37:00 From Roos : hello Kim!

11:37:45 From Eve García Burgos : congrats for such interesting webinar!
11:37:51 From Rieke Schons : @Steph @ Jenny might there be interacting effects on biodiversity, too? Like increased velocity due to increased runoff making passage even more difficult?
11:38:05 From Stéphane WEIL : what shall we do when a culvert impeach fish migration up-stream, but at the same time this culvert protects an up-stream population of ultimate native cray-fish from invasive species, that is trying to expand from downstream ? Do we systematically have to open the system in this particular case, causing extinction of the last local crayfish ? What strategy has to be thought?
11:38:41 From Stéphane WEIL : even a culvert that is well arranged for fish migration can oblige the otter to climb on the road with serious car collision risks, so specific arrangements for other animal than fish also have to be taken in account
11:39:16 From Denise Dufault : Thank you so much for this webinar! In solidarity for the fish and the all other species!
11:40:01 From Pao : 1.5 culverts per km. AMBER average on river obstacles was 0.74 obstacle per km (1 obstacle every 1.4km)...
11:41:00 From Ellis Selway : thanks for replies ref costs
11:41:02 From 7 - Dan Cenderelli : If there are invasive fish that adversely impacting native fish, we will actually install a fish passage barrier to protect the native fish from the invasive fish. Road-stream crossings can be a good location to install a barrier.
11:41:05 From Jussi-Tapio Roininen : I think that best way to promote deculverting in Finland is pointing out, that we are decades behind Denmark and Sweden.
11:41:08 From Joshua Royte : @Stephane - we need to work hard to learn if the invasive fish are already upstream (again eDNA is helpful), some people can't help move them around. We sometimes ensure a barrier stays a barrier but double up on connectivity upstream for a healthier population of sensitive species.
11:41:16 From Roos : Exactly this baseline problem! What shall we take as baseline?
11:42:36 From Steph Januchowski-Hartley : @Rieke, I would say yes. Tiny culverts are like fire hoses, they basically shoot water out at a high velocity and then with more + faster water coming in = higher intensity hose shooting water at the outlet of structures.
11:43:10 From Jakob A : I am 22 now, currently writing my bachelors degree on coastline fish communities. Even though I haven’t been around that much I can see the degradation in the nature around us.
11:43:39 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : @Stephane We build barriers also to keep invasive from getting into pure native streams. It is done mostly in the west of the USA. Personally it is OK in some location, but I am a believer in embrance change in aquatic assemblage. I am not sure the problem has been well thought out
11:44:00 From World Fish Migration Foundation : From Bob: @Stephane We build barriers also to keep invasive from getting into pure native

streams. It is done mostly in the west of the USA. Personally it is OK in some location, but I am a believer in embrance change in aquatic assemblage. I am not sure the problem has been well thought out
11:44:11 From Jussi-Tapio Roininen : How much of Small stream %/km is lost into aqricultural Fields draining culverts? Are there any estimates?
11:44:31 From Geoffrey M. Goll, P.E., Princeton Hydro : For the construction of new culverts or culvert replacements, the value of the ecosystem services should be added to economic analysis. For example, the loss of salmon spawning habitat and how the commercial value of the lost fish that would eventually be harvested. There are also other parameters, such as floodplain functions and values, the potential damage to the roads due to overtopping, etc. When you add up these numbers, the cost in install a AOP compliant culvert would become equally or a less expensive than simply installing or replacing the "old school" culverts.
11:44:44 From Lorenzo Quaglietta : Indeed, as someone suggested, semiaquatic mammals shall also taken into account.
I wonder how we could all create further lobby for DR removals in Europe joining the 'Fish' world with 'Semiaquatic Mammals' and other 'Aquatic Organisms' worlds for better and more comprehensive results.
11:44:49 From 8 Bob Gubernick, To World Fish Migration Foundation(privately) : everytime I go to chat the to: changes back to you! thanks for forwarding it
11:44:50 From Lorenzo Quaglietta : For those interested, here a paper on simulations predicting road crossings and road mortality risk for otters: https://www.researchgate.net/publication/337707737_Simulating_animal_movements_to_predict_wildlife-vehicle_collisions_illustrating_an_application_of_the_novel_R_package_SiMRiv
11:45:18 From World Fish Migration Foundation To 8 Bob Gubernick, (privately) : Np! Did you click the blue button that says my name and click “send to everyone"?
11:45:22 From Nat Gillespie : @Lorenzo – yes, and this is why we focus on Aquatic Organism Passage (AOP), not just fish passage.
11:46:14 From Lydia Alvanou : Road kills major issue in greece
11:46:28 From Jenny Jyrkankallio-Mikkola : @Rieke, yes, that can be, although the higher runoff will not be constant even if high precipitation events will be more common
11:47:47 From Elliot Lindsay : beavers really help us with identifying undersized crossing haha
11:47:48 From Oyvind Fjeldseth - Noregs Jeger og Fiskarforbund : Beavers are actualle quite tasty!
11:48:11 From Derek Marks--Tulalip Tribes : In many parts of the US, stream crossings also provide passage for large mammals (deer, elk, bear...) and have a profound influence on vehicle collisions and wildlife populations. Freeboard is 'cheap' space in the design of those projects.
11:48:47 From Lorenzo Quaglietta : Yeah, @Nat, AOP is a great step forward. Still, in many EU policies I unfortunately mostoften only see

focus on fish and maybe macroinvertebrates and mammals often neglected. More than otters, species really impacted by dams like Pyrenean desmans are a good exemple of neglected species suffering from river habitat fragmentation/alteration
11:49:47 From Chris Farmer : Engineers resist raising levels in the culvert by bed raising as it reduces capacity - in their eyes that is!
11:49:55 From Stéphane WEIL : Thanks for answers concerning otters and invasive species, not always fish and not always stopable with barreers invasive species are concerned (case here of crayfish), though it's a bit sad thinking and putting barreers at the same time workink for habitats "dis-fragemntation" ! ...
11:50:01 From 8 Bob Gubernick, : you can train the beavers to build a dam upstream of the structure so they don't plug it. pound dead wood posts and start wrapping dead brush on it. it may take a few times to dismantle the dam in the pipe but eventually get that the dam will not be taken down at your desired location. this has been done successfully in the northeast USA
11:50:01 From Eoghan C : Social capital is crucial for the smooth running of restoration works, people enjoy getting together for these initiatives in their own time
11:50:18 From Pao : Question for Kim please: Who is in charge to engage the locals? Municipality? University? Because that is quite a job.
11:50:49 From Sofia Perä : Lydia, in the ReMiBar project, we had different kind of solutions to encourage animals to choose to go under the road (in the culvert or under the bridge) instead of on the road. We did about 10 different objects. If you want I can send you the report if you want? It is in English.
11:50:50 From Pao : You have to find the locals, contact them coordinate them...
11:51:19 From Oyvind Fjeldseth - Noregs Jeger og Fiskarforbund : exellent talk!
11:51:22 From Joshua Royte : Great summary Kim!
11:51:27 From Paul Hyatt : Brilliant Kim
11:51:37 From Xenia Salomonsen (Wadden Sea National Park : Brilliant presentation, Kim.
11:51:37 From Jason Jones : That was great Kim. Thanks very much.
11:51:38 From Jonė Leščinskaitė : Sofia, could you please send it to me as well? jone.lescinskaite@am.lt
11:51:39 From Steph Januchowski-Hartley : Thanks Kim!
11:51:42 From Mark Weinhold : Great closing summary.
11:51:43 From Bert Worms : Excellent !
11:51:45 From L. Podstrelená : Excellent, Thank you, Kim!
11:51:46 From david_buysse (INBO) : Great Kim !
11:51:48 From MARQ REDEKER : Spot on, Kim
11:51:51 From Su Fanok : Loved the passion and Call to Action Kim!
11:51:58 From World Fish Migration Foundation : 🐟
11:52:01 From Ojārs Balcers : Sofia, please here too Ojars@vak.lv
11:52:13 From Heidi Keuler : Great message Kim about engaging the local community! That is so important and helps bring success.

11:52:16 From Elias Muhumuza : Thanks Kim. Great presentation.
11:52:19 From Maria Cheimonopoulou : Great presentations everybody! Thank you so much!
11:52:29 From Eoghan C : Great Kim, agreed about publishing data, democratise the data to the public to force change!
11:52:34 From Lydia Alvanou : @Sofia, thank you I could make good use of it!
11:52:36 From Natalija Matić : 
11:52:43 From Lorenzo Quaglietta : @Lydia (and all): Otters do dye due to road mortality in all Europe a lot, even in locations where there are bridges over the rivers. It's probably due to many factors, including the complexity of behavior of these animals. But definitely a lot can be done for preventing such road-wildlife collisions, including simulations studies (like the one I posted) and prevention measures locally to minimize the risk of road crossings, like some that have been referred here
11:52:45 From Gill Banner-Stevens : Inspiring presentation, Kim - thanks!
11:53:03 From Adrian Fewings : To all the speakers - great talks - very inspiring - some really helpful resources and ideas
11:53:11 From Sofia Perä : Can everybody who wants the report send me an e-mail? Some of the chat disappeared for me. sofia.pera@lansstyrelsen.se
11:53:15 From Mika Sivil : I have heard in Russia crossings have to be made by bridge if there is fish in channel. Optimal solutiion maybe.
11:53:25 From Natalija Matić : Thankssss for knowledge 
11:53:34 From Raimondas Šadzevičius : @Sofia could you send report to me Raimondas.sadzevicius@vdu.lt. Thank you
11:53:40 From Naoufel Tunisia : Great presentation. inspiration for Tunisia and north africa . in NGO : SouthMedFish
11:53:55 From Stéphane WEIL : @Pao: Numbers look cohérents !
11:54:26 From World Fish Migration Foundation : 
11:54:27 From Lydia Alvanou : @Sofia could you send it to me please as well? l.alvanou@necca.gov.gr
11:54:31 From Pao : @Stepahne, yes! :)
11:54:32 From Myron King : Great presentations. Thanks all!
11:54:49 From Artur Furdyna : Great Thank You.
11:54:49 From Flavio Orru : Sofia, please here too flaorru@gmail.com
11:54:50 From Kelly Hughes : We can share our experiences with catchment-wide programs where we have assessed and fix 100s of culverts
11:54:50 From thair : a brilliant seminar it is , thanks a lot for the organizers and presenters and hope for the other future events.
11:55:02 From World Fish Migration Foundation : LEARN MORE: https://www.wildlifeforever.org/home/state-fish-art/award-categories/fish-flag-contest/
11:55:03 From Ojārs Balcers : Thanks for the great presentations!
11:55:06 From Pao : PLEASE! SIGN THE PETITION! No individuak signatures, we need entitites, organizations, university departments

11:55:07 From Pao : https://www.worldfishmigrationday.com/petition/
11:55:20 From Sonja Stendera : great presentations and talks, thank you all!
11:55:23 From Alexandra Galindo : Great event! Thanks to all! 🐟
11:55:26 From Artur Furdyna : With information You should be sure You not invite poachers
11:55:44 From Gastaldi Enrico To World Fish Migration Foundation(privately) : Thanks for the webinar, I have to go bye
11:57:04 From Sini Javanainen : Was that fish flag competition this year or…?
11:57:25 From World Fish Migration Foundation : Yes it is launching today! It opens today, and submissions are closed April 14
11:57:27 From Gumpinger Clemens, blattfisch.at : Very very fine and helpful event - thank you all for this necessary and cool movement!!
11:57:32 From Stian Stensland : Getting schools to involve in stream restoration is a great way forward - and create stewards for tomorrow. Any good examples (online) on such initiatives/partnerships ?
11:57:33 From World Fish Migration Foundation : Winners will be announced on World Fish Migration Day!
11:58:12 From Lydia Alvanou : Thank you all, for the informative, vivid and multicultural gathering!
11:58:17 From Roos : have to go but I am very happy to have joined and seen all the wonderfull presentations. VERY UPLIFTING AND MOTIVATING. Thanks again. Tabee Rx.
11:58:22 From 8 Bob Gubernick, : and they survive large floods!
11:59:09 From thair : what about the big dams removal? is it feasible in comparison their aims ?
11:59:24 From Gill Banner-Stevens : Is there a resource anywhere that gives an indication of typical costs of retrofits in different localities?
12:00:16 From World Fish Migration Foundation : I'm going to pin all the speakers- can all speakers start their videos?
12:00:16 From Kelly Hughes : we retrofit 1000.s of flexible weir baffles we huge bbenefit both short and long term
12:00:28 From 8 Bob Gubernick, : Retrofits reduce hydraulic capacity
12:00:41 From L Meijer : Where will we be able to find the recording of this webinar (to share with collegues)?
12:01:10 From Kelly Hughes : When dealing with 1000s of barriers we need to do something today!
12:01:20 From Joshua Royte : I like when they are large enough to include a bicycle path - we could pass a moose through that.
12:02:18 From John Hollowed : This may have been stated or asked, but will the presentation materials be made available to the participants?
12:02:31 From Merryn : Hi @Stian! Led by @Stephanie, we at FIRE Lab have been doing schools engagement through stories, books, comics and art, and have a dedicated website to engage young people with freshwaters - https://firelabkids.uk/
12:03:14 From Scoica Darius : Will WFMF organize a webinar about small scale hydropower removals?
12:03:30 From Scoica Darius : Politics, Strategy ?

12:04:08 From Pao : Hi Scoica Darius
12:04:31 From Scoica Darius : hello
12:05:00 From Pao : WFMF, WWF, Wetlands International, and more organizations together are organizing the next Dam Removal Europe International Seminar 2022, which will be an in-person event, in Lisbon (Portugal) next May 19, 20, 21
12:05:02 From Merryn : One of our engagements is here! The Shout Trout Workout:
https://youtu.be/RuxBMBEAnJk and many more on the site :-)

12:05:23 From Scoica Darius : thanks
12:05:31 From Pao : We will soon announce it. That is the seminar Herman was talking about
12:05:35 From Eoghan C : A stakeholder engagement knowledge sharing event would be very useful in the future for river restoration and removal of barriers
12:05:36 From Pao : You are very welcome :)
12:05:51 From World Fish Migration Foundation : All presentation materials will be available shortly after the webinar!
12:07:08 From Shubarna Akter : all materials will be send through email?
12:07:11 From Kelly Hughes : There is a resource here showing remediation options . https://www.ats-environmental.com/
12:07:24 From Lorenzo Quaglietta : @Eoghan, this is exactly the kind of event Herman and Pao are referring to, the one that willl be held in Lisbon in May
12:07:58 From Kelly Hughes : We are looking a developing a metrc for describing the Complexity of Flow. Has anyone doen this before?
12:08:49 From Niels Brevé To World Fish Migration Foundation(privately) : Good to see so many people working on solving issues with culverts. Thanks guys.
12:08:55 From Lorenzo Quaglietta : For those working with (semi)Aquatic organisms and movement (telemetry): you may find useful this tool for multistate markovian simulations accounting for habitat bias especially designed for river species: https://movementecologyjournal.biomedcentral.com/articles/10.1186/s40462-019-0154-8
:)
12:08:57 From Paco Martinez (UPV) : Looking for complexity or turbulence maybe?
12:09:12 From Tyler Kreider : Thank you all - excellent presentations and sharing of knowledge across the world!
12:09:36 From david_buysse (INBO) : Yess, thanks to all the speakers for nice, inspiring and fun talks !
12:09:37 From Kelly Hughes : Complexity is more appropriate as it takes into account rest pools etc
12:09:42 From Xenia Salomonsen (Wadden Sea National Park : Thank you to all the speakers and organizers. Well done! 👏
12:09:46 From Joshua Royte : Great webinar team - and thanks to the World Fish Migration Foundation and US Forest Service for making this

happen and making it happy.
12:09:48 From Simon Olley : thank you all – it was very enjoyable and informative seminar. With lots of great information.
12:09:50 From TheobaldT : Many thanks to all concerned, a very worthwhile afternoon
12:09:52 From Carlos Moreno de Guerra (TTEC) : Thank you all, it has been great
12:09:55 From Yuriy Derbal : Great presentations and event! Thanks to all!
12:10:02 From Polona Pengal REVIVO : Great seminar, great talks and love to see so many people working for rivers with so much enthusiasm !!! Let's free our rivers !
12:10:03 From George Cooper (EA Fisheries) : Great webinar! Thank you all!
12:10:04 From Lorenzo Quaglietta : Thanks a lot to the organizers, the speakers and all the participants! It was really nice and useful!!
12:10:19 From Simon Whitton – Natural Resources Wales : Thank you everyone. It's been very interesting.
12:10:19 From Oly Lowe : Thanks very much everyone, great to see so many other people passionate about this issue and restoring the physical health of our rivers, their ecosystems and fundamentally all species and the planet!
12:10:22 From Adela Baratech : Thank you so much!!! :)
12:10:25 From Sini Javanainen : Thanks for all speakers and organizers, this was an informative seminar!
12:10:26 From Paco Martinez (UPV) : Anyone have references about portable fishways you can set up and then remove from a small weir?
12:10:26 From Dafydd Roberts : Great event, many thanks to all organizers and contributors!
12:10:27 From Geoffrey M. Goll, P.E., Princeton Hydro : Thank you for the webinar. Great information!
12:10:28 From Mario Eliezer Valladares : tanks you, so much!!
12:10:31 From Jill.howells : Really useful, thanks very much
12:10:32 From Iakovos Tziortzis (CY) : Thank you all. Great seminar and talks. Regards from Cyprus and thank you for the inspiration.
12:10:35 From Emilie Bourloutski : Thank you to everyone, great presentations
12:10:36 From Mario Eliezer Valladares : have nice day
12:10:38 From Stéphane JOURDAN : Thank you very much, it was great "as usual"...
12:10:43 From Cailey McCutcheon : Excellent webinar
12:10:46 From Greg Glitzer : Well done by all. Thanks again.
12:10:46 From Steph Januchowski-Hartley : Yes as Kim said, and, we make some rules for rapid assessment like culvert is <30% of river width; 30-60% width and >60% width. We got that idea from the ICE protocol from France.
12:10:47 From SGCHAPMAN : Thanks everyone, very interesting and inspiring!
12:10:47 From thair : Thank you so much
12:10:48 From miriam.lebeau : Thank you very much for the event! It is

very helpful for my work!
12:10:51 From Kristina : Thanks everyone!
12:10:52 From Kim Aarestrup : dynamite is portable
12:10:56 From Nathaniel James : Really interesting & informative. Thanks everyone involved
12:10:56 From Flavio Orru : Thanks to everyone !!!
12:10:58 From World Fish Migration Foundation : Thank you all for coming!
12:11:00 From Elena Cebrián : Thank you so much!! Excellent webinar :)
12:11:05 From Eoghan C : Huge journey ahead, but lots to learn and enjoy on the way!
12:11:06 From Sofia Spiridonidou : Thank you all! Great information, excellent webinar!!
12:11:12 From Luc-Anne Salm : Wonderful presentations and event. Looking forward to preparing for Fish migration Day! Reuze Bedankt/ Thank-You very much!!!
12:11:15 From Angeline LeBlanc : this was a great webinar. very informative. thank you everyone.
12:11:22 From CCB Gunnar Noren : Thanks for a very good webinar. Good facts and info
12:11:26 From Alex Lumsdon : Great webinar - thanks all!
12:11:27 From Jiri Musil : Thanks to all, good event!
12:11:37 From Kelly Hughes : Thank you everyone - we are only a phone call or email away if you want help.
12:11:39 From Elisabeth Cianciola To World Fish Migration Foundation(privately) : I don't represent the agencies responsible for them, but the Northeast U.S. has some resources that you could add to the list to share with participants: https://streamcontinuity.org/naacc/assessments/aquatic-connectivity-non-tidal#scoring
12:11:43 From Lev Dahl : Thank you for this. Some really interesting talks and loads of useful resources. Great webinar.
12:11:54 From World Fish Migration Foundation To Elisabeth Cianciola(privately) : Thank you!
12:11:57 From Viktoriia Stanbury WWF Ukraine : Thank you for amazing webinar!
12:11:57 From Daphne Ioanna Giannoulatou : Thanks everyone! vERY
12:12:02 From Humbulani : Thank you very much for the very informative webinar.
12:12:08 From Uğur Gümüş : Thanks to all, for great webinar!
12:12:17 From Josh Carvajal : Thank you all!
12:12:18 From Philipp Czapla (DAFV) : 👏
12:12:19 From Susana Amaral : 👏
12:12:20 From Rieke Schons : Any way to purchase this cool shirt? Thanks for the amazing webinar!
12:12:21 From Sadman Rafid : Thanks to all the speakers! It has given a lot to think about and I am more than fulfilled than I had expected!
12:12:21 From Christopher Borowski, Trout Unlimited Canada, Guelph Ontario : Thank you everyone!
12:12:24 From Marlies Wierenga - WildEarth Guardians : Thank you! This has been great!

12:12:25 From Natalija Matić : Bravooooo
12:12:29 From Diaconu DC : Superr!!!
12:12:31 From Kate Snaddon : Amazing, thanks
12:12:37 From NLanglois-Anderson : Thanks all, great presentations!!!
12:12:37 From World Fish Migration Foundation : It’s been an adventure!! Let’s fix some culverts!
12:12:38 From Ransirini Attanayake : Thank you.....
12:12:41 From Gill Banner-Stevens : Excellent presentations - thanks to all the speakers and organisers - brilliant! Thanks you!
12:12:45 From L Meijer : 👏
12:12:46 From Mats Rydgaard : Thankyou!
12:12:57 From L. Podstrelená : 👏 👏👏👏
12:13:00 From Alasdair Matheson : Thank you. A great webinar.
12:13:02 From Paco Martinez (UPV) : Thanks to the organisers and speakers, Great Seminar!!
12:13:05 From Atle : Where will you make the presentations available`?
12:13:11 From Carlos Garcia de Leaniz : well done and thanks Herman & Yurena
12:13:11 From NLanglois-Anderson : 👏👏
12:13:16 From Yuriy Derbal : 👏