

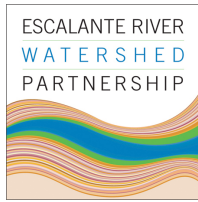
## **Escalante River Watershed Partnership Full Partnership Meeting and Field Trip**

9:00 am to 4:00 pm, October 24, 2017

Escalante Interagency Visitor Center, 355 Main Street, Escalante, UT

### **Attendees**

- Alex Engel, Escalante River Watershed Partnership (ERWP)
- Amy Dickey, Utah Division of Water Quality (DWQ)
- Brian Laub, Utah State University (USU)
- Brooke Shakespeare, US Forest Service (USFS)
- Charlotte Overby, Conservation Lands Foundation (CLF)
- Christine Brice, Canyon Country Youth Corps (CCYC)
- Clint Wirick, US Fish and Wildlife Service (USFWS)
- Craig Sorensen, Private Landowner
- Dana Backer, Bureau of Land Management (BLM)
- Dave Bastian, Utah Conservation Corps (UCC)
- Erik Woodhouse, Utah Division of Wildlife Resources (DWR)
- Jeremy Vesbach, Conservation Lands Foundation (CLF)
- Joe Zelman, Utah Conservation Corps (UCC)
- Joel Tuhy, The Nature Conservancy (TNC)
- John Spence, National Park Service, Glen Canyon (NPS)
- Jordan Nielson, Trout Unlimited (TU)
- Julie Brugger, Private Citizen
- Justin Jimenez, Bureau of Land Management Utah State Office (BLM - UTSO)
- Ken Bradshaw, Grand Staircase Escalante National Monument (BLM - GSENM)
- Kristen Buck, Escalante River Watershed Partnership (ERWP)
- Kristen Jespersion, Tamarisk Coalition (TC)
- Linda Whittam, The Nature Conservancy (TNC)
- Matt Betenson, Grand Staircase Escalante National Monument (BLM - GSENM)
- Michellsey Benally, Escalante River Watershed Partnership (ERWP)
- Natalya Walker, Canyon Country Youth Corps (CCYC)
- Nicole Croft, Grand Staircase Escalante Partners (GSEP)
- Noel Poe, Grand Staircase Escalante Partners (GSEP)
- Phoebe McNeally, University of Utah Digit Lab (UU)
- Robert McElaney, Escalante River Watershed Partnership (ERWP)
- Sarah Haderlie, Utah Conservation Corps (UCC)
- Sheridan Wilder, Escalante River Watershed Partnership (ERWP)
- Stephanie Minnaert, Grand Staircase Escalante Partners (GSEP)
- Steve Cox, Town of Boulder
- Sue Fearon, Grand Staircase Escalante Partners (GSEP)
- Tabitha Kelly, Grand Staircase Escalante Partners (GSEP)
- Terry DeLay, Dixie National Forest (USFS)
- Tom Hoyt, Grand Staircase Escalante Partners (GSEP)
- Valerie Reynolds, National Park Service (NPS)
- Wally Macfarlane, Utah State University (USU)



## Facilitation Team

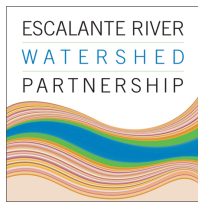
- Kim Kernan - Facilitator
- Katherine Daly - Note taker

## Introductions & Housekeeping

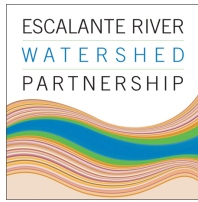
- New partner: American Packrafting Association

## Colorado Plateau Rapid Eco-Regional Assessment (REA) Step-Down Project (Brian Laub, Wally Macfarlane, and Justin Jimenez) *PowerPoint Slides are available from Facilitator*

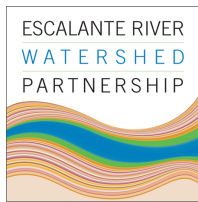
- The Project aims to integrate landscape-level quantitative data into aquatic assessments
  - Purpose: Make landscape-scale analyses useable for management in the Escalante River watershed.
  - Approach:
    - Compare Escalante watershed's intactness and stressors to other watersheds (contextual analysis).
      - Low intactness = high levels of landscape disturbance
      - High intactness = low levels of landscape disturbance
    - Analyze results of Escalante River watershed aquatic intactness model to identify potential causes behind high or low intactness ratings, identify stressors, and identify similarities and differences between subwatersheds.
    - Integrate other datasets and analyses with REA step-down analyses
      - BLM's Assessment, Inventory, and Monitoring (AIM) framework
      - Riparian Condition Assessment Tools (R-CAT)
      - Others (ERWP CAP analysis, local data)
  - Outcomes and Results:
    - **Rapid Eco-Regional Assessment (REA) Summary**
      - REA establishes high-priority (intact) areas within the Colorado Plateau for conservation using remote-sensing data. REA shows landscape-level conditions.
      - Escalante River watershed shows high intactness overall.
        - Diversions, dams, and other hydrologic alterations are a main stressor for Escalante River subwatersheds with lowest intactness.
    - **Assessment Inventory and Monitoring (AIM) Analyses**
      - AIM establishes the relative extent and biological relevance of environmental stressors throughout the Escalante watershed.
        - Stressors measured include: water quality (pH, nitrogen, phosphorus, fine sediment, excess specific conductivity, sediment), in-stream habitat complexity, bank condition, vegetation complexity, and macroinvertebrate condition.
        - Data collected at 21 sites in the watershed.
        - Random distribution of sampling points on perennial streams.



- BLM model that is regionally specific, not locally specific established baseline for this study.
- Widespread threats:
  - Lack of complex in-stream habitat.
  - Excess specific conductivity (high salinity).
  - Poor bank condition.
- Macroinvertebrate sampling revealed:
  - Excess total nitrogen best predicted macroinvertebrate populations.
  - In-stream habitat complexity is second in biological relevance.
- Instream habitat complexity has high explanatory power in both categories, along with:
  - Riparian vegetation complexity.
  - Nitrogen levels.
- **Riparian Vegetation Departure (RVD) Tool**
  - Estimates riparian vegetation departure and restoration potential on a network scale within the Escalante River watershed.
  - Baseline model estimates pre-settlement conditions
  - Nonnative and upland encroachment are major threats
    - Northern reaches of the watershed suffer from conifer encroachment.
    - RO removal efforts are reflected in Glen Canyon Recreation Area's high riparian condition.
    - BLM land could benefit from additional RO removal.
- **Conservation Action Planning (CAP) Analyses**
  - Assessed riparian and aquatic integrity and threats within the Escalante River watershed. Steps in this process are:
    - Select "target" habitats within the watershed, some of which housed species of concern.
    - Assess the health of these targets.
    - Identify threats to targets.
    - Develop strategies and actions with stakeholders to mitigate impacts and restore or maintain the health of targets.
  - Riparian and aquatic habitats are highly threatened in the watershed
    - Major riparian threats are:
      - Stream-floodplain disconnect
      - Riparian invasive plants
      - Upland encroachment
    - Major aquatic threats are:
      - Stream-floodplain disconnect
      - Upland disturbance
      - Physical habitat
- **REA Contextual Analysis for Aquatic Intactness**

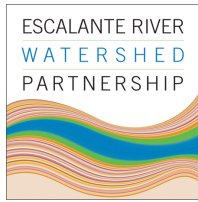


- The aquatic intactness of the Escalante River watershed was compared against that of the Freemont, Muddy, Paria, Price, and San Rafael River watersheds.
- The Escalante River watershed is doing well regionally, showing much less departure from historic conditions than nearby watersheds.
  - Escalante River watershed has a relatively low number of subwatersheds with a “low” or “very low” intactness rating.
- **New Projects**
  - The BLM is starting a restoration project on the Price River.
  - Integrative analyses (using REA, AIM, and R-CAT) of riparian and instream degradation.
    - Many stream habitats are in relatively intact condition, but will require continued conservation measures to keep threats at bay.
    - Portions of the riparian and instream habitat limited by:
      - Russian olive invasion.
      - Hydrologic alteration.
      - Channel narrowing and simplification.
      - Reduced instream habitat complexity.
    - REA, AIM, and R-CAT outputs can:
      - Identify location and extent of degradation and resource threats.
      - Locate priority areas for restoration and/or conservation.
      - Be combined and shared in GIS or as KMZ files for Google Earth.
      - Locate correlating and conflicting datasets.
    - RVD Output
      - National Agricultural Imagery Program (NAIP) data used to identify Russian Olives along streams
        - Russian Olives clearly contributed to narrowing and simplification of channels.
        - Logjams of felled Russian Olives increase downstream complexity/initiate restoration. Disturbance combined with flooding improves instream habitat by creating:
          - Multi-thread channels.
          - Riffle habitat.
          - Substrate for spawning and macroinvertebrate habitat.
          - Removes metabolic waste.
          - Creates deep scour pools.
      - Baseline condition from the 1950s is a braided, wide system. Researchers have no idea what the system

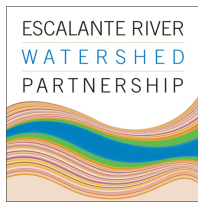


looked like before the floods at the turn of the 20th century.

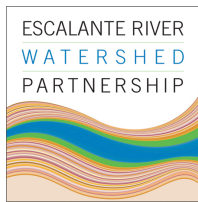
- Trenching used to date sediment layers
  - San Rafael River has good information on geomorphic change
  - Trenching taking place on the Colorado River as well
- High Potential Riparian Restoration Subwatersheds (vegetation disturbance is the only limiting factor)
  - Most applicable to direct management
  - These may be low-hanging fruit for improving intactness scores
    - Lower The Gulch
    - Upper Harris Wash
    - Right Fork Collett Canyon
    - Twentymile Wash
    - Twentyfivemile Wash
    - Big Hollow Wash
    - Stevens Canyon
    - Fools Canyon
    - Scorpion Gulch
    - East Moody Creek
- Low Potential Restoration Subwatersheds
  - Subwatersheds where aquatic intactness rating is limited by factors not easily managed
    - Upper North Creeks
      - Dams, impaired waters
    - Boulder Creek
      - Dams
- Provides information for specific projects, e.g. Cutthroat trout restoration in Calf Creek
  - Current Conditions: medium-high overall intactness
    - High macroinvertebrate O/E score
    - High vegetative complexity
  - Primary issue from AIM data: fair to poor salinity
  - Room to improve habitat complexity
- AIM and Landscape Disturbance Analysis
  - Identify influential landscape disturbance factors, e.g., specific conductance (SC) exceedances (salinity)
    - Many kilometers of streams in poor condition -- salinity is a potential problem in the watershed
    - Natural variation is already accounted for in “expected” values



- Hydrologic Alteration is the disturbance metric associated most with SC
    - As hydrologic alteration increases, there is greater increase in SC than expected
    - Understanding how the water is diverted and used could help illuminate causes of higher SC
- Final report will document this work.
  - The report will present major outcomes and examples
  - Useful for Escalante watershed and beyond as example of how to apply analyses/use complementary data sets
    - Caution! These datasets were designed for use at different scales: region (REA), network (RVD), point (AIM)
  - The report will recommend next steps



- **Next steps**
  - Model how disturbance factors are influencing other important instream conditions
    - Identify watersheds where land use changes and surface disturbance could influence important stressors.
    - REA and R-CAT layers could be used as predictors.
  - Collect higher-resolution data layer for existing vegetation to help prioritize efforts:
    - Prioritize treatment of Russian Olive.
    - Prioritize cottonwood galleries.
  - Develop historic vegetation layer.
  - Studies in Price and San Rafael watersheds to evaluate increasing salinity. Determine if this is one of the stressors that continues to show up.
    - Reference conditions: data collected for ecoregion by EPA, Forest Service, etc.
    - BLM maintains a webpage with protocols, reference conditions for a given site.
- **Live Demonstration of the Decision Support Tool**
  - The best way to complement local resource knowledge was to provide this tool, which combines REA, AIM, RVD, and R-CAT.
    - REA provides data on landscape impacts
      - Limited information on whether the impacts are ecologically relevant and limited to the subwatershed scale
    - AIM data identified areas of impaired aquatic conditions
      - Limited information on causes
      - AIM data was collected from 2012 to 2016
    - RVD data: could be updated
      - Vegetation data is 6-7 years old
    - Integration must be done carefully!
      - Datasets are designed for use at different scales
    - Other data sets and local knowledge needed
      - Causal analysis is limited with current datasets
      - This tool boosts crowd-sourced data improvement
        - Makes virtual ground-truthing possible
        - Allows users to determine where layers are current and correct
    - Area to spot-treat for Russian Olive: BLM land above Horse Canyon
    - BLM moving forward with White River, in partnership with Utah State and Tamarisk Coalition
  - Next steps:
    - Provide seamless web access to decision support tool



- Provide examples through story maps
- Web-based project report
- Web-based guidebook for decision support tool
- Hands-on training

- **Comments**

- *It would be useful to conduct an assessment during the 2019-2020 season and follow up five years later to evaluate passive restoration.*
- *The Park Service is seeing an increase in Russian Olive populations around Lake Powell. Cut branches sent downstream on the Escalante can still be viable.*
- *A lot of indicators are related to flow. Snowmelt can contribute to changes. Monsoons may decrease habitat complexity by depositing sediment and causing channelization.*
- *The ERWP laid the groundwork for the selection of the Escalante River watershed for these data collection and tools.*

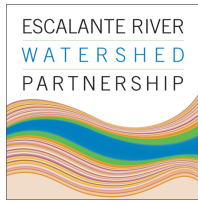
- **Questions**

- **Are GSEP crews leaving woody debris near waterways?**
  - Yes. We have noticed that piles left on uplands do not get caught in spring floods due to channel simplification, so we will focus on leaving woody debris closer to waterway
    - *Is this a best practice?*
  - There has been some pushback from river runners about debris in the channel.
    - *Is this an education opportunity?*
- **Is there any return water to the Escalante River?**
  - What is delivered through the system, after the reservoir, is a 50/50 mix of impounded water and natural flow. There is quite a bit of return below the reservoir.
  - Pressure is a factor, too.
- **What is meant by "natural flow"?**
  - Water delivery below the natural diversion.
- **Who funded this work?**
  - Initial two years of REA funding was from the Climate Change Initiative. That funding ended this year.
  - Aquatic and terrestrial AIM has been funded through the BLM's planning department. It looks like this funding will continue.
- **Did the researchers consider background groundwater with regards to conductivity?**
  - Yes
- **How do you submit changes and/or updates to the data?**
  - Send to data to Wally Macfarlane and/or Phoebe McNeally
    - Send updated layers to Wally
    - Data that might point to causes of increased salinity would be very helpful (e.g. nearby land uses).

- **Action Item (ERWP/GSEP?)**

- *Document older sites in the Park that were cleared 7 years ago.*

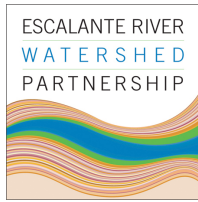




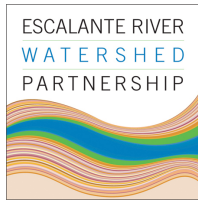
## **Coordinating Committee Update** (Linda Whitham)

PowerPoint Slides are available from Facilitator

- Welcome new facilitator, Kim Kernan!
- Coordination and Outreach (Stephanie Minnaert)
  - This year, rather than hire Watershed Partnership Coordinator, leveraged Stephanie Minnaert (GSEP), Linda Whitham (TNC), and Kristen Jespersen (TC)
  - GSEP hired Sheridan Wilder, Coordinating Assistant
  - Successes:
    - Recent publications: *Crossroads* article, paper on RO, GSEP newsletter
    - CSU class to use ERWP as a case study
- **Fundraising Subcommittee** (Kristen Jespersen)
  - All committees fundraise for their own work
  - Stephanie Minnaert, Sue Fearon, Linda Whitham, and Kristen Jespersen taking the lead in fundraising
  - Total raised for all committees: \$1,539,824
    - Top three contributors are:
      - Walton Family Foundation provided 49%
      - Utah Partners for Conservation and Development 23%
      - Natural Resources Conservation Service 10%
    - ERWP moving away from Walton Family Foundation funding.
    - Good distribution of fed, state, private funding
      - Walton Family Foundation = 49%
      - Public = 44%
      - Private = 7%
  - Restore Our Rivers Campaign
    - Goal of 2.42 M raised by Tamarisk Coalition
      - \$939,041 raised by Tamarisk Coalition to date
    - Goal of 30% match by each participating group
      - ERWP cash match: \$23,333 - \$46,666
        - \$24,318 ERWP cash match raised to date
  - Additional Successes
    - Fundraising Plan is in development
    - GSEP launched a fundraising campaign
    - Meeting with Utah Foundations
    - New funding from Hemingway Foundation and Patagonia
    - GSEP, TC, and TNC attracted numerous new donors
  - 2018 Fundraising Plan
    - Fundraising Subcommittee Meeting Oct. 25, 2017, will cover:
      - Grants
      - Foundations
      - Private donors
      - Capacity
  - Annual Retreat in Moab (Linda Whitham)
  - Tentatively set for December 6, 2017
  - Will discuss ERWP five-year action plan and budget



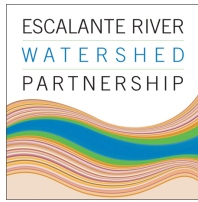
- **Outreach Subcommittee Update** (Stephanie Minnaert)  
PowerPoint Slides are available from Facilitator
  - ERWP-Sponsored Events:
    - History in your Attic (June 2017, Boulder)
  - History of the Potato (August 2017, Escalante)
    - 120 attendees
    - Researchers for this project would like to do more outreach events
    - Utah Water Watch Tier 1 & 2 trainings
    - Tier 1
      - 8-10 volunteer citizen scientists
      - 3-hour training
      - Monthly sampling for 7 months (April to October)
      - Partnership with USU
    - Tier 2
      - 4-5 volunteer citizen scientists
      - all-day training
- **Woody Invasive Volunteer Events**
  - Lots of new volunteers, repeat trip leaders
  - Great Old Broads for Wilderness
  - Wilderness Volunteers
    - Harris wash
    - Spring (front country) and fall (backcountry) trips
      - 5-6 day trips
      - clearing smaller plants to make way for GSEP
      - GSEP leads hikes and educational presentations for these volunteers
- **Other outreach activities:**
  - Canyonlands Conservation District
    - Weed awareness
    - Grant proposal
  - Hopi Youth Crew (5-8 young people, ages 8-15 years)
    - Partnership with National Park Service
    - Backpacking trip to Harris Wash
  - Escalante New Irrigation Co.
    - A GSEP representative met with the board, to advocate for the clearing of invasives
    - They are obliged to maintain a beaver dam as part of their mitigation plan
  - Conservation Corps (CC) Training
    - Occurred on private lands in Alvy Wash
    - 80 CC members in attendance for 10 days
    - Participants trained in Wilderness First Aid, Leave No Trace principles, basic science, and chainsaw use
    - Utah Conservation Corps and Kane County also brought crewmembers for training



- Art festival
  - Tabled and chatted with the public
- Media
  - More than 10 Insider newspaper articles
    - Reach of 3000+ households
  - Peter Skidmore (Walton Family Foundation) published a US Geological Survey article
  - Walton Family Foundation Colorado River Initiative film
- Questions
  - ***How many volunteers did GSEP have this year?***
    - Typically, GSEP has 10-12 volunteers per trip. This works out to about 60-80 volunteers annually.
    - There are eight or nine volunteer groups interested in getting involved next year.
- **Action Items (STEPHANIE and KIM)**
  - Stephanie to share USGS Article with Kim, to share with the ERWP listserv
  - Stephanie to share recent Walton Family Foundation film and another film, "This American Land," with Kim to share with the ERWP listserv

### **US Forest Service Update** (Brooke Shakespeare)

- Construction of culverts in 2013, on a river system prone to flash floods
  - Culverts have held up well
  - Maintenance performed this year
- Completed passage for Colorado Cutthroat along Hall Creek
- Currently pushing the relocation of roads that are not in good spots, hydrologically, in Garfield County
- Upper Valley Project
  - NEPA completed. No objections or litigation.
  - 12K acres of revegetation
  - 13K acres of prescribed burns. This allows mechanical pre-treatment before under burning. Reduce risks of catastrophic fire at the headwaters.
  - 100+ acres of stream improvement
  - Removal of pinon and juniper encroachment
  - Restoration of cottonwood corridors
  - Fence off a spring
  - Clean out sediment catchment ponds, potentially reduce salinity
  - Should take about a decade
  - Promote regeneration of aspen
- Groundwater-dependent ecosystem data collection in partnership with TNC
  - Trying to understand water and flow
- Questions
  - *Can you name the roads in Garfield County that you're trying to relocate?*
    - Not yet. We haven't compiled a list.
  - *What are the general characteristics of these roads?*
    - Dirt roads that are adjacent to or through perennial streams, leading to greater sedimentation.

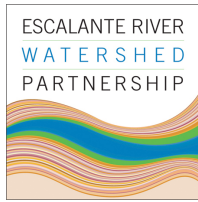


- **Action Items (BROOKE)**
  - *Compile list of roads in Garfield County that are being considered for relocation*
  - *Brooke to get USFS to put some monitoring devices near Garfield County roads that are up for relocation.*

### **WICR Committee/Monitoring and Maintenance Subcommittee** (Stephanie Minnaert)

Slides are available from the facilitator

- ERWP's Mission: aims to restore and maintain the natural ecological conditions of the Escalante River and its watershed and involve local communities in promoting and implementing sustainable land and water use practices.
- Plans
  - 10-year action plan (2010-2020)
  - annual work plans
  - Woody Invasive Control Plan (WICP) – treatment on a 1-5 year rotation
    - *Excerpt: Reduce through various control methods RO and other woody invasive species in the watershed to minimal levels, thereby allowing native plants and animals to thrive and natural (historical) riparian processes to function, such that riparian areas become more naturally functioning, sustainable, and resilient to change.*
- History of ERWP
  - Woody invasive reduction is the impetus for ERWP formation
    - Reduction of RO to minimal levels in Escalante watershed is critical and in accord with the ERWP's mission
  - Treatment of Russian Olive started in 2000 in National Park Service
  - WICP objectives:
    - Conduct retreatment and rapid monitoring on all treated basins
    - Establish long-term monitoring program in high-priority, treated basins
- Why monitor?
  - To determine if ERWP is meeting its goals
  - To protect investment by ERWP and funders
  - To develop adaptive management strategies
  - Assess need for retreatment
  - Other threats:
    - Tamarisk leaf beetle
    - Herbaceous species of concern
    - Primary treatment is coming to an end
- New Monitoring and Maintenance Subcommittee
  - Draft Plan
    - Plan to collaborate on this document during the December retreat
    - Edits that still need discussion:
      - Secondary weed species
      - Data storage
      - Long-term monitoring
      - Rapid monitoring
        - site definition



- Goals
  - Complete by the end of the year
  - Publish Feb 1, 2018
- **Comments**
  - *There is still a lot of benefit to primary treatment in some areas, from the confluence of Boulder Creek to the Park boundary. This relates to instream habitat conditions.*
    - **Response: GSEP has three crews in this reach right now.**
- **Questions**
  - *Have all the RO source populations been located and dealt with, so they're not providing a seed bank?*
    - The number of different landowners impacts the answer to this question. Private landowners decide whether or not we'll be able to treat on their land.
  - *What percentage should we expect?*
    - Unknown. We have a lot of RO that aren't attached to riparian areas, that are contributing seeds from other areas.
  - *Have any volunteer crews been trained in identifying and eradicating herbaceous invasives?*
    - A: Not yet. They need to be.
- **Action Items (STEPHANIE)**
  - Plan to train volunteer crews in identifying and eradicating herbaceous invasives.
  - Email one-pager of M&M themes and updated draft plan to ERWP.
- **Action Item (JOHN and/or MIKE)**
  - John, Mike, and others to identify new long-term monitoring sites.

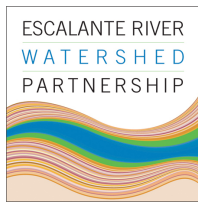
#### Announcement

- Scoping meeting for Hole-in-the-Rock Road Repair Project
  - Grading and drainage project with Garfield County
    - Oct. 25, 2018 Escalante Community Center, 5-8 pm
    - Oct. 26, 2018 Boulder Community Center, 5-8 pm

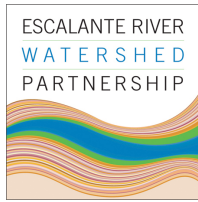
#### Afternoon Field Trip: 1:00 pm - 4:00 pm.

##### A. Introduction to the Frill Cut Method of RO Control

- Frill Cut Method (aka Hack 'n' Squirt)
  - For trees, volunteers cut into a tree's cambium and phloem with hatchets, making approximately 3" cuts in an alternating pattern around the trunk to prevent girdling and focusing on "resource pockets."
  - Next, they spray the cuts with herbicide. The tree stays alive, cycling the chemical into its roots and leaves.
  - In a few months, the tree will often die.
  - This method is adapted from one created by Kurt Dozier at the Southwest Exotic Management Team.
  - When to use Frill Cut vs. Stump Cut



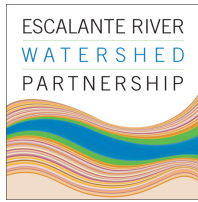
- Stump Cut method, in which a chainsaw is used to cut the entire tree down about 1" from the ground, is used on trees with a diameter of 4" or less, or on trees that shade the river
  - Frill Cut is applied on trees whose diameter is greater than 4"
- Advantages over the "Cut Stump" Method
  - Uses a hatchet, rather than a chainsaw. Chainsaws requires training and maintenance, and their bulk and weight make backcountry transport difficult
  - Frill cut method is less work, and process is therefore more efficient.
  - Does not stress the tree and prompt excessive new growth
    - Trees treated with the Cut Stump method can put out aboveground shoots because the roots are still alive. Floods will reinvigorate these roots.
  - The Cut Stump method produces a lot of woody debris.
    - 33% of the tree will be left standing.
    - 33% will be cut into smaller lengths and made into a dense "habitat pile" on the floodplain.
    - 33% will be put into the river, to improve riparian habitat.
    - All trees that shade the river will be chain sawed and put into the river.
- Challenges and Concerns
  - Volunteers are using herbicide that the Southwest Exotic Management Team used in 2013 with great success.
    - GSEP requires all volunteers to wear long sleeves, long pants, and gloves, and offers eye coverings while using herbicide.
- Questions
  - Is the efficacy of this method seasonally dependent?
    - Test plots have been created in an attempt to study the efficacy of different methods at different times of year when trees have different metabolic rates.
  - What is the success rate of the frill cut method?
    - There are two sites in Harris Wash that are receiving treatment and retreatment. Volunteers are counting trees in this area to determine the success rate.
      - Indicators of success are if the tree "looks dormant" or is defoliated, and if the tree is hollow or obviously dead.
    - Volunteers could use assistance (from Utah State University, for example) documenting the changes they witness and consolidating the knowledge they have gained in the field into a handbook.
    - Mike Scott is conducting studies of when RO fruit, as well as debris pile studies.
  - How long does it take a crew to clear an area?
    - Using the cut stump method, eight people at a site continuously for two months would clear about a mile of river.
    - The frill cut method proceeds about twice as fast.



## B. Fish: Three Species Conservation and Monitoring

PowerPoint slides are available from the facilitator

- The **2009 Conservation Plan** identified three fish species of concern on the Escalante River:
  - the Flannelmouth Sucker
  - the Bluehead sucker
  - the Roundtail Chub
- Standardized monitoring stations were set up along the upper Escalante River in 2009
  - initially sampled every other year, now sampled annually
  - Each station is 500 meters in length, with a maximum of 20 sites/habitats to sample (at least 15 sites with fish must be sampled). Sampling involves:
    - Three-pass depletion seining
      - fish are collected the put into a bucket, measured, then released
    - Categorize site according to
      - the dominant substrate
      - habitat type (e.g. run, riffle, pool, or backwater)
    - Measure habitat
      - length and width of area seined, depth of area seined
      - length and width of overall habitat sampled
  - Upper Escalante Station Results (13 stations)
    - Flannelmouth and Bluehead sucker captured in all reaches, both have robust populations
    - Two Roundtail Chub captured at one station
    - Speckled Dace of all ages classes captured in all reaches
    - Nonnative Brown Trout of multiple age classes captured throughout reaches
      - Calf and Boulder Creeks are the likely sources
  - Middle Escalante Station Results (11 stations)
    - Three species captured in nearly all stations sampled
      - Flannelmouth Sucker and Roundtail Chub were common to abundant
        - Flannelmouth Sucker population is robust
      - Bluehead Sucker least abundant of three species
    - Speckled Dace captured in all stations, multiple age classes represented
    - One nonnative Red Shiner captured in backwater of the lowest station
    - These habitat complexity of middles stations is lower than upper and lower stations
  - Lower Escalante Station Results (5 stations)
    - Flannelmouth Sucker captured in all stations
    - Roundtail Chub captured in only one station
    - No Bluehead Sucker captured
    - Speckled Dace captured in all stations
    - Nonnative fish accounted for 92% of total catch in all stations. This is likely due to migration upstream from Lake Powell
      - Red Shiner are expected to move up the river from Lake Powell, but they have not done so. The reason for this is not clear, as they thrive in the Virgin River, where the habitat is not as good as the Escalante River.

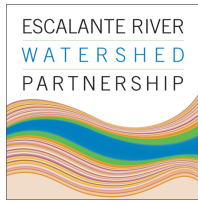


- Received funding from the Hemingway Foundation in 2017 that enabled the resampling of tributaries (Pine, Mamie, Sand, Calf, Deer, and Boulder Creeks)
  - Nonnative trout are still the dominant species
    - 81% of catch for all tributaries was Brown Trout
    - in 2003-2004 sampling, Brown Trout and Yellowstone Cutthroat trout prevailed in the upper tributaries
  - Very little change in species composition and abundance since 2003-2004 sampling efforts
  - Presence of sucker fry at mouth of several tributaries could indicate that suckers use tributaries during spawning, and fry use these areas as refuges
  - The Bureau of Land Management is considering native cutthroat restoration in Calf Creek
- Float trip planned for spring 2018 to fill in additional statistics and find out where native fish are most abundant.
- Roundtail Chub propagation program in in the works for the San Rafael River
- **Questions**
  - *Are nonnative fish being stocked?*
    - No. Trout are no longer being stocked in these streams.
  - *How is species abundance measured?*
    - Abundance is the number of fish divided by the cubic meters of the area sampled.
  - *Are three species populations responding to Russian Olive removal?*
    - It is too soon to tell if they are responding. Currently, the biggest threats to these fish are dams, diversions, and water reduction.

### C. Working with Private Landowners and Volunteers

- Property owner spotlight: Craig “Sage” Sorenson
  - Project to enhance biodiversity, rather than restore an ecosystem
    - Aerial seeding and willow planting
    - Removal of Russian Olive and Tamarisk allowed grasses to grow
  - (ERWP), (USFWS), and (NRCS) formed a financial and technical partnership around one piece of land
- GSEP Volunteer Spotlight
  - Work Crews have been especially productive this year. There are fewer than seven miles of river left to clear/treat of RO, and Harris Wash has only one mile left to clear/treat.
    - The Frill Cut method has drastically increased work crew productivity
      - This method opens up the river corridor, and leaving trees standing in place leaves less biomass for crews to deal with
      - Volunteers can complete the full treatment in 4-8 days in the field
      - Crew members can work if chainsaws are not working or are out for repairs.
    - Staffing increases and changes have helped
      - There has been 100% retention of ERWP crew leaders this season
      - Each of the five work sites now has its own manager





- Logistics are greatly improved. Having DeLorme devices to send text messages from the backcountry requesting resupply is a huge improvement over the old system of sending requests via paper slips that must be hand carried or packed in and out.
  - A full-time field staff to manage the fall conservation corps
    - Site presence and extra snacks both improve productivity
  - Crew members and leaders are very well trained this year
    - A crew leader training was held in the spring.
- Challenges:
  - The cold poses risks to crew members of frostbite and trench foot
    - Crew leaders have responded by starting work later in the day, when it is warmer
  - Chainsaws are time-consuming to fix and it is challenging to keep fleets of them maintained.
- The Sierra Club has expressed interest in volunteering