

TroutBlitz:

Documenting the Distribution
and Diversity of Trout Through
Photography



v 2 October 2014
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Trout Unlimited



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Overview and Purpose of TroutBlitz

Most anglers are familiar with rainbow, brown, and brook trout, but how many have ever seen a Whitehorse Cutthroat, Mexican Golden Trout, or Sacramento Redband? When an angler has seen these unique fish, it is usually through a painting of a single type specimen. But a single image can never capture the incredible diversity found even within a single subspecies (**Fig 1**). That's why we need citizen scientists--ecological anglers--to get involved in the TU TroutBlitz. TroutBlitz is a citizen science project aimed at cataloging the rich diversity of North America's native salmonids, including trout, steelhead, charr, whitefish, and salmon. Through photography and angling, TU's membership can build a single, easily accessible, geo-referenced photo library of native salmonids across their geographic range. In addition to documenting native trout biodiversity, TU members can contribute to scientific understanding of the introduction and non-native species by providing geo-referenced photos of these fishes when afield. In order to make TroutBlitz successful, we need your help. With just a fly rod, camera, and GPS, you can make a valuable contribution to science. This manual is designed as a start-to-finish guide for contributing to TU's TroutBlitz. As we describe, all you need to contribute is a rod, a camera, and a GPS, and you can become an ecological angler.

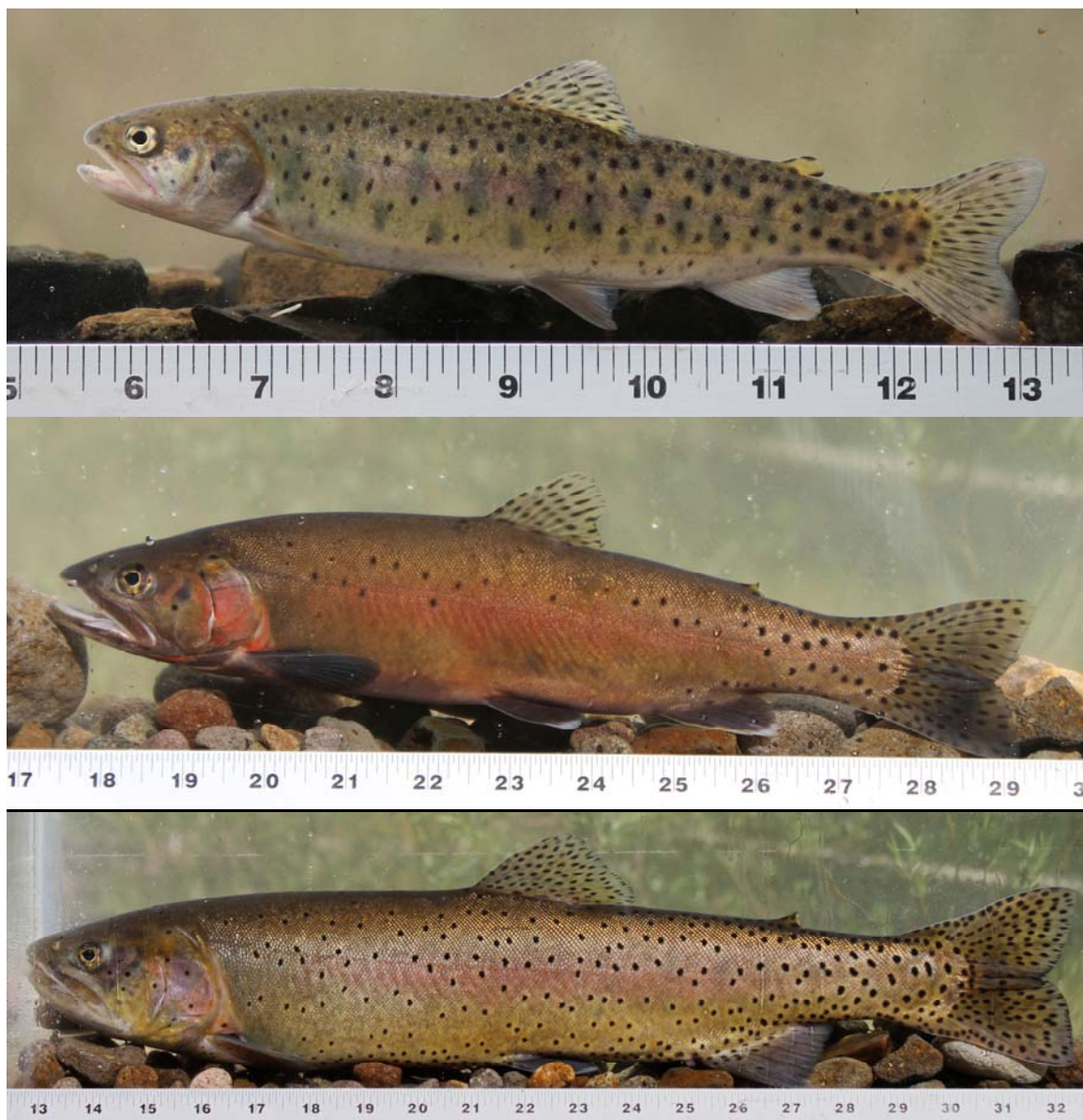


Fig 1. Pictures of pure-strain Lahontan Cutthroat Trout (*Oncorhynchus clarkii henshawi*). The top picture is a stream-dwelling Humboldt Strain LCT in the Maggie Creek Drainage in northern Nevada. The bottom two pictures are of pure-strain LCT in Independence Lake, California. (photos: John Zablocki)

A. Documenting Native Salmonid Biodiversity

Where to start? There are two main ways to locate and photograph native salmonids.

1.) Contact local state and federal agency fish biologists to see if you can accompany them on field surveys of native trout populations in order to photograph the fish. If you are having difficulty locating interested biologists, contact a member of TU's Science or Communication staff and we can help you find a person in your area with whom to work.

2.) Do it yourself. There are many resources out there describing the native trout of North America. Bob Behnke's classic books, *Trout and Salmon of North America* and *Native Trout of Western North America*, are a good place to start. If you do go in search

of rare native trout alone, please do check with state and federal to make sure you are in compliance with any and all regulations when angling for and photographing the fish. And don't underestimate the contribution you can make. Much of what is known about the trout of Eurasia comes from a single man, Johannes Schöffmann, from Austria who spent his lifetime searching out and photo documenting native trout (see: <http://biofreshblog.com/2011/10/26/the-master-without-a-masters-johannes-schoffmann/>).

B. Documenting Presence/Absence of Non-native Trout

Some streams and lakes are managed specifically for non-native trout. In other areas, non-native trout have been introduced and may compete with, hybridize with, or prey on native trout. Understanding the distribution of non-native trout can help management agencies understand the effectiveness of wild fish policies and can help determine if there is a growing threat to native species.

II. Getting Started

The following section is intended to provide participants with a guide for properly photographing native and non-native trout and submitting those records.

Photographing Trout

In order to properly ID fish, high quality photos are preferred. Ultimately, TU would like to collect the best photos submitted to the TroutBlitz for publication in a photo-book of the native trout of North America. The best way to photograph fish is in an aquarium designed to be taken into the field; however, we realize that this may not be feasible in some cases, so we also provide guidelines on how to take high-quality photos without an aquarium.

Techniques

The best technique for photo-documenting fish in the field is with an aquarium. The best aquariums are custom built. The aquarium should be wide enough that the fish can comfortably fit inside, but narrow enough that it is difficult for it to turn around. The length dimension of the aquarium need only be a few inches longer than the largest fish you anticipate photographing. Clear plexi-glass is the best choice for material as it is not as fragile or heavy as glass. There are also pre-made aquariums available for purchase, such as the [Photarium](#), (**Fig 2**) sold by the Wild Fish Conservancy, which comes in several sizes and is reasonably priced.

Fig 2. Photarium



You can even use something as simple as a plastic food container for an aquarium, adding grass, sand or pebbles to enhance the photograph (**Fig 3**). These containers work best for smaller fish.



Fig 3. Redband trout. Middle Fork John Day River, Oregon.
Photo by John McMillan.

With any of these methods, it is important to minimize the time the fish is out of the water. We suggest a goal of 20 seconds or less, so it's best to set up your aquarium ahead of time to reduce the stress on the fish.

Materials:

A few essential items to take with you in the field:

- GPS or device to accurately record your location
- Small, erasable white-board or a piece of paper to record relevant info on for the photo (see example in **Fig 4**)
- Erasable marker or writing device
- Ruler or measuring tape for scale
- Towel to wipe off aquarium
- Spray bottle with cleaner to clean off surface of aquarium prior to photographing
- Plywood box for transporting aquarium (optional)
- Camera, ideally one capable of adjusting exposure for bright sunlight conditions
- A notepad or journal to record any additional field notes
- Large clear plastic bag or collapsible bucket (to fill with water and quickly transport fish from stream to aquarium)

Process for photographing fish in an aquarium

When setting up to photograph a fish, the aquarium should be removed from its case and set on a level surface. Stones from the stream should be cleaned off and set in the bottom of the aquarium to resemble a streambed. A ruler should be placed along the bottom of

the aquarium so that the length of the fish can be determined from looking at the photograph. Water from the stream should be poured into the aquarium. It may take a few moments for the water to settle after pouring into the aquarium. This is fine, although it is important to not let the water heat up in the sun too long before photographing the fish. Once the aquarium is set up and ready to go, place the fish inside. If need be, add more cold water from the stream to the aquarium. Adding oxygen either by stirring the water or through the use of a portable aerator may also be done if the process is taking longer than expected. Always photograph the **left side** of the fish. Take the first frame as a wider angle shot showing the fish inside the aquarium along with the information written on the whiteboard. The information to record is:

- Date
- Watershed
- Specific Stream
- GPS location
- ID # for the fish (if you photograph multiple fish, each fish should have its own ID#)
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After taking a wide shot with the aquarium and the information on the whiteboard (**Fig 4**), next focus on zooming in and getting a good side profile of the fish (**Fig 5**). It is OK to take multiple pictures of the fish, adjusting camera functions, until you are satisfied with the picture. The useful thing of taking a wide angle shot first with the whiteboard is that it serves as a marker for every time you photograph a different fish. If you are traveling between different watersheds, **please clean and disinfect the aquarium so as not to transfer any aquatic invasive species**. When later entering the observation into i-Naturalist, please be sure and enter the tag ‘aquarium’ for all photos taken using an aquarium.



Fig 4. Photograph the fish with a record of the information first before taking close up pictures. Take the wide angle shot of the top every time you photograph a new fish. This will ensure that you are able to keep track of which fish corresponds to which location.



Fig 5. Zoom in to photograph the fish to get a good side profile.

Process for photographing fish without an aquarium

While we recommend bringing an aquarium to photograph fish, you may still be able to capture quality images without one (**Fig 6**). As with the aquarium, we advise taking a whiteboard with you and recording relevant information to include in a frame before photographing the fish. When photographing the fish, it is important to remember that it is the fish we are interested in for the photograph, not the fishermen (**Fig 7**).



Fig 6. This picture shows a good side profile of the fish for ID purposes. The picture could be improved by photographing the left side of the fish instead of the right, but other than that this photo does a good job of featuring the fish: the angler's hands do not obscure the profile of the fish and the fish is held underwater where it can breathe. If removing a fish from the water for a photograph, the fish should be lifted above the water, quickly photographed, and immediately submerged.



Fig 7. This photo shows identifying features of the angler, but not the fish, and is therefore an unsuitable observation.

What if you are not sure what kind of trout you have? It is perfectly fine to submit a photo of an unidentified trout. Fish taxonomists will examine the photo once it is posted and help identify the fish for you.

III. Using the i-Naturalist platform

Overview: i-Naturalist is an online citizen-science platform that allows everyday naturalists to upload observations of plants and animals. TU has created the TroutBlitz project within the i-Naturalist platform. To access Trout Blitz, first log on to the i-Naturalist site and create a user profile (<http://www.inaturalist.org>). Once you have registered, you may join the TroutBlitz project. To do so, you can click on the projects tab at the top of the screen and search for 'TroutBlitz,' or you may just click on the following link to the project itself: <http://www.inaturalist.org/projects/trout-unlimited-trout-blitz>. Once you are there, find the orange box at the top right of the screen that says 'Add Observations' (Fig 8).



Fig 8. TU TroutBlitz project interface on i-Naturalist

Directly above it you will find a link that says 'Join this project'. Click on it to join the project. Once you have joined, you may begin adding your observations by clicking on the orange box that says 'Add Observations'. Doing this will take you to a screen where you can enter observations. Adding an observation is pretty straightforward once you have reached this point, so we will only offer a few guidelines. Scientists rely on accurate data, so when in doubt about a particular item it is always better to **leave a data field blank rather than guess**. If you forgot to properly record the location, or did not measure the fish, it is best to

leave these items blank rather than try and estimate from memory. Please note that there is a field below the map labeled “Change geoprivacy.” If you select “obscured,” your location’s coordinates will be shown as a random point within 10KM of the true coordinates. In addition to data fields, you should also enter in tags so that your observation can be found and filtered with keywords. So, if you used an aquarium to photograph a hybrid cutbow trout from John Doe stream in Montana, you might enter (aquarium, hybrid, cutbow, John Doe Stream Montana, trout, etc.). When later entering the observation into i-Naturalist, please be sure and enter the tag ‘aquarium’ for all photos taken using an aquarium. All photos submitted to TroutBlitz are available for free non-commercial public use unless otherwise indicated. Photographer acknowledgements are appreciated.

IV. i-Naturalist Mobile apps

i-Naturalist is also available as a mobile app for both Android and iOS devices. You can download the app for your device here:

iPhone: <http://itunes.apple.com/us/app/inaturalist/id421397028?mt=8>

Android: <https://market.android.com/details?id=org.inaturalist.android>

Once you’ve got the app installed, sign into your iNaturalist account, push the ‘Projects’ button on the bottom ribbon, and it will display the TroutBlitz project. From there you’ll see an array of ‘Add Observation’ choices. Please note the app doesn’t let you sign up for projects you’re not already part of, so you’ll need to log in to iNaturalist via the website first, and then join TroutBlitz there.

V. Quick reminders

Do:

- Make sure you are in full compliance with all state and federal laws when photographing fish
- Record all relevant information while in the field
- Take proper care to minimize handling of the photographed fish and minimize the time the fish is out of the water
- Photograph left side of fish
- Accurately and completely fill out relevant data fields in i-Naturalist
- Add appropriate data tags (e.g., aquarium, native, etc.)

VI. Conclusion

As part of the TroutBlitz, TU will recognize and reward those citizen scientists who document the most species and subspecies of native trout in their home range. In addition, providing high quality photos and data could result in your inclusion and acknowledgement in scientific and popular publications, such as a photo-book of native trout of North America.

We would like to thank the following people for use of their photos in this manual.

Cover Photos: David Bowie, John Zablocki, Dan Dauwalter, Joe McGurrin, John McMillan

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