

**From:** [Jacqualine Grant](#)  
**To:** [Barrett, Justin S](#)  
**Subject:** [EXTERNAL] Re: Tiehm's herbivory report  
**Date:** Friday, December 4, 2020 1:04:55 PM  
**Attachments:** [Outlook-11f2mgoz.png](#)

---

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Thanks Justin! I checked all the links and everything seems in order.

Stay well, and let me know if I can help answer any questions that may come in.

Jackie

On Fri, Dec 4, 2020 at 1:58 PM Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)> wrote:

Good afternoon,

I wanted to bring this report and statement to your attention. These have been posted on our Reno Fish and Wildlife website but there may be some problems with the links so I wanted to make sure the information was appropriately disseminated.

Thank you!

Environmental DNA analysis supports conclusion that damage to rare Tiehm's buckwheat plants was caused by herbivory

*December 4, 2020* - An environmental DNA (eDNA) analysis conducted on damaged Tiehm's buckwheat roots, nearby soils and rodent scat strongly links small mammal herbivory to the widespread damage and loss of Tiehm's buckwheat reported in September 2020. Tiehm's buckwheat is a rare plant found only near Rhyolite Ridge in Esmeralda County, Nevada.

To determine the cause of the damage, the U.S. Fish and Wildlife Service and the Bureau of Land Management contracted a researcher affiliated with Southern Utah University to conduct an independent review and analyze materials collected from the area for eDNA. The analysis found squirrel, deer and a small trace of human DNA on root samples and soils near damaged or dead plants.

Buckwheat DNA was detected in the scat, and the genetic signatures were

a strong match (96.9-99.8 percent) to ground squirrels. This coupled with known white-tailed antelope ground squirrel populations at Rhyolite Ridge, burrowing at damaged plants, and rodent bite marks on plant roots strongly supports that ground squirrels were responsible for the damage. Current drought conditions likely motivated the rodents to seek moisture by consuming the shallow taproots of mature buckwheat plants. This is the first time herbivory was documented on Tiehm's buckwheat and its significance depends not only on its frequency and intensity, but whether damaged plants can recover and survive.

## Home | Reno Fish & Wildlife Office - FWS

Welcome to the Reno Fish and Wildlife Office! The Reno Office protects and conserves endangered fish, wildlife, plants, and their habitats in Northern Nevada, the Eastern Sierra and Tahoe Basin for the continuing benefit of the American people.

[www.fws.gov](http://www.fws.gov)

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



--

\*\*\*\*\*

### **Dr. Jacqueline Grant**

Associate Professor of Biology  
Museum Curator (SCA 105A)

[Garth and Jerri Frehner Museum of Natural History](#)

Southern Utah University

Cedar City, UT 84720

USA

<http://suu.edu/cose/museum/>

<http://suu.edu/faculty/jacquelinegrant/>

ph: 435-865-8549

email: [jacquelinegrant@suu.edu](mailto:jacquelinegrant@suu.edu)

**From:** [Grady, Benjamin](#)  
**To:** [Barrett, Justin S](#)  
**Subject:** [EXTERNAL] Re: Tiehm's herbivory report  
**Date:** Monday, December 7, 2020 6:56:20 AM  
**Attachments:** [Outlook-11f2mgoz.png](#)

---

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Justin,

Thank you for sharing this report with me. I am happy to hear that this matter is being thoroughly investigated.

Ben

On Fri, Dec 4, 2020 at 2:58 PM Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)> wrote:

Good afternoon,

I wanted to bring this report and statement to your attention. These have been posted on our Reno Fish and Wildlife website but there may be some problems with the links so I wanted to make sure the information was appropriately disseminated.

Thank you!

Environmental DNA analysis supports conclusion that damage to rare Tiehm's buckwheat plants was caused by herbivory

*December 4, 2020* - An environmental DNA (eDNA) analysis conducted on damaged Tiehm's buckwheat roots, nearby soils and rodent scat strongly links small mammal herbivory to the widespread damage and loss of Tiehm's buckwheat reported in September 2020. Tiehm's buckwheat is a rare plant found only near Rhyolite Ridge in Esmeralda County, Nevada.

To determine the cause of the damage, the U.S. Fish and Wildlife Service and the Bureau of Land Management contracted a researcher affiliated with Southern Utah University to conduct an independent review and analyze materials collected from the area for eDNA. The analysis found squirrel, deer and a small trace of human DNA on root samples and soils near damaged or dead plants.

Buckwheat DNA was detected in the scat, and the genetic signatures were a strong match (96.9-99.8 percent) to ground squirrels. This coupled with known white-tailed antelope ground squirrel populations at Rhyolite Ridge, burrowing at damaged plants, and rodent bite marks on plant roots strongly supports that ground squirrels were responsible for the damage. Current drought conditions likely motivated the rodents to seek moisture by consuming the shallow taproots of mature buckwheat plants. This is the first time herbivory was documented on Tiehm's buckwheat and its significance depends not only on its frequency and intensity, but whether damaged plants can recover and survive.

## Home | Reno Fish & Wildlife Office - FWS

Welcome to the Reno Fish and Wildlife Office! The Reno Office protects and conserves endangered fish, wildlife, plants, and their habitats in Northern Nevada, the Eastern Sierra and Tahoe Basin for the continuing benefit of the American people.

[www.fws.gov](http://www.fws.gov)

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



--

**Benjamin Grady, PhD**  
202 Farr Hall  
Assistant Professor of Biology  
Ripon College

300 W. Seward St.  
Ripon, WI 54971  
(p) 920-748-8113



Visit us at [ripon.edu](http://ripon.edu)

**From:** [Barrett, Justin S](#)  
**To:** [Rebecca Sawyer](#)  
**Subject:** Re: [EXTERNAL] RE: accuracy of statement  
**Date:** Monday, November 16, 2020 9:59:31 AM  
**Attachments:** [image001.png](#)  
[Outlook-fooxd4dv.png](#)

---

Thank you very much!

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



---

**From:** Rebecca Sawyer <[rsawyer@ioneer.com](mailto:rsawyer@ioneer.com)>  
**Sent:** Monday, November 16, 2020 9:47 AM  
**To:** Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)>  
**Subject:** [EXTERNAL] RE: accuracy of statement

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Justin

UNR is under a 5 year contract with loneer to monitor the permanent transects established last year through the known populations. So, yes, this statement is correct regarding the project proponent.

Rebecca

---

**From:** Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)>  
**Sent:** Monday, November 16, 2020 8:52 AM  
**To:** Rebecca Sawyer <[rsawyer@ioneer.com](mailto:rsawyer@ioneer.com)>  
**Subject:** accuracy of statement

Good morning Rebecca,

We are working through a response to one of the legal challenges and I currently have the following statement in there. I wanted to check with you to make sure it was accurate before we finalize and submit (the underlining added for your attention here and will not be in the final version).

1. While the recent plant loss is of concern to all, initial observations and analyses indicate that it was the result of natural predation by rodents. The population continues to be monitored by the project proponent and agency staff to evaluate whether or not this impact re-occurs.

Thank you!

Justin

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>





**From:** [Barrett, Justin S](#)  
**To:** [Rebecca Sawyer](#)  
**Subject:** Re: [EXTERNAL] RE: Tiehm's herbivory report  
**Date:** Monday, December 7, 2020 6:17:03 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)

---

Hello Rebecca!

No worries. I don't think we had specific questions but were simply looking to include the results into the species reports.

Thank you very much!

Take care!

Justin

---

**From:** Rebecca Sawyer <[rsawyer@ioneer.com](mailto:rsawyer@ioneer.com)>  
**Sent:** Monday, December 7, 2020 11:27 AM  
**To:** Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)>  
**Subject:** [EXTERNAL] RE: Tiehm's herbivory report

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Justin

My apologies for the delay in getting back to you. Ioneer will get you the UNR report this week. If there are any specific questions on the report please contact me.

Kind regards



Rebecca A. Sawyer  
Environmental and Community Relations Director

**E:** [rsawyer@ioneer.com](mailto:rsawyer@ioneer.com) **C:** +1 520.368.1772  
**9460 Double R Boulevard, Suite 200 Reno, Nevada 89521 USA**  
**W:** [ioneer.com](http://ioneer.com)

---

**From:** Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)>

**Sent:** Friday, December 4, 2020 12:58 PM

**Subject:** Tiehm's herbivory report

Good afternoon,

I wanted to bring this report and statement to your attention. These have been posted on our Reno Fish and Wildlife website but there may be some problems with the links so I wanted to make sure the information was appropriately disseminated.

Thank you!

Environmental DNA analysis supports conclusion that damage to rare Tiehm's buckwheat plants was caused by herbivory

*December 4, 2020* - An environmental DNA (eDNA) analysis conducted on damaged Tiehm's buckwheat roots, nearby soils and rodent scat strongly links small mammal herbivory to the widespread damage and loss of Tiehm's buckwheat reported in September 2020. Tiehm's buckwheat is a rare plant found only near Rhyolite Ridge in Esmeralda County, Nevada. To determine the cause of the damage, the U.S. Fish and Wildlife Service and the Bureau of Land Management contracted a researcher affiliated with Southern Utah University to conduct an independent review and analyze materials collected from the area for eDNA. The analysis found squirrel, deer and a small trace of human DNA on root samples and soils near damaged or dead plants.

Buckwheat DNA was detected in the scat, and the genetic signatures were a strong match (96.9-99.8 percent) to ground squirrels. This coupled with known white-tailed antelope ground squirrel populations at Rhyolite Ridge, burrowing at damaged plants, and rodent bite marks on plant roots strongly supports that ground squirrels were responsible for the damage. Current drought conditions likely motivated the rodents to seek moisture by consuming the shallow taproots of mature buckwheat plants. This is the first time herbivory was documented on Tiehm's buckwheat and its significance depends not only on its frequency and intensity, but whether damaged plants can recover and survive.

[Home | Reno Fish & Wildlife Office - FWS](#)

Welcome to the Reno Fish and Wildlife Office! The Reno Office protects and conserves endangered fish, wildlife, plants, and their habitats in Northern Nevada, the Eastern Sierra and Tahoe Basin for the continuing benefit of the American people.

[www.fws.gov](http://www.fws.gov)

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



**From:** [Barrett, Justin S](#)  
**To:** [Sharkey, Anne-Marie](#)  
**Subject:** Re: Buckwheat - Case Closure  
**Date:** Thursday, November 12, 2020 5:17:09 PM  
**Attachments:** [Outlook-13bkaqsa.png](#)

---

Hello Anne-Marie,

Thanks for reaching out and I really appreciate your willingness to share your report when it's finished. Yes, we did contract with a researcher from Southern Utah University for a eDNA analysis of root material and of small samples of scat that we found associated with the burrows that dug near plants. The report just came in today. We might have a few relatively minor suggested modifications but, for the most part it's completed. I will send that right over. I haven't read it yet but what I understand, rodent DNA was found on the roots, it was rodent scat found in the burrows near the plants that were damaged and the rodent scat had buckwheat DNA in it.

Feel free to reach out if you have any questions.

Thanks again!

Justin

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



---

**From:** Sharkey, Anne-Marie <asharkey@blm.gov>  
**Sent:** Thursday, November 12, 2020 4:15 PM  
**To:** Barrett, Justin S <justin\_barrett@fws.gov>  
**Subject:** Buckwheat - Case Closure

Hi Justin,

I am the agent for BLM that did the investigative case concerning Rhyolite Ridge. I have two things outstanding that I need to follow-up on, one is getting the last batch of photo's downloaded and the second is DNA results.

I was informed that the FWS was going to do DNA testing on the roots of the Buckwheat to see if there was any DNA present. Did this happen and if so do we have the results of this testing?

Thanks in advance.  
AMS

Anne-Marie Sharkey  
Assistant Special Agent in Charge  
Region 3 - Office of Law Enforcement and Security - Nevada  
Bureau of Land Management  
Office (775) 861-6707  
Cell (775) 741-6061

**From:** [Barrett, Justin S](#)  
**To:** [Gilkeson, Joanna C](#)  
**Subject:** Re: Tiehm's eDNA News Release for Review  
**Date:** Wednesday, November 18, 2020 4:04:24 PM  
**Attachments:** [Outlook-cfcmyfw5.png](#)  
[Outlook-xqdwsy0z.png](#)  
[Outlook-1kcyu0uw.png](#)

---

All great answers, thank you!

Yes, I think sharing the report can and should wait until the NR.

I will share my version of the weekly update with you and Jessica now.

Have a nice evening!

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



---

**From:** Gilkeson, Joanna C <[joanna\\_gilkeson@fws.gov](mailto:joanna_gilkeson@fws.gov)>  
**Sent:** Wednesday, November 18, 2020 3:31 PM  
**To:** Barrett, Justin S <[justin\\_barrett@fws.gov](mailto:justin_barrett@fws.gov)>  
**Subject:** Re: Tiehm's eDNA News Release for Review

Hey Justin,

I hope these responses answer your questions, let me know if you want to further discuss.

I do have a question you can help with! Marc suggested adding a statement on next steps and I agree with that. I was planning to add a sentence along the lines of us working on the 12-month finding for Tiehm's buckwheat and that a decision was due around September 2021. Is there anything else I should add? Should I include the Sept 2021 date?

Where do we go from here?

[A draft version of the press release is with Martha Maciel at the RO, who is coordinating with her counterpart at the BLM NV state office \(Chris Bush\). We're hoping to get comments back](#)

from BLM and then Martha is going to run it by Paul, and then through SOL and HQ.

Is the BLM officially on board now with this idea?

BLM isn't saying no, so it seems they're on board. They're reviewing the draft I sent them and they're going to let us know if they intend to mention the LE investigation or if they'd like to stick to the eDNA analysis. Neither Martha or I have recieved comments yet.

Have they contributed to the language or are those place-holders for them?

BLM contributed the language about the LE investigations. They had it approved through their channels and they haven't given us a clear answer on whether or not they wanted to mention the LE investigation in the press release, so I left their language in there. We also need to add a statement about next steps in the press release.

Is there anything else I can do to help?

As for timing, I'm \*hoping\* the news release will be ready to go out after Thanksgiving. Can the disclosure of the report wait until then?

Joanna Gilkeson (she/her)  
Public Affairs Specialist  
Reno, Nevada  
U.S. Fish and Wildlife Service  
Office: 775/861-6336  
Cell: 760/473-3954  
<https://www.fws.gov/reno/>

---

**From:** Barrett, Justin S <justin\_barrett@fws.gov>  
**Sent:** Wednesday, November 18, 2020 3:01 PM  
**To:** Gilkeson, Joanna C <joanna\_gilkeson@fws.gov>  
**Subject:** Re: Tiehm's eDNA News Release for Review

Hi Joanna! We just got off the phone for the Tiehm's SSA check-in call and Adele was asking about this joint press release. She would like to review it when we are close to a finish product.

Where do we go from here?

Is the BLM officially on board now with this idea?

Have they contributed to the language or are those place-holders for them?

Is there anything else I can do to help?

We would like to share the final research report with CBD and are thinking that it could go out the same time as the press release. The researcher is wrapping up the final and I'd guess we will get it within the next week, hopefully.

Thanks for all your help with this!

Justin

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



---

**From:** Gilkeson, Joanna C <joanna\_gilkeson@fws.gov>  
**Sent:** Tuesday, November 17, 2020 10:28 AM  
**To:** Barrett, Justin S <justin\_barrett@fws.gov>; Jackson, Marc A <marc\_jackson@fws.gov>  
**Cc:** Kulpa, Sarah <sarah\_kulpa@fws.gov>; Heston, Sophia M <sophia\_heston@fws.gov>  
**Subject:** Re: Tiehm's eDNA News Release for Review

I'll wait for Marc to look at this version with your comments before I incorporate and reconcile. BLM is aware they will be getting something from us soon!

Joanna Gilkeson (she/her)  
Public Affairs Specialist  
Reno, Nevada  
U.S. Fish and Wildlife Service  
Office: 775/861-6336  
Cell: 760/473-3954  
<https://www.fws.gov/reno/>

---

**From:** Barrett, Justin S <justin\_barrett@fws.gov>  
**Sent:** Tuesday, November 17, 2020 10:18 AM  
**To:** Gilkeson, Joanna C <joanna\_gilkeson@fws.gov>; Jackson, Marc A <marc\_jackson@fws.gov>  
**Cc:** Kulpa, Sarah <sarah\_kulpa@fws.gov>; Heston, Sophia M <sophia\_heston@fws.gov>  
**Subject:** Re: Tiehm's eDNA News Release for Review

Hello Joanna,

I've a few modifications and attached.

Thank you very much for putting this all together!

Justin



Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



---

**From:** Gilkeson, Joanna C <joanna\_gilkeson@fws.gov>  
**Sent:** Tuesday, November 17, 2020 9:06 AM  
**To:** Jackson, Marc A <marc\_jackson@fws.gov>; Barrett, Justin S <justin\_barrett@fws.gov>  
**Cc:** Kulpa, Sarah <sarah\_kulpa@fws.gov>; Heston, Sophia M <sophia\_heston@fws.gov>  
**Subject:** Re: Tiehm's eDNA News Release for Review

If you haven't already looked the press release, here's an updated version with input from the researcher. Please use this copy when adding your edits and comments!

Thanks,  
Joanna

Joanna Gilkeson (she/her)  
Public Affairs Specialist  
Reno, Nevada  
U.S. Fish and Wildlife Service  
Office: 775/861-6336  
Cell: 760/473-3954  
<https://www.fws.gov/reno/>

---

**From:** Gilkeson, Joanna C <joanna\_gilkeson@fws.gov>  
**Sent:** Monday, November 16, 2020 6:23 PM  
**To:** Jackson, Marc A <marc\_jackson@fws.gov>; Barrett, Justin S <justin\_barrett@fws.gov>  
**Cc:** Kulpa, Sarah <sarah\_kulpa@fws.gov>; Heston, Sophia M <sophia\_heston@fws.gov>  
**Subject:** Tiehm's eDNA News Release for Review

Hello!

Please see the attached news release and provide feedback at your earliest convenience.

A couple items of note:

- It has been reviewed by Sarah and Sophie.
- I've left the BLM paragraphs as they sent them to us, and will defer to them to change or remove. Once our office is good with it, we'll send to the RO and the BLM to review/edit through their channels. The RO will coordinate regional, SOL and HQ review!
- Sarah is going to reach out to the researcher and ask her how to mention her affiliation with the University since she is on sabbatical. That sentence is subject to change.

Thank you! And let me know if you have any questions/concerns.

Best,  
Joanna

Joanna Gilkeson (she/her)  
Public Affairs Specialist  
Reno, Nevada  
U.S. Fish and Wildlife Service  
Office: 775/861-6336  
Cell: 760/473-3954  
<https://www.fws.gov/reno/>

**From:** [Crosby, Brandon J](#)  
**To:** [Barrett, Justin S](#)  
**Subject:** Re: Tiehm's herbivory report  
**Date:** Friday, December 4, 2020 12:53:39 PM  
**Attachments:** [Outlook-c03gmuru.png](#)

---

Thanks for the update. It is greatly appreciated.

---

**From:** Barrett, Justin S <justin\_barrett@fws.gov>  
**Sent:** Friday, December 4, 2020 12:50 PM  
**To:** Raby, Jon K <jraby@blm.gov>; Furtado, Douglas W <dfurtado@blm.gov>; Wickham, Perry B <pwickham@blm.gov>; Crosby, Brandon J <bcrosby@blm.gov>; Todd, Marci L <m1todd@blm.gov>; Amme, Brian C <bamme@blm.gov>; Ralston, Jill A <jralston@blm.gov>; Bush, Christopher I <cbush@blm.gov>; infoweb@blm.gov <infoweb@blm.gov>  
**Subject:** Tiehm's herbivory report

Good afternoon,

I wanted to bring this report and statement to your attention. These have been posted on our Reno Fish and Wildlife website [Home | Reno Fish & Wildlife Office \(fws.gov\)](#) but there may be some problems with the links so I wanted to make sure the information was appropriately disseminated.

Thank you!

Environmental DNA analysis supports conclusion that damage to rare Tiehm's buckwheat plants was caused by herbivory

*December 4, 2020* - An environmental DNA (eDNA) analysis conducted on damaged Tiehm's buckwheat roots, nearby soils and rodent scat strongly links small mammal herbivory to the widespread damage and loss of Tiehm's buckwheat reported in September 2020. Tiehm's buckwheat is a rare plant found only near Rhyolite Ridge in Esmeralda County, Nevada. To determine the cause of the damage, the U.S. Fish and Wildlife Service and the Bureau of Land Management contracted a researcher affiliated with Southern Utah University to conduct an independent review and analyze materials collected from the area for eDNA. The analysis found squirrel, deer and a small trace of human DNA on root samples and soils near damaged or dead plants.

Buckwheat DNA was detected in the scat, and the genetic signatures were a strong match (96.9-99.8 percent) to ground squirrels. This coupled with known white-tailed antelope ground squirrel populations at Rhyolite Ridge, burrowing at damaged plants, and rodent bite marks on plant roots strongly supports that ground squirrels were responsible for the damage. Current drought conditions likely motivated the rodents to seek moisture by consuming the shallow taproots of mature buckwheat plants. This is the first time herbivory was documented on Tiehm's buckwheat and its significance depends not only on its frequency and intensity, but whether damaged plants can recover and survive.

Justin Barrett

Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



**From:** [Barrett, Justin S](#)  
**Bcc:** [esmboc@esmeraldacountynv.org](#); [dstapleton@nvaco.org](#); [Colby Prout](#); [clerktreasurer@esmeraldacountynv.org](#); [pdonnelly@biologicaldiversity.org](#); [center@biologicaldiversity.org](#); [jmaschinski@saveplants.org](#); [gradyb@ripon.edu](#); [Shaaron@nevadawilderness.org](#); [info@nevadalandtrust.org](#); [Tyre@nevadaming.org](#); [president@nvnp.org](#); [brian.beffort@sierraclub.org](#); [Nevada@tnc.org](#); [emolvar@westernwatersheds.org](#); [tjones@wildearthguardians.org](#); [lmcade@calbg.org](#); [ileneanderson@biologicaldiversity.org](#); [paul@westernwatersheds.org](#); [lcunningham@westernwatersheds.org](#); [nfraga@calbg.org](#); [Kris Kuyper](#); [Rebecca Sawyer](#); [jchrist@forestry.nv.gov](#); [rshane@forestry.nv.gov](#); [Janel](#); [James](#); [Elizabeth A Leger](#); [atiehm@unr.edu](#); [ohvinfo@ohv.nv.gov](#); [Kacey KC](#); [cdonohue@lands.nv.gov](#); [Kristin Szabo](#); [bcrowell@dcnr.nv.gov](#); [thompsonj@unr.edu](#); [Jacqueline Grant](#); [glovato@ndep.org](#); [smontooth@nig.nv.gov](#); [Clifford Banuelos](#); [Barrett, Justin S](#)  
**Subject:** Tiehm's herbivory report  
**Date:** Friday, December 4, 2020 12:57:45 PM  
**Attachments:** [FINAL Tiehms eDNA report 20201201.pdf](#)  
[Outlook-11f2mqoz.png](#)

---

Good afternoon,

I wanted to bring this report and statement to your attention. These have been posted on our Reno Fish and Wildlife website but there may be some problems with the links so I wanted to make sure the information was appropriately disseminated.

Thank you!

Environmental DNA analysis supports conclusion that damage to rare Tiehm's buckwheat plants was caused by herbivory

*December 4, 2020* - An environmental DNA (eDNA) analysis conducted on damaged Tiehm's buckwheat roots, nearby soils and rodent scat strongly links small mammal herbivory to the widespread damage and loss of Tiehm's buckwheat reported in September 2020. Tiehm's buckwheat is a rare plant found only near Rhyolite Ridge in Esmeralda County, Nevada. To determine the cause of the damage, the U.S. Fish and Wildlife Service and the Bureau of Land Management contracted a researcher affiliated with Southern Utah University to conduct an independent review and analyze materials collected from the area for eDNA. The analysis found squirrel, deer and a small trace of human DNA on root samples and soils near damaged or dead plants.

Buckwheat DNA was detected in the scat, and the genetic signatures were a strong match (96.9-99.8 percent) to ground squirrels. This coupled with known white-tailed antelope ground squirrel populations at Rhyolite Ridge, burrowing at damaged plants, and rodent bite marks on plant roots strongly supports that ground squirrels were responsible for the damage. Current drought conditions likely motivated the rodents to seek moisture by consuming the shallow taproots of mature buckwheat plants. This is the first time herbivory was documented on Tiehm's buckwheat and its significance depends not only on its frequency and intensity, but whether damaged plants can recover and survive.

## Home | Reno Fish & Wildlife Office - FWS

Welcome to the Reno Fish and Wildlife Office! The Reno Office protects and conserves endangered fish, wildlife, plants, and their habitats in Northern Nevada, the Eastern Sierra and Tahoe Basin for the continuing benefit of the American people.

[www.fws.gov](http://www.fws.gov)

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>



**From:** [Barrett, Justin S](#)  
**Bcc:** [Serrell Smokey, Chairman](#); [Rodney Mike, Chairperson](#); [natural.resources@duckwatertribe.org](mailto:natural.resources@duckwatertribe.org); [Ronald Snooks, Chairman](#); [environment@yombatribe.org](mailto:environment@yombatribe.org); [george@timbisha.com](mailto:george@timbisha.com); [environmental@timbisha.com](mailto:environmental@timbisha.com)  
**Subject:** Tiehm's herbivory report  
**Date:** Friday, December 4, 2020 1:00:17 PM  
**Attachments:** [FINAL Tiehms eDNA report 20201201.pdf](#)  
[Outlook-l1f2mgoz.png](#)

---

Good afternoon,

I wanted to bring this report and statement to your attention. These have been posted on our Reno Fish and Wildlife website but there may be some problems with the links so I wanted to make sure the information was appropriately disseminated.

Thank you!

Environmental DNA analysis supports conclusion that damage to rare Tiehm's buckwheat plants was caused by herbivory

*December 4, 2020* - An environmental DNA (eDNA) analysis conducted on damaged Tiehm's buckwheat roots, nearby soils and rodent scat strongly links small mammal herbivory to the widespread damage and loss of Tiehm's buckwheat reported in September 2020. Tiehm's buckwheat is a rare plant found only near Rhyolite Ridge in Esmeralda County, Nevada.

To determine the cause of the damage, the U.S. Fish and Wildlife Service and the Bureau of Land Management contracted a researcher affiliated with Southern Utah University to conduct an independent review and analyze materials collected from the area for eDNA. The analysis found squirrel, deer and a small trace of human DNA on root samples and soils near damaged or dead plants.

Buckwheat DNA was detected in the scat, and the genetic signatures were a strong match (96.9-99.8 percent) to ground squirrels. This coupled with known white-tailed antelope ground squirrel populations at Rhyolite Ridge, burrowing at damaged plants, and rodent bite marks on plant roots strongly supports that ground squirrels were responsible for the damage. Current drought conditions likely motivated the rodents to seek moisture by consuming the shallow taproots of mature buckwheat plants. This is the first time herbivory was documented on Tiehm's buckwheat and its significance depends not only on its frequency and intensity, but whether damaged plants can recover and survive.

Welcome to the Reno Fish and Wildlife Office! The Reno Office protects and conserves endangered fish, wildlife, plants, and their habitats in Northern Nevada, the Eastern Sierra and Tahoe Basin for the continuing benefit of the American people.

[www.fws.gov](http://www.fws.gov)

Justin Barrett  
Assistant Field Supervisor  
U.S. Fish and Wildlife Service  
Reno Field Office  
Phone: 775-861-6338

<https://www.fws.gov/reno/>

