

Bibkey: 2173212



Rock Smith
08/27/02 10:54 AM MDT

To: Jerry Banta/CANY/NPS@NPS, Jim Webster/ARCH/NPS@NPS, Paul Cowan/CANY/NPS@NPS, Charlie Schelz/CANY/NPS@NPS, Bruce Rodgers/CANY/NPS@NPS

cc:
Subject: Re: Canyoneering in Desert Potholes

I wasn't sure if Tim sent this to any of you. Good info.

Rock Smith
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----- Forwarded by Rock Smith/ARCH/NPS on 08/27/2002 10:52 AM -----



"Tim B Graham"
<tim_graham@usgs.gov
v>

To: Rock_Smith@nps.gov
cc:
Subject: Re: Canyoneering in Desert Potholes

08/27/2002 09:25 AM
CST

Hi Rock

I wrote most of this last week, then got called away, and forgot I hadn't sent it. Again, my apologies for not getting this to you sooner. I hope your meeting yesterday was productive. I was actually at Dead Horse Point filming for their new pothole display.

I'm sorry I haven't answered before, but I have a group of Earthwatch volunteers here working on the Salt Creek study, and have been trying to squeeze in a couple of other meetings and meet some deadlines along with that. I've talked with Charlie Schelz about this, and read all the emails you, Charlie, and Paul Cowan have sent, which have included a number of comments by Matt Moore and Bill Love. I don't think this is really something that people should be getting worked up over.

Plunge pools in washes and canyons are subjected to much more destructive forces than people walking through them. The organisms that live in these pools have a variety of strategies to deal with these disturbances, but primarily, plunge pool communities re-assemble from scratch almost every time, that is they escape the disturbance. If there is already water in a pool and a flash flood roars through, almost all the invertebrates and amphibians know enough to get out of the way. I've seen well over 100 water striders in a tinaja (plunge pool) move up onto the rock, along an overhang during a period of intense thunderstorm activity in the area. The next day, even though flood waters had literally torn through the drainage (I slept under another overhang near there), and large logs had been carried down into the pools, the water striders were back on the surface of the opaque, pink water. The insects, if adult, can fly away if the disturbance is great enough, if they are still immature, they are stuck in the pool. I don't think a few people walking through a pool at a time is great enough to make them need to leave. I don't think aquatic

invertebrates are affected directly very much by a small disturbance like walking through a pool.

To my knowledge, toads do not use the pool sediments to estivate (summer dry) or hibernate (winter). Most pools do not have sediments deep enough that toads can avoid being dessicated or frozen. In addition, it takes a little time for them to respond to conditions, and they could be washed out before becoming completely conscious if they stayed in these sediments. Pool sediments are typically finer than surrounding sand and thus lose water more quickly and to deeper depths so the toads would dry out. All the day burrows I've seen, and I'm sure the long term dormancy burrows are similar, have been in upland areas, so I don't think there is cause to worry about hiking in dry plunge pool basins when they are dry. There are perhaps eggs of some invertebrates in these sediments, but again, it is a very risky place to leave dormant propagules--we've all seen that the water in a flood is full of stuff, and that would include any eggs that are laid in or on the sediment of a plunge pool. This is actually the main reason I make a distinction between pools in drainages (tinajas) and pools outside drainages (potholes)--the communities are different because species that survive the dry period in situ (in the sediment) are rarely found in communities in tinajas because they do not have a predictably safe place to pass the dry period. For these reasons, I do not think there is much damage inflicted in wash bottoms when people walk in them, whether wet or dry.

As for interfering with wildlife drinking, again I don't think there is cause for concern. Deer, coyotes, and other wildlife continue to drink from washes after a flash flood when the water is full of sediment and debris, I doubt very much that stirring up the water in a pool will deter a thirsty animal from drinking. Yesterday at Dead Horse, we were filming around a single pothole that still had water, and while I was talking, 3 deer walked around behind me and eventually came in to drink (I don't actually know if they took a drink, I had to face the camera and talk about the value of potholes to wildlife), and they were startled by a black case for some of the equipment that was near the pool, but they were within 15 m of 4 humans. So I don't think that any lingering smell will prevent these animals from accessing water after the humans have passed by.

The standard Colorado Plateau "leave no trace" mantra is to hike in washes and on bedrock. I think it is a good approach, I don't know of any other way to travel across this landscape. Let me know if I can provide any more information. Take care.

Tim

Rock_Smith@nps.gov

08/20/02 10:56

To: tim_graham@usgs.gov

cc:

Subject: Canyoneering in Desert

Potholes

AM

Canyoneering in Plunge Pools.

ARCHES NATIONAL PARK

Bill Love:

- Main concern is Social Trails yet he talks almost exclusively about potholes.(1-1)
- Carrying Capacity Plan as required by Section 8.2.1 of the 2001 Management Policy. (1-2)
- "Extensive wading in desert potholes" (2-1) Probably less than 2 % of the trips.
- "Plunge pools and potholes are still the only source of water in Arches for most of the year and are vital for the survival of the park wildlife" (3-1). Not so, there are numerous perennial springs and seeps, hanging gardens (Clover Canyon, Fin Canyon, Sevenmile Canyon, Courthouse Wash, Salt Wash area, Freshwater Spring area), and flowing creeks (Courthouse Wash, Freshwater spring and Creek, Salt Wash, Lost Spring, Willow Spring, Salt Valley, Colorado River). In fact, a number of rodents get their water from the food they eat, as do most reptiles. So what we are talking about are the larger mammals and they usually stay near perennial recharged water.
- Up to 160 people waded this pool (Lomatium Canyon) (3-2). The pool at the bottom, not skull arch, can be avoided and walked around. Upper pool is in a secluded and somewhat inaccessible place for most wildlife. Nevertheless, 160 people is a clear exaggeration.

POOLS in Arches

- Lomatium:**
- 2 pools – one just after first rope ladder (have to wald through it,
 - second just after second repel which can be walked around
- Dragonfly:**
- 4 pools up top, can be avoided, definitely plunge pools
 - 1 pool under second repel, you can avoid water.

Plunge Pool Facts:

- Plunge pools are very ephemeral, highly impacted areas
- Communities are short-lived, mostly chironomids, beetles, fly larva
- Amphibians are more likely in areas where water lasts longer
- Very little riparian vegetation
- Most hibernating toads and eggs will be destroyed by floods
- Many plunge pools are inaccessible to most wildlife, except birds and insects.
- Most of the energy passing through them comes from detritus. Some primary production from alga.