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HOT SPRINGS CANYON FISH BARRIER COMPLETED

by Diane Laush, Wildlife Biologist, Bureau of Reclamation

The Bureau of Reclamation (Reclamation) completed construction of the Hot Springs Canyon fish barrier on December 13, 2010. The barrier is located on Hot Springs Canyon approximately 5.6 stream miles upstream from the San Pedro River confluence. Fish barrier construction was initially mandated by two U.S. Fish and Wildlife Service (FWS) biological opinions (BO) (1994 and 2001) on the impacts of Central Arizona Project (CAP) water transfers to the Gila River Basin. These BO's were incorporated into and superseded by a third BO issued on May 15, 2008.

The CAP canal, declared substantially complete in 1993, begins near Lake Havasu and continues through Phoenix and Tucson terminating on the San Xavier District of the Tohono O'odham Indian Reservation south of Tucson. The CAP canal provides direct (and indirect) connections between the waters of the Colorado River Basin and waters of the Gila River Basin. This pathway provides an opportunity for nonnative aquatic species to access waters of the Gila River basin and potentially cause harm to populations of native fish.

Native fish populations in the Gila River basin have deteriorated significantly over the past century and a half to the point that 11 of 21 native fish species are now listed under the Endangered Species Act. In addition to the listed species, one species has gone extinct (Santa Cruz [Monkey Springs] pupfish [*Cyprinodon arcuatus*]) and two other species have been placed on the candidate list (roundtail chub [*Gila robusta*] and headwater chub [*Gila nigra*]). The remaining species have also declined, and five of them have been recommended for Federal listing (Desert Fishes Team 2004). These include the longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), Sonora sucker (*Catostomus insignis*), desert sucker (*Catostomus clarki*), and flannelmouth sucker (*Catostomus latipinnis*).

The purpose of the fish barrier is to prevent or hinder upstream movements of non-native fish and other aquatic organisms into high-value native fish and amphibian habitat. To date, fish barriers have been completed on Aravaipa Creek (2001), Cottonwood Creek (2004), Fossil Creek (2004), Bonita

Creek (2008) and most recently Hot Springs Canyon. Construction started in October 2011 on a fish barrier located on the Blue River approximately 0.5 mile upstream of the San Francisco River confluence. Four additional fish barriers are required to be constructed, but alternative locations are still being considered.

Aquatic habitats impacts in the Gila River Basin include construction of dams for water storage, hydroelectric production, and flood control; dewatering of streams due to surface diversion and ground-water pumping for municipal, industrial, and agricultural purposes; watershed disturbances arising from domestic livestock, overharvesting of timber, mining of commercially valuable ores; and habitat loss due to expansion of human populations (Dobbins 1981). In addition, introduction

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PRESIDENT'S MESSAGE

Greetings. Things have been extra busy for many of us. In this President's Message I want to talk about what ARC has been doing in the last few months. I will start with our fall meeting. We had our 2011 fall campout in October at The Nature Conservancy's (TNC) Shield Ranch located along the beautiful Verde River in Cottonwood. Kim Schonek, TNC Preserve Manager, was our hostess. Our focus was on the Verde River and we had talks from Arizona Game and Fish, US Fish and Wildlife Service, and Friends of the Verde River Greenway. We heard about native fish and endangered species issues as well as plans from the local community on what they want to see for the Verde River. The weather, food, and friendship were all perfect. We have begun planning our next fall meeting so watch for an email and plan on coming.

Our annual meeting, our 25th anniversary meeting, was in March in Thatcher, AZ. The meeting was co-hosted by the Gila Watershed Partnership (GWP) and the turnout was great with local people along with ARC members. GWP is an organization that formed in the 1990s and is comprised of local landowners including ranchers, farmers, along with various state and federal agencies who come together

to maintain the quality of life in the Gila River Valley. At our meeting we discussed how to overcome natural and regulatory hurdles that landowners face in doing conservation projects. Our presenters covered a range of topics including an overview of the geomorphology study conducted on the Gila River, tools in the Endangered Species Act that provide regulatory certainty, the Gila River Water Settlement Act and how this effects water users, conservation easements, and the types of projects being along the Gila River. The *crème de la crème* was our Saturday field trip to an actual stream restoration project that was recently completed along the Gila River.

The field trip on Saturday was a continuation of our Thursday workshop conducted by Stephanie Yard and Allen Haden of Natural Channel Design. The workshop discussed planning and designing stream and riparian restoration projects. In particular, how to

do a project while also maintaining the landowner's need to continue his farming and ranching operation. Stephanie and Allen did a great job. You guys rock!!!

Our meeting on Friday covered a lot of issues and the speakers were all outstanding. I have to say a big thank you to Jan Holder, Executive Director for GWP who helped arrange the speakers and organized the Saturday field trip. Jan, thank you for making this meeting successful. It was a pleasure working with you – you are the best!!! And of course you are awesome.

Some of you have told me that these were outstanding meetings and that they were very worthwhile. I truly appreciate hearing those kind of comments because we try to have meetings where you walk away learning something new, making a new friend, and most of all having a good time.

We are starting to plan our annual meeting for next year. If you have ideas please email them to me or one of the other ARC Board members. We want to do meetings to be informative and provide a forum for discussion.

I hope to see you at our October fall meeting.

– Kris Randall, President



Stephanie Yard and Allen Haden of Natural Channel Design go over the design for the restoration project on the Gila River.

Fish Barrier. from pg. 1

and establishment of nonnative aquatic organisms in the region over the past century have polluted native fish habitat that remain (Miller 1961, Moyle et al. 1986, Minckley 1991). This physical and biological destabilization of riverine systems has led to a typical pattern in Arizona where native fish species tend to be restricted to the upper reaches of drainage basins (FWS 2001).

Consequently, the widespread situation in the Gila River Basin is that remaining tributary populations of native fishes cannot recolonize other tributaries from where they have been extirpated because of large populations of predatory nonnative fish that reside in the mainstem habitats connecting them (Minckley 1999). As a result, the mainstem rivers have become populations sinks for native fish. For these reasons, fish biologists have recommended concentrating restoration efforts on streams which contain large assemblages of

native fish or streams which can be protected and renovated (mechanical or chemical treatment of streams to remove nonnative fish species) to replicate rare stocks of native fish such as loach minnow (*Tiaroga cobitis*) and spikedace (*Meda fulgida*).

Hot Springs Canyon sustains populations of five native fish species: longfin dace, speckled dace, Sonora sucker, desert sucker, and the endangered Gila chub (*Gila intermedia*). In October 2007, the Bureau of Land Management (BLM) working with the FWS, Arizona Game and Fish Department, Arizona State University, Arizona State Land Department, Reclamation, Forest Service and The Nature Conservancy stocked loach minnow, spikedace, desert pupfish (*Cyprinodon macularius*) and Gila topminnow (*Poeciliopsis occidentalis*) into three perennial streams of the Muleshoe Ranch Cooperative Management Area including Hot Springs Canyon. The objective of the stocking was to assist in the recovery of these

species and to restore historical species diversity in the area.

Prior to the actual construction of the fish barrier, numerous details must be coordinated and completed. First, Rob Clarkson, Reclamation's fish biologist, looked for a suitable location to place the barrier. Working in concert with Reclamation engineer, Jeff Riley, a site was located that protects the maximum amount of stream miles and is feasible from a construction/engineering standpoint. Once the location is determined National Environmental Policy Act (NEPA) compliance must be completed. In the case of Hot Springs Canyon an Environmental Assessment (EA) was prepared. Endangered Species Act compliance is also completed at this time. After the NEPA process is completed, the engineers prepare the construction specifications. These "specs" provide the contractor with construction plans to build the barrier as well as detail for all facets of the construction including access, staging area location, limits of the construction zone and sensitive environmental areas.

The Hot Springs Canyon fish barrier was constructed on land under the jurisdiction of the Safford District of the BLM. Reclamation and BLM cooperated on preparation of the EA and both agencies issued Findings of No Significant Impact (FONSI) on February 12, 2009. Fish barrier construction was delayed until the spring of 2010 due to an appeal of BLM's decision on behalf of the Cattle Growers Association. The appeal was later dismissed. A contract was



Preconstruction view of fish barrier location.



Laying down plywood from the end of the road to the streambed to avoid leaving tracks.

awarded to BairCo Construction from Lovell, Wyoming.

The Hot Springs Canyon fish barrier is located in an Area of Critical Environmental Concern, commonly referred to as an ACEC. Due to the remoteness of the location and sensitivity of the canyon habitat, all

equipment was flown into the barrier site except the excavator. The 9-ft tall, 8-ft wide piece of equipment would have required a Sky Crane to lift. That expense resulted in the decision to “walk” the excavator up the canyon and necessitated permission to cross private land. The landowners were

especially concerned that impacts to the canyon habitat were minimized, resulting in additional coordination and project modifications to address their concerns.

The Contractor set up operations at the staging area located at a private airstrip about 4.5 miles from barrier site. It took 4 hours for the excavator to traverse the 4.5 miles while I, Reclamation's contract inspector and wildlife biologist, scouted the route in advance. Plywood was laid down from the end of the road to the streambed to avoid leaving tracks. The first 1,100 ft of tracks in the streambed were raked to obscure passage of the excavator through the wash at the landowner's request.

Few obstacles were encountered along the wider portions of Hot Springs Canyon. Progress was slower once the canyon narrowed, but the con-



Rock slide that blocked upstream access of excavator.

tractor (Devin Bair) was able to maneuver the excavator up the canyon with little evidence of his passage. A rock slide which blocked the stream channel was discovered just weeks before construction was to start. This necessitated taking the excavator out of the channel and across a large mesquite bench. The contractor was able to maneuver across the site without cutting any major mesquite branches a testament to his expertise.

Barrier construction was initiated by diverting the stream around the construction site and installing dewatering wells. These wells keep the construction area dry but must be monitored continually. Devin hiked the 0.25 mile up the canyon to the barrier site from the campsite at 2:00 A.M. every morning to check on the motors running the pumps. Next, the excavation started, rock anchors which tie the barrier into the bedrock abutments were drilled and set. For this barrier which is relatively small (24 ft wide and 5 ft tall) the anchors were drilled 4 ft into the rock abutments. The Contractor set forms and installed the reinforcement steel for the upstream and downstream scour walls. Scour walls extended approximately 16 ft vertically into the streambed to preclude flood flows from undercutting the structure and compromising its stability. Fish barriers also include an “apron,” which is the flat concrete structure immediately downstream of the barrier wall. This structure prevents development of a plunge pool which potentially provides a suitable environment for non-native fish to congregate below the barrier.



Bringing in construction supplies via helicopter.



Reinforcement steel installation.

The concrete was batched at the airstrip and then flown into the site in a bucket which holds 3/4 of a yard. The apron took 14 yards of concrete requiring approximately 19 trips via helicopter. The entire project took 40 cubic yards of concrete and approximately 80 trips, not counting mobilization and demobilization.

Actual barrier construction took a little over 3 weeks; the Contractor was onsite for 28 days. Reclamation and Central Arizona Water Conservation

District (CAWCD) personnel will occasionally need to access the barrier in the future. CAWCD will be responsible for long-term maintenance of the structure.

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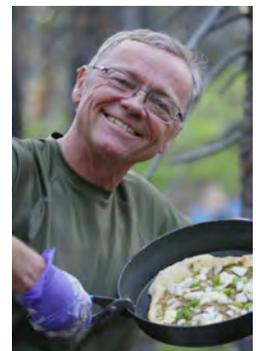
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MEET OUR NEW ARC TREASURER

John Hathaway has been a member of the Arizona Riparian Council since 2011, though he has long been associated with the Council's mission as former Statewide Watershed Coordinator for the Arizona Department of Environmental Quality (ADEQ), where he formed many of his working relationships with Council membership, and his current work as Watercourse Planning Manager for the Flood Control District of Maricopa County. He earned a B.S. (CE) from Union College in Schenectady, NY, and an M.S.C.E. at San Diego State University, specializing in surface water hydrology and river mechanics. Later studies include groundwater/surface water interaction at the University of Montana Flathead Lake Biological Research Station. He is a licensed civil engineer in California, Nevada, and Arizona and received the USEPA Stratospheric Ozone Protection Award in 1994 in recognition of his work at ADEQ.





LEGAL ISSUES OF CONCERN

By Richard Campbell

The Latest Piece in the Endangered Species Act “Puzzle”: Did the US Fish and Wildlife Service Adequately Take into Consideration the “Lost Historical Range” of the Flat-Tailed Horned Lizard in its 2011 Withdrawal of the Proposed Rule to List the Lizard as Threatened?

Editor’s Note: Rich is an Adjunct Professor of Law, Golden Gate University School of Law, San Francisco and Attorney for the U.S. Environmental Protection Agency, Region 9. The opinion expressed in this article are the author’s only and do not represent those of the U.S. Environmental Protection Agency or the Golden Gate University School of Law.

The latest chapter in the long-running dispute about the listing of the Flat-Tailed Horned Lizard (*Phrynosoma mcallii*) as a threatened species under the Endangered Species Act (ESA) occurred on March 15, 2011, when the U.S. Fish and Wildlife Service (Service) withdrew its original Clinton-era proposal to list the Lizard as a threatened species under the Act. See 58 *Federal Register* 62624 (November 29, 1993); 76 *Fed. Reg.* 14257 (March 15, 2011). The decision by the Service to withdraw its proposed listing was made in response to the Ninth Circuit’s decision in *Tucson Herpetological Society v. Salazar*, 566 F.3d 870 (9th Cir. 2009). In that case, the Court agreed with the Society that when the Service determines whether a species is endangered or threatened throughout a *significant portion* of its range, the Service must take into consideration whether the “lost his-



Photo © Randy Babb
Flat-Tailed Horned Lizard (Phrynosoma mcallii).

torical range” of the species (as opposed to its current range) constitutes a significant portion of the range of that species. The Service’s consideration of the Lizard’s lost historical range in its 2011 decision not to list it as threatened under the Act is discussed below.

BACKGROUND Flat-Tailed Horned Lizard

The Flat-Tailed Horned Lizard is on average 3 inches long and has managed to adapt to the Sonoran Desert in Arizona (including the Gila and Tinajas Atlas Mountains in Yuma County), the Coachella Valley of California, and in the

northernmost Sonoran Desert of Mexico (62 *Fed. Reg.* 37852, July 15, 1997). Forty-two percent of lizard habitat occurs on private land (58 *Fed. Reg.* 62625). The balance of lizard habitat on public land is managed by the Bureau of Land Management (BLM) (58 *Fed. Reg.* 62628).

Proposed Listing Decision

On November 29, 1993, the Service proposed to list the Lizard as a threatened species (58 *Fed. Reg.* 62624). Habitat loss caused by urban development, conversion of desert lands for agriculture, off-highway vehicle usage, and

military activities (e.g., Gold-water Bombing Range), coupled with inadequate regulatory mechanisms to stem this habitat loss on at least public lands managed by BLM, were cited as reasons for the proposed listing (58 *Fed. Reg.* 62626). The Service noted that fragmentation creates isolated subpopulations that, because of their reduced size, have an increased probability of extinction (58 *Fed. Reg.* 62626-27 (Nov. 29, 1993)).

In 1996, the Service estimated that man-made factors were responsible for the destruction of 1,103,201 acres of the Lizard's estimated 4,875,624-acre historic range (71 *Fed. Reg.* 36745, 36749-51 Jun 28, 2006). In September 1996, a Service biologist maintained listing was the appropriate action to take:

*Nothing has really changed on the ground; and in some ways, the status of the lizard has continued to deteriorate. If forced to publish a final rule at this time, I do not believe we could make a case that threats have been alleviated to the point that listing is no longer warranted. (As quoted in the Society's Initial Brief to the Ninth Circuit on July 3, 2000; 2000 U.S. 9th Cir. Briefs LEXIS 40 *8).*

A few months later, however, on July 15, 1997, the Service decided it would not place the Lizard on the Endangered Species list (62 *Fed. Reg.* 37852). Three reasons were provided:

1. BLM and other federal and state agencies (including

Arizona Game and Fish) had entered into a Conservation Agreement and agreed to implement a Management Strategy to protect Lizard habitat;

2. A significant portion of Lizard habitat was no longer threatened by geothermal and oil and gas development and pesticide spraying as it had been in 1993; and
3. Lizard survey methodology was too uncertain to conclusively demonstrate a downward trend in populations (62 *Fed. Reg.* 37859).

In essence, the Service found that the Lizard's current range on public land was sufficient to prevent listing even though it was extirpated from a large percentage of its historical range and faced continuing threats on private land. *Defenders of Wildlife* (DOW) challenged the 1997 withdrawal in federal district court (in southern California), but the district court upheld the Service's decision.

2001 Ninth Circuit Decision

DOW appealed the district court decision to the Ninth Circuit (*Defenders of Wildlife v. Norton*, 258 F.3d 1136 [9th Cir. 2001]). In that case, the Ninth Circuit first found that due to the ambiguity of the phrase "significant portion of its range," the Service was entitled to deference in its interpretation of the term, so long as the Service articulated a reasoned basis for its decision and articulated a rational connection between the facts and the decision it made (*Defenders of Wildlife v. Norton*, 258 F.3d 1141 [9th Cir. 2001]). The Ninth Circuit also found that

Congress added the "significant portion of its range" language to the ESA, at 16 U.S.C. § 1532(6), to allow the Service to take a flexible approach to wildlife management, i.e., one that would allow the Service to list a species that is threatened in a "significant portion" of its range even if that same species is thriving in other geographic areas (*Defenders of Wildlife v. Norton*, 258 F.3d 1141 [9th Cir. 2001]). The Ninth Circuit then noted that the Service's 1997 withdrawal of its listing decision presented the court with an opportunity to "puzzl[e] out the meaning" of what Congress meant when it told the Service to take into consideration "a significant portion" of a species' range when making listing decision (*Defenders of Wildlife v. Norton*, 258 F.3d 1141 [9th Cir. 2001]).

In puzzling out the meaning of "significant portion of its range," the Ninth Circuit first rejected the Service's argument that it could rely on only an examination of the Lizard's current range on public land (*Defenders of Wildlife v. Norton*, 258 F.3d 1138, 1140). The Ninth Circuit found that the Service's distinction between public and private land explained much of the dispute between the Service and DOW, and was responsible, in large part, for the shift between the Service's initial findings that accompanied the proposed rule and its subsequent decision to withdraw the rule. (*Defenders of Wildlife v. Norton*, 258 F.3d 1140-1141). The Ninth Circuit concluded that the Service needed to take a more "flexible" approach and look at both

private and public lands when considering historical range (*Defenders of Wildlife v. Norton*, 258 F.3d 1145).

The Court next rejected DOW's assertion that a species should be listed merely because it no longer inhabits a high percentage of its historical range.

The Court explained,

*[I]t simply does not make sense to assume that the loss of a pre-determined percentage of habitat or range would necessarily qualify a species for listing. A species with an exceptionally large historical range may continue to enjoy healthy population levels despite the loss of a substantial amount of suitable habitat. Similarly, a species with an exceptionally small historical range may quickly become endangered after the loss of even a very small percentage of suitable habitat (*Defenders of Wildlife v. Norton*, 258 F.3d 1143).*

The Ninth Circuit then concluded that "a significant portion of its range" should be interpreted as follows:

[A] species can be extinct "throughout ... a significant portion of its range" if there are major geographical areas in which it is no longer viable but once was. Those areas need not coincide with national or state political boundaries, although they can. The Secretary necessarily has a wide degree of

*discretion in delimiting "a significant portion of its range, since the term is not defined in the statute (*Defenders of Wildlife v. Norton*, 258 F.3d 1143).*

The Court granted, however, that if a species has lost a large portion of its historical range, the agency "must at least explain [the] conclusion that the area in which the species can no longer live is not a 'significant portion of its range'" (*Defenders of Wildlife v. Norton*, 258 F.3d 1145). The Ninth Circuit directed the Service to take this into consideration in its next decision on whether to list the Lizard under the Act (*Defenders of Wildlife v. Norton*, 258 F.3d 1145).

2003 Listing Decision

In the course of making its next listing decision, the Service solicited the opinion of four lizard experts:

Of the four, two recommended listing the species as threatened, one did not express a firm opinion, and one concluded that listing was not warranted. ... Kevin Young, the biologist that did not favor listing, stated that a 'significant portion of the [Lizard's] range' has indeed been lost, but concluded that listing would likely direct resources away from efforts to protect the species on public lands, and toward unproductive efforts to protect lizard habitat on private lands (566 F.3d at 875,

n. 7, citing 68 Fed. Reg. at 340-41).

Based on this and other evidence, the Service again decided against listing the Lizard in 2003. This decision was subsequently challenged in federal district court (this time in Arizona) by the Tucson Herpetological Society (and others, including DOW, Sierra Club, and the Center for Biological Diversity) arguing that the withdrawal did not comply with the Ninth Circuit's 2001 decision in *Defenders*.

The district court agreed with the Tucson Herpetological Society in a 2005 decision where it found that the Service "assumed without explanation that large swaths of lost habitat were of no significance at all" and ordered the Service to try again (though the district court found the Service's assessment of threats to the Lizard's current range was adequate). The Service withdrew its 2003 decision and restored the Lizard to proposed listing status while it reconsidered its decision (70 *Fed. Reg.* 72776; Dec. 7, 2005).

2006 Delisting Decision

After another public notice and comment period, the Service again decided to withdraw the proposed listing in 2006 (71 *Fed. Reg.* 36,745; June 28, 2006). The Service noted that the "sole purpose" of the 2006 decision was to address the lost historical habitat issue that was the subject of the district court's 2005 decision (71 *Fed. Reg.* 36749). Again, the Society challenged this decision in district court (*Tucson Herpetological Soc'y v. Kempthorne*, 2006 U.S. Dist. LEXIS 70736; N.D. Ariz.

2006). In 2007, after hearing the challenge, the district court upheld the Service's 2006 lost habitat analysis and listing decision:

After setting a temporal baseline and defining the subject area, the Secretary proceeded to evaluate the significance of the lost historical habitat. He concluded that the Coachella Valley area [in California], including its lost associated habitat, was insignificant because of its small size relative to the overall range of the species, the high level of fragmentation due to human development, the lack of genetic, behavioral, or ecological differentiation, and the small size and importance of the population in general.... The remaining parcels of lost historical habitat areas near Mexicali and Yuma were also deemed insignificant.

Not only has the species persisted for nearly a century in the face of the steady habitat destruction, but the size of existing lizard populations has not declined and is not likely to decline in the foreseeable future because of the loss of 1,103,201 acres of historic range, the Secretary found.... After surveying the 'available data concerning population abundance, trends, and threats,' the Secretary concluded

*that yesterday's conversion of suitable habitat to agriculture in the Mexicali and Yuma areas is not significant to the survival of today's lizards (Tucson Herpetological Soc'y v. Kempthorne, 2007 U.S. Dist. LEXIS 50740 *27-28; N.D. Ariz. 2007).*

The Society appealed this decision to the Ninth Circuit, first arguing the Service's reasoning was inconsistent with the Ninth Circuit's 2001 decision in *Defenders* because it merely relied on pointing to some areas where Lizard populations persisted to support a finding that threats to the species elsewhere were not significant. The Society argued the ESA requires a more thorough explanation.

Ninth Circuit 2009 Decision

In its 2009 *Tucson Herpetological Society* decision, the Ninth Circuit found, in part, that the Service had relied on limited and inconclusive studies in its determination that the Lizard was persisting in its current range (particularly in Mexico for which there were no studies provided), and that this reliance had adversely impacted the Service's lost range analysis:

The absence of conclusive evidence of persistence, standing alone, without persuasive evidence of widespread decline, may not be enough to establish that the [Service] must list the lizard as threatened or endangered ... But this is a different case. The [Service] affirma-

*tively relies on ambiguous studies as evidence of persistence (i.e., stable and viable populations), and in turn argues that this 'evidence' of persistence satisfies Defenders' mandate and proves that the lizard's lost range is insignificant for purposes of the ESA. This conclusion is unreasonable. The studies do not lead to the conclusion that the lizard persists in a substantial portion of its range, and therefore cannot support the [Service]'s conclusion (Tucson Herpetological Soc'y v. Kempthorne, 2007 U.S. Dist. LEXIS 50740 *879; N.D. Ariz. 2007).*

The Ninth Circuit again remanded the decision whether to list the Lizard back to the Service for further reconsideration based on better studies. In a dissent, Ninth Circuit Judge Noonan made the following observation that likely captured the Service's frustration at this point:

How many flat-tailed horned lizards are there?

No one knows the answer to that question. Nor does anyone know how many lizards disappeared when portions of their range disappeared. It is supposed that a diminution in range correlates with a diminution in lizards. This hypothesis is plausible. It has not been shown to be probable. Yet the case turns

on what measures are necessary to keep this unknown population in existence. The court concludes that the [Service] erred in finding that the lizard has not lost a significant portions of its range. The old method of counting lizards is out. A new method has not been tried very much. It's anybody's guess whether the lizards are multiplying or declining. In a guessing contest one might defer to the government umpire. The court, however, finds the [Service's] conclusion impacted by over-reliance on fragmenting evidence of the lizard's persistence; so the court decides to give the [Service] another crack at the problem.

If the [Service] does not know what the lizard population was to begin with, or what it was in 1993, or what it is now in May 2009, how will [it] know if it is increasing, staying the same, or declining?

A style of judging, familiar to readers of the old English reports, characterizes the judge as dubitante. That is probably the most accurate term for me, which leads me to concur in the majority opinion insofar as it rejects the contentions of the Tucson Herpetological Society and to dissent from the remand whose command to the Secretary of the Interior

is, *Guess again (Tucson Herpetological Soc'y v. Kempthorne, 2007 U.S. Dist. LEXIS 50740 *882-883; N.D. Ariz. 2007).*

March 15, 2011 Withdrawal of Proposed Rule To List Lizard as Threatened

In its March 15, 2011 decision, the Service, as directed by the Ninth Court, addressed the lost historical range issue again. The Service determined the Lizard's lost historical range did not represent a significant portion of the Lizard's range for four reasons:

1. Historically lost habitat was lost decades ago and, despite the amount of time that has since transpired, the species has not experienced a continuing range contraction due to the past loss of habitat.
2. Historically lost habitat "did not provide any special or unique features or meet any life history needs of the [L]izards that made those areas any more significant than any other habitat."
3. Historically lost range was not continuous and contained natural barriers that separated relevant Lizard population segments.
4. The Lizard populations most in jeopardy do not separately contribute substantially to the resiliency, redundancy, or representation of the entire species (76 Fed. Reg. 14258).

The Service then found that threats to the Lizard's current range (including that in Mexico) "have been reduced, managed, or eliminated, or found to

be less substantial than originally thought." The Service also found that implementation of the Interagency Conservation Agreement and associated Rangeland Management Strategy was reducing threats in the United States and was benefitting the species throughout its current range.

Therefore, we conclude that none of the existing or potential threats are likely to cause the [Lizard] as an entire species ...to be in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range (76 Fed. Reg. 14267-8).

Whether the Service's analysis is legally adequate remains to be seen, and may be subject to further legal challenge. What is clear is that as urbanization continues apace in Arizona, and in northern Mexico's Baja region, the requirement that the Service take into adequate consideration the lost historical range of species that reside in Arizona and which are proposed for listing under the Act will take on greater significance.

It is also noteworthy that the Ninth Circuit's 2009 *Tucson Herpetological Society* decision was very recently followed by the Ninth Circuit in its November 22, 2011, decision to remand back to the Service its decision to delist the Grizzly Bear in the Yellowstone region of the United States. In that case, the Ninth Circuit found the Service did not adequately consider evidence that brought into question the Service's conclusion

that the distinct population of Grizzlies in the Yellowstone region was stable:

The Yellowstone grizzly has been the focus of a laudable, decades-long cooperative research effort-one that we hope continues. It may be that scientists will compile data demonstrating grizzly population stability in the face of whitebark pine declines. Such information, however, simply is not in the record before us. The lack of any data showing a population decline due to whitebark pine loss is not enough (Greater Yellowstone Coalition v. Servheen, 665 F.3d 1015, 1030 (9th Cir. 2011), quoting Tucson Herpetological Soc'y, 566 F.3d at 879 ("If the science on population ... trends is undeveloped and unclear, the Secretary cannot reasonably infer that the absence of evidence of population decline equates to evidence of persistence.")).

The Ninth Circuit's 2011 decision is notable because its effect is, in general, to delay the removal of ESA protections for the Grizzly in the lower 48 states.

In conclusion, neither the courts nor the Service have been able to provide a definitive answer as to what amount of "lost historical range" is "significant" enough to warrant a listing under the ESA. But the Ninth Court decisions regarding the Lizard in 2009 and the Grizzly Bear in 2011 make clear that whatever decision is

made must be backed by firm data. As the following quote from the *Tucson Herpetological Society* case makes clear certain assumptions no longer apply:

There seems to be a tacit assumption that if grizzlies survive in Canada and Alaska, that is good enough. It is not good enough for me Relegating grizzlies to Alaska is about like relegating happiness to heaven; one may never get there. – Aldo Leopold, A Sand County Almanac (1966:277) (Quoted by the Ninth Circuit Court of Appeals in Defenders of Wildlife v. Norton, 258 F.3d 1136, [9th Cir. 2001]).



ARC UPDATE TO LEGAL ISSUE OF CONCERN

In part, as a result of the flat-tailed horned lizard listing decision and resulting litigation, the US Fish and Wildlife Service and NOAA's National Marine Fisheries Service (Services), the two federal agencies responsible for administering the Endangered Species Act (ESA), proposed a new federal policy that will help clarify which species or populations of species are eligible for protection under the ESA and will provide for earlier and more effective opportunities to conserve declining species. See 76 *Fed. Reg.* 76987 (December 9, 2011).

The proposed policy will define the key phrase "signifi-

cant portion of its range" in the ESA and provide consistency for how it should be applied, aiding the agencies in making decisions on whether to add or remove species from the federal list of threatened and endangered wildlife and plants. The phrase is not defined in the ESA, but appears in the statutory definitions of "endangered species" and "threatened species" in the ESA.

Until the policy is final, the Services have an obligation to meet statutory timeframes and make determinations in response to petitions to list, reclassify, and delist species. During this interim period, The Services will consider the interpretations and principles in this proposed policy as non-binding guidance in making individual listing determinations. As nonbinding guidance, the Services will apply these interpretations and principles only as the circumstances warrant, and the agencies will independently explain and justify any decision made in this interim period in light of the circumstances of the species under consideration. The draft policy can be viewed at <http://www.regulations.gov>, Docket No. [FWS-R9-ES-2011-0031].





NOTEWORTHY PUBLICATIONS

Kelly Mott Lacroix, Graduate Research Associate, Water Resources Research Center,
University of Arizona

Katz, G. L., M. W. Denslow, and J. C. Stromberg. 2012. The Goldilocks effect: Intermittent streams sustain more plant species than those with perennial or ephemeral flow. *Freshwater Biology* 57:467-480.

In arid regions, the majority of our stream miles consist of intermittent and ephemeral reaches. In this study the authors examine three interrupted perennial rivers, i.e., rivers with perennial, intermittent and ephemeral reaches, to determine how the differences in hydrology influence spatial and temporal patterns of species richness and species composition. In their study of three Arizona streams, the San Pedro River, Hassayampa River and Cienega Creek, they find that patterns of species richness varied between single-year and multi-year time frames with the highest single year richness at perennial sites and the highest long-term richness at intermittent sites. The authors also find that, on two of the three rivers, ephemeral sites had the highest inter-annual compositional variance and perennial streams had the lowest, and that compositional differences between various types of hydrologic sites were dominated by species turnover as opposed to nestedness. These conclusions provide evidence that to conserve riparian diversity in desert ecosystems it is necessary to both protect

consistently wet conditions at perennial sites and maintain the processes that cause natural fluctuations in conditions at non-perennial sites.

Megdal, S., J. Nadeau, and T. Tom. 2011. The forgotten sector: Arizona water law and the environment. *Arizona Journal of Environmental Law and Policy* 1(2):244-291.

Although Arizona is renowned for its natural environment, the water needs of that environment have been frequently overlooked when we plan for and regulate water. In this article the authors examine federal and state law as well as state policy to determine the extent to which environmental water needs are, or are not, recognized in Arizona. Through a review of laws such as the Clean Water Act, Endangered Species Act, Instream Flow Rights and the 1980 Groundwater Management Act, the authors determine that the environment is not adequately included within our current legal framework and in fact many disincentives exist for providing for environmental water needs. They present a rationale for why Arizona can no longer ignore the environment as a water-using sector and describe opportunities within the current legal context such as federal reserved water rights and voluntary transactions that could be used to

incorporate water needs of the environment in the future.

Poff, B., K. A. Koestner, D. G. Neary, and V. Henderson. 2011. Threats to riparian ecosystems in western North America: An analysis of existing literature. *Journal of the American Water Resources Association* 47(6):1241-1254.

Riparian ecosystems provide a large portion of essential habitat in a very small area for flora and fauna in the West. To determine the major threats to riparian ecosystems in western North America over the past seven decades, the authors review 453 journal articles, reports, books, and book chapters. They identified 22 different threats and determined that the four primary threats to riparian ecosystems are grazing, dams, land use change and invasive species. Although grazing has been noted as the primary threat since the 1980s, its influence has diminished in the past decade. In more recent years the most noted threats riparian ecosystems in western North America face are invasive species, dams and climate change. Interestingly, the authors also found that threats to riparian ecosystems are most frequently studied in Arizona, with 22.5% of all studies reviewed coming from this state.

Reynolds, L.V., and D. J. Cooper. 2011. Ecosystem response to removal of exotic riparian shrubs and a transition to upland vegetation. *Plant Ecology* 212:1243-1261.

As a consequence of land use, river regulation, changes in climate and invasive species, the composition of plant communities have changed and many streams have become incised. In this study the authors used soil seed banks to analyze the effects of removal of riparian shrubs and channel incision on the dynamics of ecosystem and plant communities in Canyon de Chelly National Monument, Arizona. Their research analyzed seed bank composition and differences in soil nitrogen, vegetation, groundwater levels, and seed rain between control, cut-stump and whole-plant removal areas. Neither shrub removal method increased groundwater levels, but both methods decreased exotic plant cover and seed inputs. After two years there was an increase in native plant species, however, because of the disconnect from the floodplain, native species were predominantly native grasses.



JAMES STEPHAN RENTHAL, 1944-2012

“Viewing the Arizona landscape, whether by road, air, or foot, I find myself enjoying a warm sensation rise within me whenever I recognize a part of the land I have touched.” Not his words, per se, but I’m sure Jim felt this way.

Jim was that way.

His landscape was very much alive. As much as he loved it, it was the people in it whose touch gave rise to his eternal warmth.

After 35 years of dedication to the Bureau of Land Management – especially the “land” part – James Stephan Renthal left us suddenly May 6, 2012.

Born April 4, 1944 in Chicago, Illinois, to Sid and Helen Renthal, Jim was a proud alumnus of the University of Chicago. His first encounter with Arizona came during a 1953 family road trip. His Dad, Sid, wanted to get a feel for his job as the new writer for the 1950's TV Western, “Sky King!”

The rest is a history of a life-long love affair with the West, Barbara his dearest wife of 36 years, son David, and his delightful granddaughter, with whom he would play make-believe games of “butterfly” and “airplane” for hours.

After moving west, Jim earned a Master's Degree in Soil Science at the University of Arizona. Working in BLM field offices in Arizona, Idaho, and Oregon, he continued his love of the land – read: its precious water.

Conversing with Jim was a gift. Sadly, I only got to know him in the past 2 years. Sadder still would be never to have

done so. When we got to “Who do you know?” suddenly 10 fingers didn't seem enough.

He'd smile fondly of his recent five-year posting in Washington, DC, where in his spare time Jim contributed to an exhibit currently at the Smithsonian Museum of Natural History. A must see, no doubt.

Before his February 2012 retirement, Jim told me he would become more active in the Arizona Riparian Council. I was going to tease him the next time I saw him about missing the meeting in Thatcher. All who knew him will miss him. Those who don't never did.

– John Hathaway 

The Arizona Riparian Council (ARC) was formed in 1986 as a result of the increasing concern over the alarming rate of loss of Arizona’s riparian areas. It is estimated that <10% of Arizona’s original riparian acreage remains in its natural form. These habitats are considered Arizona’s most rare natural communities.

The purpose of the Council is to provide for the exchange of information on the status, protection, and management of riparian systems in Arizona. The term “riparian” is intended to include vegetation, habitats, or ecosystems that are associated with bodies of water (streams or lakes) or are dependent on the existence of perennial or ephemeral surface or subsurface water drainage. Any person or organization interested in the management, protection, or scientific study of riparian systems, or some related phase of riparian conservation is eligible for membership. Annual dues (January-December) are \$20. Additional contributions are gratefully accepted.

This newsletter is published three times a year to communicate current events, issues, problems, and progress involving riparian systems, to inform members about Council business, and to provide a forum for you to express your views or news about riparian topics. The next issue will be mailed in September, the deadline for submittal of articles is August 15, 2012. Please call or write with suggestions, publications for review, announcements, articles, and/or illustrations.

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CALENDAR

Arizona Riparian Council Board Meetings. The Board of Directors holds monthly meetings the third Wednesday of each month and all members are encouraged to participate. Please contact Cindy Zisner at (480) 965-2490 or Cindy.Zisner@asu.edu for time and location.

Save your October weekends for the fall meeting and don't forget next spring!

Please remember to renew your dues – if it says PLEASE RENEW after your name above you need to send them in.
