



Desert Wetlands *News & Views*

Butterfly Monitoring along Wash

Excerpted from Butterfly and Sticky-trap Monitoring Along the Wash, S. Mark Nelson, Bureau of Reclamation, Denver office

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Yuma Skipper (ochlodes yuma) nectaring at Baccharis. Most common skipper in the Wash (Bureau of Reclamation photo)

There are approximately 700 species of butterflies found in the United States and Canada. In Nevada, there are 222 species of butterflies (including about 700 subspecies). Butterflies are further divided into two subfamilies: the true butterflies (*Papilionidea*) and skippers (*Hesperioidea*).

A joint study was conducted along the Wash by the Southern Nevada Water Authority and the Bureau of Reclamation to identify butterflies and other invertebrate arthropods. Butterflies were identified by sight and sticky traps were used for other invertebrates. Two site types were monitored, exotic and native. The richness and abundance was approximately 50% greater in the native sites. Although butterfly species richness was increased at restored riparian sites, there were few riparian “obligate” butterflies detected and it is suggested that the isolation of the Wash from other functioning riparian areas may inhibit recovery of the “natural” riparian butterfly assemblage. Obligate butterflies are super-specialists and require a very specific relationship within the habitat.

Despite lower mean values at the exotic vegetation sites, the richness of the arthro-

pods caught in the sticky traps didn’t show the same statistical significance between the two site types as did the butterflies.

Although it could be argued that monitoring only butterfly assemblages would serve as a surrogate of other invertebrate groups and thus preclude the need for this additional monitoring, it does appear that there was value in the additional study of sticky-trap invertebrates. Study of this group was important in realizing what could be important information for additional modifications for revegetation of riparian environments. To date plantings are often aligned with and in close proximity to the narrow channel and do not extend for any great distance away from the channel. It may increase the value of these environments if denser plantings were extended back away from the channel. This sort of planting scheme might increase abundance of invertebrates in the environment and provide additional resources for insectivorous vertebrates.

The Wash example may be useful in setting goals for other restoration projects where habitat for butterfly assemblages is important. The importance of flowering shrub and grass richness, or its proxy such as soil moisture, suggests considerations for restoration projects as does the presence of a variety of nectar resources. An additional consideration is the presence of source butterfly populations for colonization of restored environments.

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Desert Wetlands
Conservancy

The mission of the DWC is to influence policy, create partnerships, and initiate activities in advocacy or the Las Vegas Valley Watershed, including the Desert Wetlands Park.

Selenium monitoring revisited

In 2005 we had an article on Selenium concentrations in the Las Vegas Wash and its tributary waters based on a report from the Southern Nevada Water Authority. Recently, there was an interesting report given at the Coordinating Committee meeting by Dr. Khalil Abusaba of the environmental engineering and consulting firm, Brown and Caldwell, updating the Las Vegas Wash Selenium Management Plan. The aim of the Management Plan is to mitigate threats to Larval Razorback Suckers in the Las Vegas Bay, and fish and wildlife in the Las Vegas Wash. The Razorback Sucker (*Xyrauchen texanus*) is a unique fish native to the Colorado River Basin and one of the largest suckers in North America, growing up to 3 feet in length and weighing up to 13 pounds. The Razorback is on the endangered species list.



Razorback Sucker, Photo by Mark Fuller, U.S. Fish and Wildlife Service

The Las Vegas Wash (Wash) is the sole drainage from the Las Vegas Valley watershed that discharges to Lake Mead. Flows to the Wash include effluent from the three wastewater treatment facilities in the valley, urban runoff, shallow groundwater, and storm water. In the arid southwest, trace metals and metalloids frequently require monitoring due to their potential to bioaccumulate in various trophic levels in the ecosystem. Selenium (Se) is one of these naturally occurring trace metals. In general, the highest Se concentrations are found in the tributaries to the Wash, whereas concentrations at the Wash sites are relatively low due to the dilution effect of highly treated effluent provided by inflows from the wastewater treatment plants. The concentrations are particularly high in the Duck Creek and Flamingo Wash tributaries. A small spring at Whitney Mesa, which flows into Whitney

Drainage, had a Se concentration of over 30 parts per billion (ppb), which was the highest concentration detected. It has been measured at over 60 ppb in the past.

Se is widely distributed in nature and abundant with sulfide minerals of various metals, such as iron, lead and copper. Weathering rocks, including volcanic and sedimentary rocks, are the major sources of environmental Se. High Se concentrations in natural waters are generally associated with reduced metal sulfide minerals that occur in fine-grained, principally Late Cretaceous sedimentary rocks of marine origin. These types of rocks are common in the desert southwest and Las Vegas is no exception. The leaching of these rocks and soils by groundwater result in the Se concentrations we find in the tributaries

In humans, Se is beneficial or essential in trace amounts, although it can become toxic in higher concentrations. The drinking water standard for Se is 50 ppb. Se is more of concern from an environmental standpoint due its ability to bioaccumulate in the food chain. The State of Nevada aquatic life standard is 5 ppb. Highest concentrations found in the tributaries were over 25 ppb while concentrations in the main body of the Wash were typically less than 4 ppb.

This recent study is looking at the current impact on fish in the tributaries and wildlife in the Wash. The preliminary conclusion for fish and wildlife in the Wash is that some may be Se stressed, but the ecological impact is still unclear. However, there is concern for the Razorback Suckers in the Las Vegas Bay. This concern will increase if the base flow in the Wash is significantly reduced with the implementation of the System Conveyance and Operations

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Selenium monitoring revisited

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Program (SCOP). The current status of the wildlife in the Wash indicates there is also some Se stress, but again, the ecological significance is unclear. The SCOP bypass pipe could reduce the Wash flow by a factor of 5 or more, raising the potential that the Se concentrations in the Wash and heading into the Las Vegas Bay will exceed the 5 ppb level.

The Management Plan is looking at options to mitigate the Se concentrations in the tributaries, including tributary flow diversion to the existing treatment plants and upstream treatment plants. At this point the likely approach is a hybrid with small upstream treatment to reduce the Se load feed to the main treatment facilities. The plan recommended two pilot programs diverting the flows from the Flamingo and Duck Creek tributaries into a water reclamation facility to be treated for Se prior to being released into the Las Vegas Wash. These pilot projects would be conducted from 2010 to 2014 with a full implementation of additional tributaries scheduled for 2014. We expect that the final Management Plan Report will be issued in July, we will provide an update at that time if there is new information.



A dewatering pipe in one of the area tributaries. Photo provided by Nick Rice, SNWA

Butterfly Monitoring

(continued from page 1)

Further information about Nevada Butterflies can be found in University of Nevada Special Publication-05-25, Common Butterflies of Southern Nevada, by Maria Ryan, Area Extension Specialist. The publication lists 17 species of butterflies found in the Mojave Desert and associated mountain ranges. Six species are described in detail that include two skippers (*Hesperiidae*), one little butterfly (*Lycaenidae*), and three brush-footed butterflies (*Nymphalidae*). The photo below by Jim Brock of the Monarch butterfly comes from this publication. It is one of the brush-footed species and is probably one of the most recognized butterflies in the western hemisphere.



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PLEASE CHECK THE EXPIRATION DATE ON YOUR MAILING LABEL TO SEE IF IT IS TIME TO RENEW! If you have not yet taken the plunge to join, please do so now. You will demonstrate that you want to help in the development of new features in the Park for our community!

The Park is a place to enjoy! Have you visited the Park recently? The temporary Visitor Center is at the very end of Wetlands Park Lane. Cross Boulder Highway and travel 1 mile east, then look for the Wetlands Park sign, just where Tropicana turns into Broadbent Ave. If it has been a while since you've visited the Park, you will be amazed at the changes and improvements that have taken place. The Park is for your benefit, come and enjoy it!

There are many opportunities to get involved and to show your support-not only through membership in the Friends, but by contributing funds or labor for needed physical improvements, and educational materials. If you have put off renewing, remember your membership ends one year from the date you paid your dues.

Spring Green-Up



The Las Vegas Wash Coordination Committee hosted its 14th semi-annual Wash Green-Up events on Saturday March 21. Approximately 380 volunteers came to plant 2160 trees and shrubs and 43 pounds of seeds on 7.5 acres. The site for this event was just east of the Pabsco Road Weir. To date, more than 90 acres along the Wash have been revegetated with over 37,000 native trees, shrubs, and emergents. These plantings further armor the channel banks against erosion, increase habitat value for wildlife, and enhance the scenic beauty of the Wetlands Park.

This site had sections planted last year with Salt Grass harvested from the Ducks Unlimited construction site. Team members noticed the Salt Grass being removed for construction and managed to recycle much of it to this new site. This was the first time seed spreading was added to the Green-Up activity. Seeds for Sunflower, Brittlebush, and Desert Marigold were spread after the planting was completed. We had some help from the wind. A larger variety of plants species were included this time. Some of the new plants were Fremont's Peppergrass, Alkali Sacaton, Desert Saltbush, and Broom Baccharis. A flowering Broom Baccharis is shown in the photo on page 1 with the Yuma Skipper. As usual, fun was had by all.

Newsletter Editor, Peter Zavattaro

P.O. Box 28017

Las Vegas, NV 89126-2017

Email: pzwetlands@earthlink.net

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