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Digging In

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Ms. Ficke described urban streams as home to a unique combination of species that tend to have a large diversity of body size, lifespan, and reproductive strategy. Accordingly, urban stream species have “impressive physiological tolerances” to large temperature ranges, dissolved oxygen levels, and salinity levels. As illustrations of their ability to adapt to changing needs, urban species tend to be omnivorous and can make wide changes in habitats if compelled to do so by flooding or seasonal changes.

Despite a high tolerance to urban environments, Ms. Ficke stated that assemblages of fishes in urban streams are declining. These declines are due to “extensive human modifications” in and around the streams such as alterations of flow rates, sedimentation, changes to water quality, fragmentation, channelization, and introduction of nonnative species. According to Ms. Ficke, dams and diversions cause changes in flow patterns that can adversely affect opportunities for foraging, spawning and refuge. Changes in sediment regimes can suffocate incubating eggs and increase competition for food and predation amongst existing populations. “More water is not always beneficial,” according to Ms. Ficke: higher flow rates can lead to limited refuge during spates and floods and limited habitats for spawning and rearing. Hence, urban fish have “nowhere to hide” in channelized systems. Ms. Ficke concluded by stating that the persistent introduction and growth of nonnative species in urban streams will continue to pose significant challenges to existing and future populations of urban fish species as fish fight for habitat and food.

“Swimming In” proved to be a useful mix of history, biology and the current reality. From tracing the roots of Colorado’s state fish, to fisheries scientists collaborating with water managers to spur trout populations while maintaining domestic needs, to the challenges faced by fish that prefer the city to the country, these speakers fascinated and educated the attendees of the twenty-fourth annual proceedings of the South Platte Forum.

J. Keith Tart

DIGGING IN

As part of its two-day conference, the South Platte Forum hosted a panel that discussed Colorado agriculture and the effects of the September 2013 floods on livestock and crops in the South Platte Basin.

The first speaker, David Petrocco, a local vegetable farmer in Adams and Weld Counties, discussed the basics of local agriculture, including methods of applying water to crops, water conservation, and the beneficial uses of water. As Petrocco explained, timely irrigation is every farmer’s main concern. A lack of adequate water stresses certain crops and affects their marketable quality. Irrigation wells were useful resources for timely irrigation prior to 2006. However, due to severe drought in 2006 the State of Colorado shut down many irrigation wells, which impacted the production of crops.

Most importantly, Petrocco discussed the challenges of water conservation. Noting the significance of agriculture, Petrocco suggested that, along with improving irrigation efficiency, water conservation efforts should focus on cities and municipalities decreasing the watering of golf courses, parks, and road frontages in order to provide more water to agriculture. Petrocco also dis-

cussed the problems of pondweeds, aggressive vegetation that grow on the bottom of rivers that raise water levels, restrict the water's flow, and ultimately consume a great amount of the water in which they grow. Even though the South Platte River's quality has improved greatly, Petrocco argued these pondweeds were a growing concern deserving immediate attention.

Next, Adrian Card and Keith Maxey discussed the on-the-ground impact of the September 2013 flood on the Colorado farming community. Card serves as Boulder County's Agricultural and Natural Resources Extension Agent with Colorado State University in Boulder County. Maxey is the Weld County Director and Livestock Extension Agent with Colorado State University. Their presentation started with a video showing aerial footage of the flooding and its subsequent destruction in Longmont and other areas of Colorado.

Card and Maxey spoke about how the flooding greatly affected mountain communities by destroying roads and restricting access. In Weld County, the flood closed over one hundred roads. Even a month after the flooding, crossing over the Platte River was cumbersome for children trying to get to school and for farmers making product deliveries.

Card and Maxey then discussed floodwater contamination of local crops. Concerned with floodwater mixing with various contaminants like raw sewage, oil and gas spills, and pesticides from agricultural fields, the United States Food and Drug Administration (FDA) declared that any crop touched by floodwater was adulterated and thus unmarketable. This had a dramatic and expensive toll on the affected Colorado farmers. In the South Platte Basin, crop loss from floodwaters estimated between \$3.5 million and \$5.5 million.

The final speaker, Sean Cronin, discussed what water providers focused upon in the aftermath of the flood. Cronin is the executive director for the St. Vrain and Left Hand Water Conservancy District. Cronin reported that in District Five of the Conservancy District the flood damaged 101 ditches and reservoirs, amounting to almost \$10 million of estimated damage. Cronin mentioned, however, that this number might decrease as water levels subside and infrastructure shows less damage than previously feared.

Cronin then discussed flood recovery. First, Cronin mentioned the availability of Federal Emergency Management Agency (FEMA) Public Assistance available to those who apply. Second, Cronin discussed Colorado Water Conservation Board ("CWCB") loans and grants, which apply to individuals who experienced approximately \$1-2 million in damages. The loan carries no interest and no payments for three years. Third, Cronin mentioned partnerships forming between many different agencies interested in helping support the affected water users. Lastly, Cronin described local "stream teams," which consist of local volunteers, engineers, and water experts. The CWCB headed the state "stream team," which provided technical assistance to local groups by coordinating and aiding them with financial assistance and permits. However, aiding water users without creating conflicts and obstacles proved challenging. Justifiably, water users want to make long-term repairs immediately even though it might be more beneficial and financially prudent to make incremental short-term repairs.

Cronin commended the emergency response teams and acknowledged the heroism, human kindness, and leadership during the devastating floods.

However, he also stressed that Colorado lacked any kind of emergency flood plan and argued Colorado needed to address and plan for future floods.

Overall, the panel extensively addressed the concerns of the September flooding, the effects of the flooding, and what Colorado could do better in the future.

Devon Bell

ENVIRONMENTAL ENTREPRENEURS (E2) ECOSALON

Denver, CO October 29, 2013

WATER WISE: MEETING COLORADO'S WATER CHALLENGES

Environmental Entrepreneurs ("E2") is an independent non-partisan organization uniting business and environmental leaders to shape state and national policy. E2 is an affiliate of the Natural Resource Defense Council ("NRDC"). Donations supporting E2 go through the NRDC and the two organizations share staff. Due to the close affiliation between the two non-profits, the NRDC and E2 both value environmental advocacy and sustainability. However, E2's mission expressly seeks engagement of business leaders to achieve the shared goals of the affiliated organizations. E2's mission is "[t]o create a platform for independent business leaders to promote environmentally sustainable economic growth."

On October 29, 2013, at Deloitte Consulting's office in downtown Denver, E2 hosted a panel to discuss the topic "Water Wise: Meeting Colorado's Water Challenges." Panelists included Will Sarni, Director of Enterprise Water Strategy at Deloitte; Jerry Tinianow, Chief Sustainability Officer of the City of Denver; Greg Fisher, Chief Planner for the Denver Board of Water Commissioners ("Denver Water"); and James Eklund, Director of the Colorado Water Conservation Board ("CWCB"). In light of E2's recently released report titled "Colorado Water Supply and Climate Change: A Business Perspective," each speaker addressed questions relating to water conservation and efficiency in Colorado.

Will Sarni discussed three categories of value that he contemplates when consulting with a wide variety of companies to strategize their water management. Sarni asserts that the three risk categories for business value are physical risks, regulatory risks, and reputational risks. Physical risks, for instance, could be the temporary unavailability of water. Regulatory risks range from the reallocation of water away from business production to meet more urgent needs during times of drought to the suspension or withdrawal of the supplier's license or permit. Reputational risks refer to the potential for negative exposure or public outcry against a business for its water-use practices. Among other things, when Sarni consults with businesses about the location of manufacturing plants he asks whether the business will have access to water in twenty years at that location and from where the water to support growth projections will come. Will Sarni's role at Deloitte Consulting led him to encourage business leaders to incorporate water stewardship into their corporate risk management plans.