Land of the West Wind

Volume 19 Issue 3 June 2019

What is that Herd of Goats Doing at Hill Slough?

Sarah Estrella, Environmental Specialist, Department of Fish and Wildlife

Heading into Suisun Marsh during the month of May, you may have noticed the unusual sight of a herd of goats grazing along Grizzly Island Road just south of town. Department of Fish and Wildlife environmental scientist Sarah Estrella provided an explanation of just what the goats were doing there. Several hundred goats have been hard at work eating vegetation on either side of Grizzly Island Road where road construction will begin as a first step of the 850-acre Hill Slough Habitat Restoration Project on the Hill Slough Wildlife Area.

The overall goal of the project is to provide more habitat for the plant and animal species, including endangered species, that rely on the tidal marsh to survive. Before the levees can be breached, the county road must be raised. The endangered Salt Marsh Harvest Mouse is currently found on the site, ***and that is the reason for the goats.*** Federal guidelines require clearing the vegetation in their habitats by hand or "other approved method" prior to construction, and the U. S. Fish and Wildlife Service authorized the use of goats to accomplish this at Hill Slough.

Once the goats have done their job removing the vegetation, a temporary two-way road will be constructed for a one-mile stretch north of the bridge. When completed, traffic will be moved to the temporary road and construction on Grizzly Island Road will begin. The new section of road will be higher, include bike lanes, and have a gentler shoulder and curve. Because of the nature of the soil, a long settlement period may be required, so the temporary road will be in place through the winter.

Other features of the project include a two-mile long pedestrian trail that connects the City of Suisun's Grizzly Island Trail to a loop trail around one the ponds on the east side of the road that will not be breached. Levees on six ponds on the site will be breached next fall. The project will provide fish with more water during drought periods and tidal marsh dependent species with more habitat. In addition, the project will greatly reduce levee maintenance and repair, decrease mosquitoes, and increase Suisun Marsh's ability to adapt to sea-level rise.

For questions or more information, please contact Sarah Estrella at sarah.estrella@wildlife.ca.gov.

Land of the West Wind

Quarterly newsletter of the Suisun Resource Conservation District
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SRCD's public meetings are held at 2 PM on the second Wednesday of each month at the Solano County Supervisors Chambers 675 Texas Street Fairfield, CA 94533

SRCD represents private landowners of the Suisun Marsh at the Federal, State, and local levels. Its historic goal has been to achieve a water supply of adequate quality so that preferred wetland habitat values will be retained through appropriate management practices Through cooperation with landowners and various agencies, SRCD seeks to develop new programs aimed at protecting and improving the Suisun Marsh for future generations.

Suisun Conservation Fund's 16th Annual

Shoot and Social Fundraiser

Sporting Clays Shoot, Steak BBQ, Raffle, and Auction

All proceeds to benefit SRCD Landowners

Friday, August 2, 2019 @ 9:00 AM
Birds Landing Hunting Preserve and Sporting Clays

Cost $75.00 per Person

The organizing committee is actively soliciting volunteers, donations of cash, auction, and raffle prizes

For more information contact:
SRCD @ (707) 425-9302 or SRCD@SuisunRCD.org,
Bud Tonnesen (707) 688-0957

SRCD Update:

Grant funding from the Preservation Act Implementation (PAI) grant, and the program will continue next year. If you have not yet upgraded your water control infrastructure to HDPE pipe and stainless-steel gates, this remains a good option chance. As we enter the late summer months, it becomes important to think about a flood up schedule for early fall. The sooner you coordinate with your water manager, the smoother fall flood up becomes.
Your water managers remind you to take photos during construction of any exterior levee work for regulatory reporting purposes.

In Memoriam

Bill Brush

Bill Brush, an Associate Director of the Suisun Resource Conservation District since 2005 and a Trustee of the Suisun Conservation Fund since 2004 passed away on March 31st at the age of 79.

Bill was born on December 15, 1939 and grew up in Belmont. He graduated from Belmont High and earned a degree in agriculture from Cal Poly San Luis Obispo. After college, Bill married his high school sweetheart, Rosemarie Burke.

Bill was an owner of the Greenhead Duck Club (#321), and was known for his meticulous care for his club and involvement in Suisun Marsh. Bill opened his doors to visiting researchers and hosted duckling releases for California Waterfowl Association's Egg Salvage Program.

Bill donated to the CWA Wood Duck Program and his son Kevin and granddaughters Trinity, Melina, and Amber managed 28 nest boxes on the club. Bill is survived by his wife Rose; children Kelli, Kevin, and Sherry; and seven grandchildren.

Frank Henry Johnson

Frank Henry Johnson, a Trustee of the Suisun Conservation Fund since 2003 passed away on April 1st at the age of 72.

Frank was born on June 3, 1946 in Oakland to Kenneth and Pam Johnson. He graduated from Skyline High School in 1964 and Chico State in 1969 before marrying his college sweetheart, Cynthia Lycos in 1970.

In 1974, Frank and 11 others bought the California Farms Duck Club along Montezuma Slough. They added the adjacent Tip End Club in 1985, bringing the total area to about 400 acres. Frank was a mainstay at the Suisun Marsh Field Day which was initiated by Ray Lewis and Lee Lehman in 1985, but they quickly passed the reins to Frank. He took charge in 1987 along with Byron Hisey who joined as cochair in 1988,

Frank is survived by his wife Cyndi, sons Ken and Tyler, daughter-in-law Jocelyn, grandchildren Casey and Lila, and sisters Diane and Barbara.

SRCD Executive Director Steve Chappell stated, "Bill's and Frank's passion was for the conservation and effective management of the Suisun Marsh managed wetlands and waterfowl resources. SRCD could always count on their willingness to contribute their time and provide sage advice to support SRCD's mission. They will be sorely missed!"

Drone Technology Assisting Management for Waterfowl

There is a lot of buzz about the increased use of small-scale drones by private citizens and large organizations alike. Many see a future where drones are a fact of everyday life, used for everything from recreation to business delivery. So what can duck hunters use drones for? This new equipment is providing novel and exciting ways to perform research and gain a more accurate management perspective of wetlands. Piloted (or automated) drones are a particularly helpful new tool. Because they can be equipped with a variety of attachments, from thermal cameras to herbicide applicators, drones are being used for the benefit of management in Suisun Marsh.

Getting Hi-Tech to Count Duck Broods

Mike Casazza, Research Wildlife Biologist
USGS Western Ecological Research Center— Dixon and the Suisun Research Team

Trying to get an accurate picture of how many ducklings are in a brood pond has always proven to be a very difficult task. Hens often take their broods into ponds with large amounts of emergent vegetation which helps to keep the ducklings safe from predators by providing lots of places to hide. However, it also keeps biologists from being able to get an accurate count of ducklings present.

Recent technological advances in both thermal imaging and aerial drones is changing all of that. Scientists now are able to fly drones equipped with thermal cameras over these brood ponds and count how many ducklings are actually in the pond using the thermal signature provided by the camera. The hens and their broods show up significantly warmer than the pond water and green vegetation present in the ponds making it possible to count them.

Biologists from USGS have been surveying several duck clubs in the Suisun Marsh that are providing brood water, and the results have been very exciting. Over 900 ducklings were counted during the 1-week survey period in early June across 8 clubs! Biologists and managers hope to use this type of information to improve brood habitat across the Suisun Marsh and ultimately improve waterfowl production in Suisun Marsh.

USGS biologist drone pilot Chase Freeman prepares the drone for flight.

The drone was flown at 100 feet above the marsh along transects where broods were identified.

Thermal images of adults with duckling broods.

It's a Bird, It's a Plane, It's a Spray-Drone?

John Takekawa, Operations Manager
Suisun Resource Conservation District

Suisun Marsh's wetland managers are faced with the challenge of supporting the diverse native flora and fauna while controlling expansion of invasive plants including *Lepidium latifolium* (Pepperweed) and *Phragmites australis* (Common Reed).

Recently, unmanned aerial systems or drones have been used extensively for natural resource management activities such as mapping and habitat surveys. Novel applications have included development of spray-drones that can apply chemical treatments and provide a new tool for invasive plant control. SRCD and its partners (U. S. Geological Survey, Department of Water Resources, CASA 2100) were recently awarded a California Department of Food and Agriculture Noxious Weed Program grant to test use of spray-drones for controlling Pepperweed.

Herbicide is applied when managed wetlands are drained for habitat work. In late May, we worked with Leading Edge Aerial Technologies (LEAT) to conduct the first field test of spray-drone herbicide treatments on Pepperweed at the SRCD's Lower Joice Island managed wetland. We used LEAT's 6-rotor drone that carried 28.5 pounds (3.5 gallons) of herbicide in an onboard tank with 2 spray booms that covered a 20-foot swath. The spray-drone flew for 14 minutes on 2 batteries which were rotated and charged while herbicide was refilled from a 100-gallon tank.

We were able to treat several acres of flowering Pepperweed during a one-day trial, and in a second test, we treated newly emerging Phragmites in an area burned earlier in the spring. LEAT suggested that it may be possible to treat up to 100 acres in a day. The spray-drone was operated manually but can be programmed to spray transects or plots from imagery or from the onboard camera. It allows for surgical precision at a low flight elevation with minimal overspray and highly efficient use of chemicals.

Similar techniques have already been applied to agricultural fields. The ability to spray remotely could prove especially valuable for wetland pond management, where access is often limited by tall vegetation and muddy terrain.

We plan to continue development of this method by integrating improved imagery analyses to better detect the invasive plant patches and increase efficiency of the herbicide applications.

A spray-drone flying over a Suisun Marsh managed wetland.

Changing the batteries and refilling the tank.

Spray-drone treating flowering invasive Pepperweed.

Blue dye shows the spray-drone droplet coverage on Phragmites.

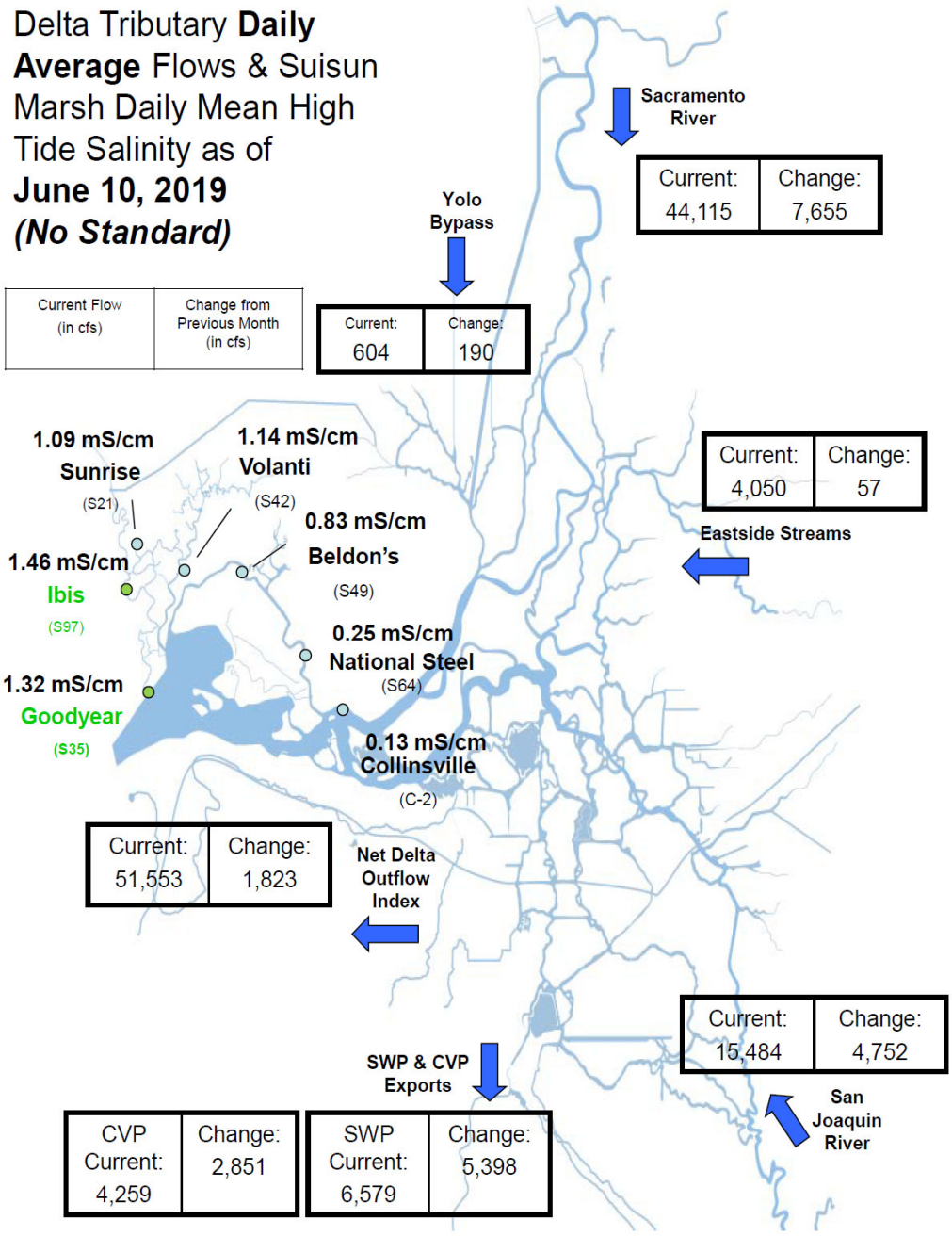
Excellent Freshwater Conditions

Remember the heavy rainfall this past winter that caused flooding and eroded levees? The silver lining is the increased availability of freshwater, and that continues to pay off. Reservoirs are full, and the heavy snowpack in the mountains continues to provide a steady supply of freshwater to the rivers and tributaries. The result can be seen in the recent Department of Water Resources graphic showing June flows and salinities.

Jeff Taylor, SRCD Water Manager on water quality:

"Current salinities are the lowest in June (particularly in the western marsh) that I have seen in over 10 years. The freshwater opens up the possibility to try new water management approaches extending our window for producing quality food resources for the waterfowl arriving in the fall."

Taking advantage of the freshwater flows in wet years is a key to reducing soil salinities that have accumulated through the drought years. Late season irrigations are something landowners should consider this year, and the SRCD pumps are available to make sure water doesn't sit on the ponds for too long for these "flash" irrigations.



Reminder!

Diversion reporting to California Water Board is **due July 1st**. Go to https://rms.waterboards.ca.gov/login.aspx and login with your assigned water right ID's and passwords to file your report.

Fall Landowner and Suisun Science Workshop

Remember to join us for the second annual science-based landowner workshop on Wednesday, September 18th at F. P. Smith Parts and Equipment. Learn about the plethora of ongoing research in Suisun Marsh!

Response of Vegetation to the 2018 Branscombe Fire

Scott Jones, Postdoc, USGS Western Ecological Research Center — Davis

Fire can devastate plant communities. In some cases, habitat can recover quickly after a fire and re-establish the same type of communities that existed before the fire. In other cases, however, fire can act like a reset button, and a different or unique habitat may emerge either temporarily or permanently post-fire. The Branscombe Fire burned ~4,500 acres after starting on October 7th, 2018 and made its way into the northern fringe of Suisun Marsh after burning over the Potrero Hills.

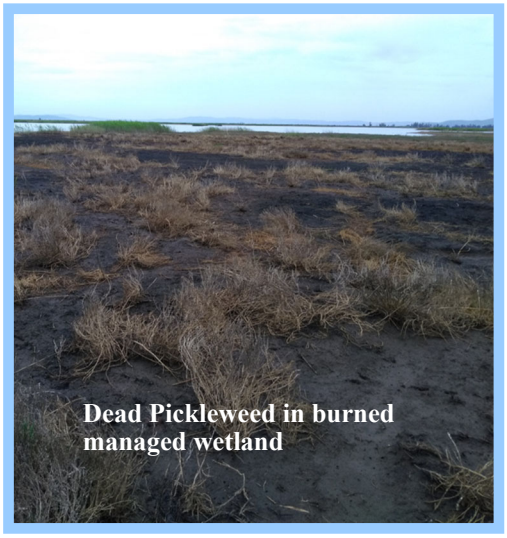
To understand how the marsh would respond to this fire disturbance, we set up plots to track recovery after the fire burned Joice Island. We were interested to see if tidal marshes recovered differently than seasonal wetlands, so we set up plots on both sides of Cutoff Slough. In both the tidal and managed wetlands, we followed fire recovery initially after the fire in the fall and in the spring. We plan to sample 1-year post-fire this coming fall. We also set up plots in nearby unburned habitat as controls to compare to the burned tidal and managed areas. In all plots, we measured surface elevation, plant community composition (what species and how many), and soil nutrients to better understand how the fire affected the entire ecosystem.

Limited managed habitat recovery in the spring after burning in the fall

Tidal habitat recovery in the spring after burning in the fall

We found no evidence of post-fire peat collapse in tidal or managed wetlands, probably because the soils were mineralized. Elevations did not change due to the fire, but it did initially influence nutrient concentrations. Managed wetlands had low concentrations of nitrate (nitrogen) in burned and unburned areas, while nitrate was released in great concentrations in the burned tidal wetlands right after the fire. Burned managed marsh soils also lost the ability to process ammonium to nitrate from the fire, an important step in the nitrogen cycle. In comparison, burned tidal marsh soils did not lose this ability.

These differences in soil response likely influenced patterns of plant recovery. As of April 2019, the tidal wetlands were recovering well, with high species diversity and cover; the same community that was burned away is coming back. In the managed wetlands, however, recovery over the winter was very poor. The few portions of the wetland that have any recovery are dominated by pickleweed or *Phragmites*. It may be that winter flooded conditions dampened recovery in the managed wetlands compared to tidal wetlands, so we are looking forward to sampling again this fall to get a better handle on true managed wetland recovery after a summer growing season. We will also be looking into what is driving the poor recovery we have seen so far in order to understand what activities might lead to better fire recovery in managed seasonal wetlands.



Dead Pickleweed in burned managed wetland

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2544 Grizzly Island Road
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****Please remit to: SRCD @ 2544 Grizzly Island Rd. Suisun, CA. 94585**

Enclosed is a check for how many lunch(es) ____

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