1963 60 YEARS 2023 Suisun RCD

# Land of the West Wind

October 2023 Volume 23 Issue III

## A Conversation with John Eadie
## Dennis G. Raveling Chair of Waterfowl Biology

*Interviewed By Marina Guzman and John Takekawa, SRCD staff*

After a long and storied career as a Distinguished Professor in Fish, Wildlife, and Conservation Biology, John Eadie is retiring in June 2024. John grew up on a farm in British Columbia and graduated from UBC with a PhD in Zoology. He moved to UC Davis (UCD) in 1995, and over the years, he and his students' research have led to many important discoveries about California waterfowl. He has been heavily involved in the California Waterfowl Association (CWA) hunt education programs. He was recently awarded $60,000 for the UCD Teaching Prize for Undergraduate Teaching and Scholarly Achievement which he donated back for a scholarship to promote increased access for a greater diversity of students to follow a career in Wildlife and Waterfowl Biology. A few months ago, we spoke with John about his research work in Suisun Marsh, career insights, and vision for future leaders in waterfowl conservation.

***SRCD: What stimulated your interest in Suisun Marsh?***

In the mid-1980s, UCD Professor Dennis G. Raveling and Dan Connelly, the state waterfowl coordinator at that time, took a fieldtrip to Suisun Marsh. While tromping around, they noticed that there were a surprising number of breeding mallards in the Marsh. Raveling put his graduate student Bob McLandress into the field to start looking at breeding mallards on Grizzly Island. When I came to California in 1995, Bob (by then at CWA) was still keen on the mallard work, so we recruited a few grad students to continue the studies including Josh Ackerman (now at the U. S. Geological Survey) and Kevin Ringelman (now at Louisiana State).

[*A Conversation with John Eadie,* Cont. on Pg. 4]

## Land of the West Wind

Quarterly Newsletter
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**SRCD's public meetings are every second Wednesday of each month at 2PM 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. It's 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. With cooperation from landowners and various agencies, SRCD develops new programs aimed at protecting and improving the Suisun Marsh for future generations.

### Holding the Line: Flood Gate vs. Flashboard Riser Drain Control to Maintain Waterfowl Season Shoot Levels


The 2023 waterfowl season has arrived, and wetland managers are actively preparing ponds for the most highly anticipated 103 days of the year. Each club across the Marsh floods, drains, and circulates differently. There isn't a one-size-fits-all approach to water management. Each club works to cooperate with mosquito abatement inspections during flood-up, while in the western marsh, water quality standards also must be maintained. The end goal is to reach the ideal shoot level for the duration of the waterfowl season.

There are two primary ways that clubs can control and circulate water. The conventional method has been the use of flashboard risers and boards to a set pond level. This method is very popular, because once the boards are set, it can be left for the rest of the season. The water level will be maintained that provides blind concealment, food availability for the ducks, and boating access. For properties at high elevation, this method is often best and requires less management of water control structures. However, this method can have a few drawbacks. Boarding up risers will also lower the rate of water circulation and reduce the exchange with "fresher" slough water. While the water is still saltiest as the club floods, low circulation rates may increase salt accumulation in pond bottom soils. Furthermore, lack of water movement will result in stagnant water, and as the plant matter decomposes, it can leave a foul smell across the club and an even worse smelling wet retriever in your back seat for the ride home. If California is fortunate enough to have a large rainstorm during the season, the adjustments needed for less drainage and more rainwater accumulation can require some work.

The alternative method of water control is a flood gate which requires more small scale adjustments. The property drains the maximum amount of water with each low tide cycle. The drain structures are left 100% open (or moderately closed for higher elevation clubs), and the water level is controlled with minor adjustments to the intake structures. Once the property is at shoot level, adjustments are made by opening and closing of flood gates based on tide levels. With open drain gates, maximum drainage and circulation will result in lower soil salt accumulation and reduced areas of stagnant water.

The flood gate method has multiple benefits and lends itself to easy adjustment and preparation for storm events. Gates may be shut in advance a few inches at a time to decrease the water level for the incoming rainfall. It may take trial and error to fine tune the club's ability to be controlled by flood gates, but the benefits often outweigh the downsides of this method. However, someone must be designated to assess the tides and make the needed adjustments. Landowners are encouraged to contact their Water Manager to discuss potential changes in gate operations that may improve their circulation.

## Start of The New 2024 Water Year

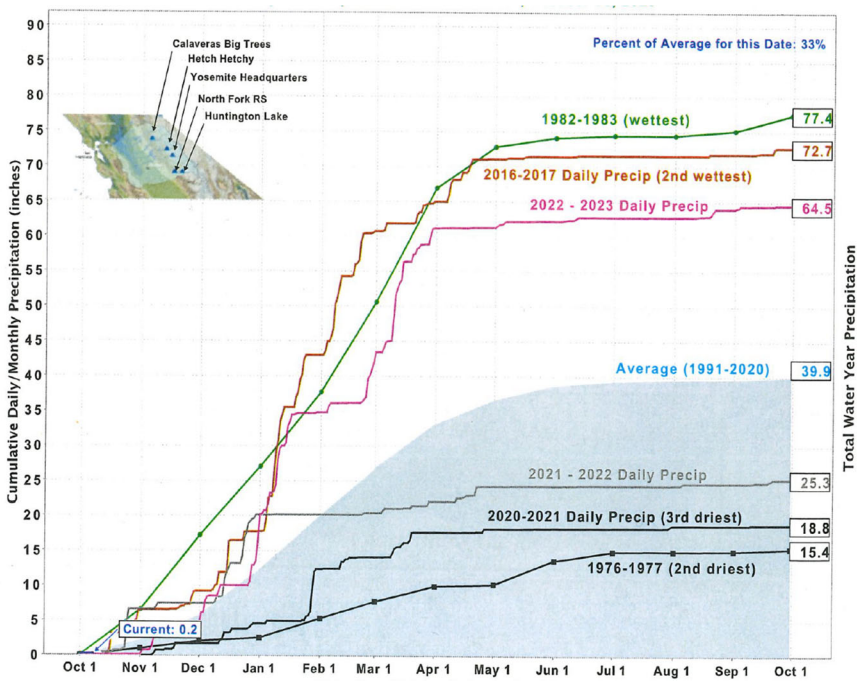



Fig. 1: Data from October 8, 2023 showing the San Joaquin Precipitation 5–Station Index with the most current water year information

The 2022-23 water year was outstanding! Both the 8-station index for the Northern Sierra and 5-station index for the San Joaquin (Fig. 1) showed that the 2022-2023 Daily Precipitation was above average and the third wettest year on record. The wet year was partially a result from the El Niño/La Niña pattern that periodically occurs as well as the fact that California experienced both a bomb cyclone and atmospheric river events during the past winter.

According to the Climate Prediction Center, there is a 95% chance El Niño will continue through this winter and is predicted to have strong effects in some areas. However, the primary tool the director of Climate Prediction Center, David DeWitt, uses in weather dynamic models is precipitation forecasting, and he stated that California is probably going to have a near-normal rainfall season. DeWitt added that there is low confidence in the long-term forecasting, and as Californians get close to the winter, the forecast could change. Another California's state climatologist, Michael Anderson, also echoed DeWitt's sentiments by stating that even though El Niño is on track to be very strong, it isn't a good predictor of California's winter. Anderson explains that many climate systems play a role in the weather outcomes.

The historical record shows that the three strongest El Niños developed in the last 50 years, and Suisun Marsh had a flood event during each of those years (the winter of 1982-83, 1997-98, and 2015-16). While climatologists are still debating this year outcome, the likelihood of increasing climate extremes suggests that **landowners should increase the club preparedness for winter extreme events by upgrading levees, conducting surveys with storms, pre-positioning flood-fighting equipment, and stockpiling sandbags and plastic sheeting.**

## *2023 Waterfowl Breeding Population Survey Report*

The Waterfowl Breeding Population Survey Report has been conducted by California Department of Fish and Wildlife (CDFW) since 1948. Although the survey was redesigned in 1991, data from the survey's current form will be incorporated into U.S Fish and Wildlife Service Adaptive Harvest Management framework and become an integrated part of the duck harvest management framework in the Pacific Flyway. The survey covers the 9 major concentration areas in the state. It includes the Sacramento Valley, Sacramento-San Joaquin Delta, San Joaquin Grasslands, San Joaquin Desert, Suisun Marsh, Napa/Santa Rose Valley, Northeastern California, East Central Valley, and West Central Valley.

The timing of the survey follows nesting chronologies in these regions, and differences are found with increasing latitude, higher elevations, and cooler temperatures. For example, about half of all duck nests are initiated by late April for the Central Valley and a bit later in mid May for Northeastern California. CDFW conducted this year's breeding waterfowl population survey from April 24-29 in the Central Valley and May 17-19 in northeast California.

*Preliminary results from this year's survey are shown below and will help inform conservation & management practices.*

| SPECIES | 2023 | 2022 | % CHANGE FROM 2022 | % CHANGE FROM LTA |
|---|---|---|---|---|
| MALLARD | 6.13 | 7.43 | ▼18 | ▼23 |
| GADWALL | 2.56 | 2.69 | ▼5 | ▲25 |
| AMERICAN WIGEON | 1.89 | 2.19 | ▼14 | ▼28 |
| GREEN-WINGED TEAL | 2.50 | 2.15 | ▲16 | ▲15 |
| BLUE-WINGED TEAL | 5.25 | 6.49 | ▼19 | ▲2 |
| NORTHERN PINTAIL | 2.22 | 1.78 | ▲24 | ▼43 |
| NORTHERN SHOVELER | 2.86 | 3.04 | ▼6 | ▲8 |
| REDHEAD | 0.93 | 1.07 | ▼13 | ▲27 |
| CANVASBACK | 0.62 | 0.59 | ▲6 | ▲5 |
| SCAUP | 3.52 | 3.66 | ▼4 | ▼29 |
| TOTAL DUCKS | 32.32 | 34.66 | ▼7 | ▼9 |

NUMBERS IN MILLIONS. LTA (LONG-TERM AVERAGE)

***SRCD: What was the first research you conducted on the area?***
Bob was the CWA Science Director and then President, and he was keen on keeping research focused on local mallards in the California harvest. Josh was my first PhD student in the Marsh, and then Ed Burns (now with the Natural

Resources Conservation Service) conducted the first formal diet study. I also worked with Mike Miller (then a federal research biologist in Dixon) to see if ducks avoided red water in the Marsh. We did some behavior work and also energetics studies. Ed's research helped change our perspective on what food plants to manage for in the Marsh. Productivity was related to salinity, water quality, and location, so Mike and Ed's work was really important in changing some of the early management philosophy. The marsh is always changing, and it's changing still.

***SRCD: A lot more ducks wintered in the Marsh in the 1970s, what do you think made it change?***
Back in the 1970s before the Central Valley Joint Venture (CVJV) got started, birds were in poorer body condition. They were pretty skinny – it wasn't the land of plenty. Second, there wasn't as much rice, so the birds may have been in the Marsh out of necessity-- it will always be a kind of a refuge. I think we now just have more habitat available in the Valley. How was 2-3 times the number of birds back then surviving on the same food resources? I would guess food resources were a lot higher then.

***SRCD: Where do you see the differences in food productivity from years past?***
You can look at food correlated with salinity and fresh water -- the most productive marshes are in the freshest areas. The west side is more saline, so productivity is lower there than in the northeast. Water management and availability has always been the story, and that is why we have salinity gates. We are working on an agent-based model that is spatially explicit so we can determine where habitat change has the greatest impact on waterfowl. There are places with only 100 pounds per acre productivity, but it all comes down to management capacity. My PhD student, Dan Smith found that management affects which species grew but did not have a strong correlation with the amount of food produced.

***SRCD: What has been your most recent research in the Marsh?***
We have recently worked on an integrated project over 5 years. Doug Kelt (UCD) was working with Katie Smith (UCD, now WRA, Inc.) and Laureen Barthman-Thompson (DFW) on salt marsh harvest mice ("salties"). John Durand (UCD) was doing the fish work continuing on from Peter Moyle (UC Davis emeritus). Brian Todd (UCD) was doing western pond turtle work, and we were doing the waterfowl work collaborated closely with SRCD and Mike Casazza and Josh Ackerman at USGS, so it was a team effort.

We had 3 students on that project. Dan Smith completed a huge amount of seed sampling over 2 years. He tied management in with seed variability to determine how different practices affected productivity and species composition. Jackie Satter looked at duck diets with hunter-collected and pass-shot birds, and she is analyzing 600+ samples of 5 different species for the first comprehensive multi-species assessment in the Marsh. Rob Blenk pulled this together using our integrated model "SWAMP" [Spatially Explicit Waterbird Agent-based Model Program] to provide insights into different management scenarios. We're modeling 100,000 birds at 15-min intervals in the winter to track energy, fats, movements, and mortality. We included bird foraging efficiency, since we had no idea of how species differ in extracting seed sizes from different substrates and water depths.

***SRCD: What are some of your recent findings?***
We're looking at food availability and use and how that translates into body condition to predict movement rates, emigration and immigration, carrying capacity, and even mortality. The CVJV population goal is developed from the Central Valley average of 500 pounds of seed per acre. It was reduced to 50% to adjust for salinity resulting in a carrying capacity of 214,000 birds in the Marsh. However, Dan's samples of 125 pounds per acre and recent modeling estimate 84,000 birds as the current capacity. Tidal wetlands produce about the same amount of food in pounds per acre as managed wetlands, but there is almost no food used by waterfowl in tidal wetlands.

[*A Conversation with John Eadie,* Cont. on Pg. 5]

That kind of ties back to the integrated method. Looking at the fish side, I went out to Denverton with Peter Moyle which was the first time Peter sampled fish food inside a managed wetland. Peter was concerned about declining fish and felt that duck clubs were part of the problem because of black water and red water quality issues. But when Peter started sampling the output from the managed wetlands, he said "Holy smokes, look at all of this!" Recently, UCD PhD student Kyle Phillips working with John Durand has shown managed wetlands can produce lots of fish food. Then Katie Smith found "Hey guess what, there is a lot of plants in these managed habitats that are really good for salties." So, it's that openness to assess the systems and maybe mutually manage them -- I think that is the secret.

***SRCD: Are there any studies you would like to see in the Marsh?***
Every 2-5 years, we should be doing some sort of systematic sampling. We often go out and take a snapshot and go this is how it is but imagine if we took a snapshot when we were teenagers and said this is how we will look for the rest of our lives. I mean I would love it, but unfortunately the old Marsh has kind of degraded a little bit, has got a lot more gray. I think we need to move beyond single species management. I am a waterfowl guy, but we can't just be thinking about how we manage just for ducks or fish. There are lots of endangered fish that are going to take priority, but how do we manage to benefit salties and what are we doing for raptors? Let's learn collectively, looking at all the mutual benefits and constraints in an integrated fashion.

The Marsh can be a model of a partially reconciled ecosystem as we move forward with tidal restoration, with maintenance of managed wetlands, water issues, sea-level rise and the gauntlet of challenges that are coming. If we think about waterfowl as ambassadors, they are critical. If we are just going to manage for fish and take away all the carrying capacity for waterfowl, well, then it is like you are choosing who is your favorite offspring. I wouldn't raise my family that way, and I don't think that is a good way to "raise" the Marsh.

***SRCD: How do you help achieve this outcome and what should be done to help?***
There are so many levels on which you have to act to affect that change, and perhaps it starts at the beginning with getting youth engaged. Nature deficit syndrome -- we know that the lack of interaction with nature causes learning disorders and emotional issues -- there is a lot of science supporting that. That is why the wood duck project was started to make those opportunities. That was important to me because of the Raveling chair; it was something I added as an educator. Students come through this program and say: "I had no experience; this is the first time ever holding a live bird," and now students have said "this changed my life." Although that's pretty late down the line [for nature education], but instead of death by 1,000 cuts, its life by 1,000 tiny little band aids.

I have had 57 grad students, and I think 50 of those are employed in some aspect of biology. It was not always in a waterfowl capacity, but I am just thrilled that they are out there. Many are not duck hunters, but they are aware of the importance and integration of that component. It is really wetland conservation that is the umbrella in which all of this rests. Ducks are a big part of it, and that's why we get youth involved.

***SRCD: Does this tie into your presentation "Who's minding the marsh"?***
Yes! We are at a critical juncture of being able to backfill retiring professional biologists and particularly university programs. We lost a lot of the programs [in waterfowl] and maybe the interest and desire aren't there, but I think some of the schools have gone to other fields and disciplines that bring in more money. There is a real push that way, but waterfowl programs do well that have some a level of protection like the Raveling Chair which was the first, and now there are 10 university chairs. If you build these programs piece by piece, you can harness those energies to invest in our talent pool at the university level. I think we need to put more thought into what actually is the more cost-effective role of universities and wildlife conservation programs.

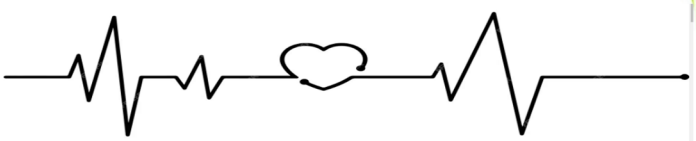

**Automated External Defibrillators (AEDs):**
**Save a Life by having an AED at your Clubhouse!**

As hunters venture out to different areas of Suisun Marsh before sunrise, they also must acknowledge that if a situation occurs where medical help is needed, that help may be delayed for an extended period. Hunting in Suisun Marsh typically entails a 10-30 minute drive on country roads to a club or wildlife area with more time needed to reach most blinds. Although most ambulance services are held to a standard of arriving on scene within 9 minutes, accessing a site within the Marsh in under 10 minutes is unlikely in most cases. If someone collapses from a heart attack or Sudden Cardiac Arrest (SCA) and is without oxygen for as little as 4 minutes, brain cells begin to die, and the heart and other organs can be damaged. For every minute their heart isn't beating, there is a 7-10% decreased chance of being revived, and the survival rate for SCA in the U.S is only 5%.

Automated External Defibrillators (AEDs) greatly lower the risk of death from SCA. AEDs are lightweight portable devices that can be kept at a clubhouse to significantly increase survival rates among heart attack and SCA victims by as much as 60%. Although, SCA can affect anyone, the odds of SCA increase with age, and for every 10 years over 45, the chances of having heart disease doubles. In fact, 50% of males over 45 who died from SCA had no previously reported symptoms of heart disease. AEDs can be used multiple times and are designed with simple voice prompts on how to use the device. Once the AED is opened, the automated prompts will not only direct its proper use but also will provide visual clues that guide the user through the process. The AED then checks for life-threatening heart rhythms (ventricular fibrillation or unstable ventricular tachycardia) and if needed, provides an electric shock to kick a heart back into a normal rhythm. It will not accidentally shock someone who has a normal heart rhythm.

AEDs save lives and are the main effective treatment for SCAs which are the leading cause of death in the U.S. claiming 325,000 lives every year. That is nearly 1,000 victims a day or one person every 2 minutes, and it is very likely that an AED will be used on a friend or family member. Investing in an AED for your duck club is similar to investing in fire extinguishers, a safety measure used to prevent disasters. The likelihood of their use on any day is low, but the benefit of having an AED can save a life over the long run. Please consider investing in an AED — the price range for a unit is about $1,200 -$2,200.

**Save a Life! If you have an AED, please let us know, and we will include it on a list and map on our website. SRCD has AEDs at the main office and at Lower Joice Island #424.**




- Green-winged Teal are the smallest dabbling duck species! They weigh an average of 14oz, grow to 14.5" in length with a wingspan of 24".
- They can take flight directly from water without running across the surface and are among the fastest flyers, flying up to 50 mph.
- Teal are early migrants and highly gregarious. Flocks can be made up to 50k birds at a time.
- The Aleutian Islands supports a population of teal that doesn't migrate. During the winter, these birds move to ponds, lakes, and nearby beaches where they forage on tide pools and shallow reefs.
- Eurasian Teal differ from Green-winged Teal in North America because they lack the vertical white shoulder stripe and instead have a horizontal white stripe along the back.

## 2023– 2024 Waterfowl Hunting Regulations

** The following is only a summary. **

**7 duck daily bag limit**

**7 Mallard (2 hens)**
**2 Canvasback**
**2 Redheads**
**2 Scaup**
**1 Pintail**
**Goose bag limit: 30 birds (20 white, 10 dark)**

**Balance of the State**

**Regular Season: Oct 21 - Jan 31**
**Scaup opens Nov 7**
**Goose season ends Jan 28**

**Special Hunts**

**Youth Hunt: Feb 3 - 4**
**Veterans Hunt: Feb 10 - 11**
**Late Canada Goose: Feb 17 - 18**
**Late White Geese & Whitefronts: Feb 17 - 21**

**Other**

**Snipe: Oct 21 - Feb 4 (8 bag limit)**
**Dove: Nov 11 - Dec 25 (15 MODO, 10 WWDO)**
**Pheasant: Nov 11 - Dec 24 (2 males bag limit for first 2 days of season, 3 males afterwards)**
**Powered spinning-winged decoys opens Dec 1**

**See Fish and Game Commission's website for details**

## Public Announcement Board

In California, West Nile Virus (WNV) is the most common and serious mosquito borne disease found among humans, horses, and birds alike. As of October 5, 2023, the Solano County Department of Health and Social Services, Public Health Division, and the Solano County Mosquito Abatement District (SCMAD) have confirmed one positive human case of WNV. Solano County officials are advising the public to stay covered up when outside and to wear DEET or other repellents to keep mosquitos from biting. Other ways to reduce the risk of contracting the illness is to ensure that doors and windows have tight fitting screens to keep mosquitos out, drain standing water, or contact SCMAD for free mosquito fish to minimize mosquito production.

Some counties near Solano have a higher number of positive cases. Yolo Country has the highest counts of human infections with 16 cases, whereas Contra Costa has 3 positive human cases. However, the string of infected humans, animals, and insects across the Bay Area is expected to increase. Currently, Solano County has confirmed 15 avian cases of WNV and 24 cases among mosquito groups. Contra Costa has recorded another 50 avian cases and 18 mosquito groups whereas Yolo has reported 63 avian cases and 292 mosquito cases. Compared to last year, numbers are almost doubled and with the considerably wetter year than last year, and residents and visitors of Suisun Marsh are urged to take precautions. The best way to prevent WNV is to protect yourself from mosquito bites! Birds suspected to be victims of the virus can be reported online at www.WestNile.Ca.Gov or by calling 1-877-WNV-BIRD (1.877.968.2473)

## SOUTH CAROLINA STYLE BARBECUED DUCK RECIPE

Ingredients

2-3 pounds of ducks

Sauce

| | |
|---|---|
| 4 tablespoon of unsalted butter | 1 tablespoon of dry mustard |
| 1/2 cup of grated yellow corn | 1 bay leaf |
| 1/2 cup of yellow mustard | Cayenne pepper for seasoning |
| 1/2 cup of brown sugar | Kosher salt |

1. In a saucepan, melt butter on medium heat and sauté onion until translucent (not brown). Stir in prepared mustard, sugar, vinegar, dry mustard and bay leaf. Season to taste with salt and cayenne pepper. Turn heat off and allow a gentle simmer for 30 minutes. Once flavors blend, remove by leaf and puree sauce before use.
2. Gather and coat duck legs with sauce in containers. Reserve half of sauce for basting later.
3. Cover container and let marinate for at least 30 minutes. Keep at room temperature for grilling.
4. Organize grill with an open space so that duck legs are not in direct heat. (example: with charcoal or wood grill, have fuel on one side of grill floor and other half left open.
5. Set duck legs on grill, cover and cook until tender (2-3 hours). Baste legs with remaining sauce every 45 minutes and turn once every hour.

Land Of The West Wind
SRCD Newsletter
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## Fall Reminders

**Actual Work Reports: All landowners who applied under the USACE RGP3 permit should report back to their water manager on what was completed during the summer work season.**

**Winter-run Chinook Salmon Intake Gate Restrictions are in effect from November 1, 2023 through January 31, 2024. Intake gates along closure areas will be monitored by SRCD staff.**

**Solano County Mosquito Abatement District continues to accept cost share applications from landowners who work closely with them to control fall mosquito production.**