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Ducks and More: Value-added Wetland Management

Monica Iglecia

Suisun Resource Conservation District Fall Landowner Workshop

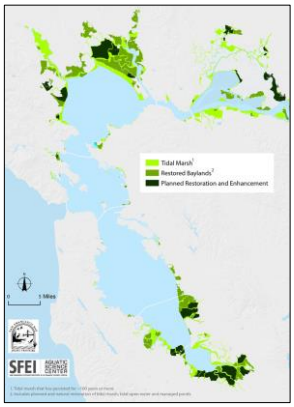
September 5, 2018

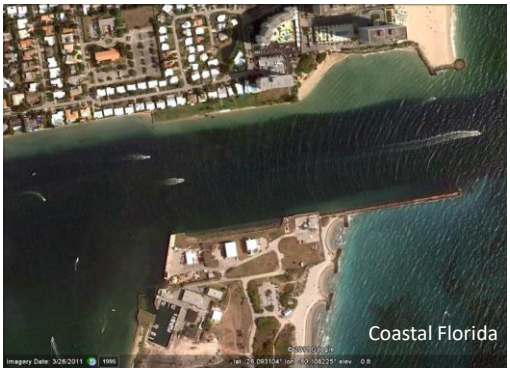
@monicaiglecia

Photos by Brad Winn and Monica Iglecia

- The least sandpiper is the smallest shorebird in the world- about the size of a sparrow. This tiny, long-distance migrant makes its nest in the subarctic and spends the nonbreeding season as far south as coastal Chile
- LESAs are not particularly showy, but in the right light, this tiny little bird can be downright beautiful. In 2015 we held a shorebird workshops in the Mississippi River Valley , we were looking out on a wetland with Bill, the owner.
- That day – he saw least sandpipers for the first time and learned about their migration, their needs, and their reliance on wetlands like his. After that- he committed to adjusting his management to accommodate these beautiful birds.
- And this is what I, and our team at Manomet are working towards - - sharing information and inspiring action to ensure great migrations like this continue

An altered landscape





Over 90% of California's wetlands have been lost

And we have some work to do!

Nearly half of all wetlands in the United States have been lost and over 60% of our coastlines have been altered in some way

Within California - more than 90% of wetlands have been lost- converted to other uses like urban development and agriculture.

These losses and alterations have significant negative effects on the species that depend on these ecosystems

Integrated management needed

- Include a broad suite of taxa in wetland management
- Priority taxa and species will vary by region
- Suisun Marsh: birds, fish, mammals, plants

In the face of such losses, the ability to manage our remaining wetlands for the wide variety of wetland and estuarine dependent species is critical to maintain these populations.

The species in management need will depending on location -

Here in Suisun Marsh, you are fortunate to support a large number of incredible species – including waterfowl and shorebirds, but also mammals including river otter and Salt marsh harvest mouse and fish like sturgeon and delta smelt, and plants like soft bird's beak and Suisun Thistle.

Adapt management with new knowledge

Ask Questions

Track and Monitor

Share and Adapt

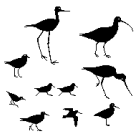
And as we work to provide habitat for the species that need it –

It is also important to adapt management actions as we learn more about how the ecosystems function and the species that rely on them

And to share that information to decision makers and managers that can implement actions to benefit wildlife and wetlands.

This workshop is a testament to the value of this kind of information sharing

A focus on shorebirds in the Americas



Manomets Shorebird Recovery Program focuses on shorebird conservation…

Shorebirds are members of the order Charadriiform

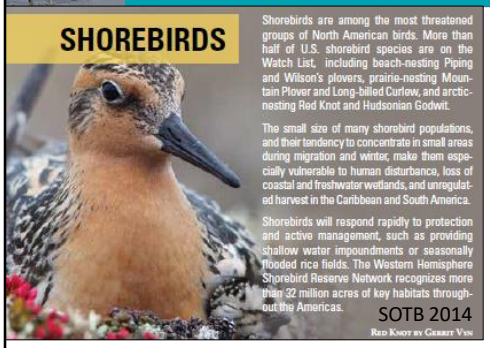
Here in North America there are four major shorebird families… sandpipers (most diverse)

We are stewards of ¼ the worlds shorebirds

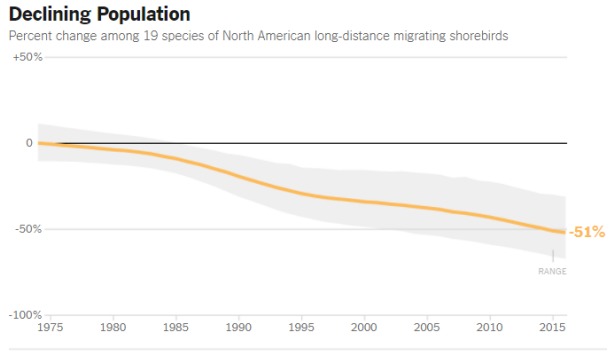
And we are fortunate enough to host nearly ¼ of the world's shorebirds – with 52 shorebird species relying on habitats in US and Canada each year to breed.

With this great diversity of birds also comes great responsibility to protect these species

Shorebirds around the world are in decline



- Habitat Loss
- Invasive Species
- Disturbance
- Predation
- Climate Change
- Pollution



Source: Environment and Climate Change Canada

Data from the International Shorebird Survey

More than 40% of the world's shorebirds are in decline

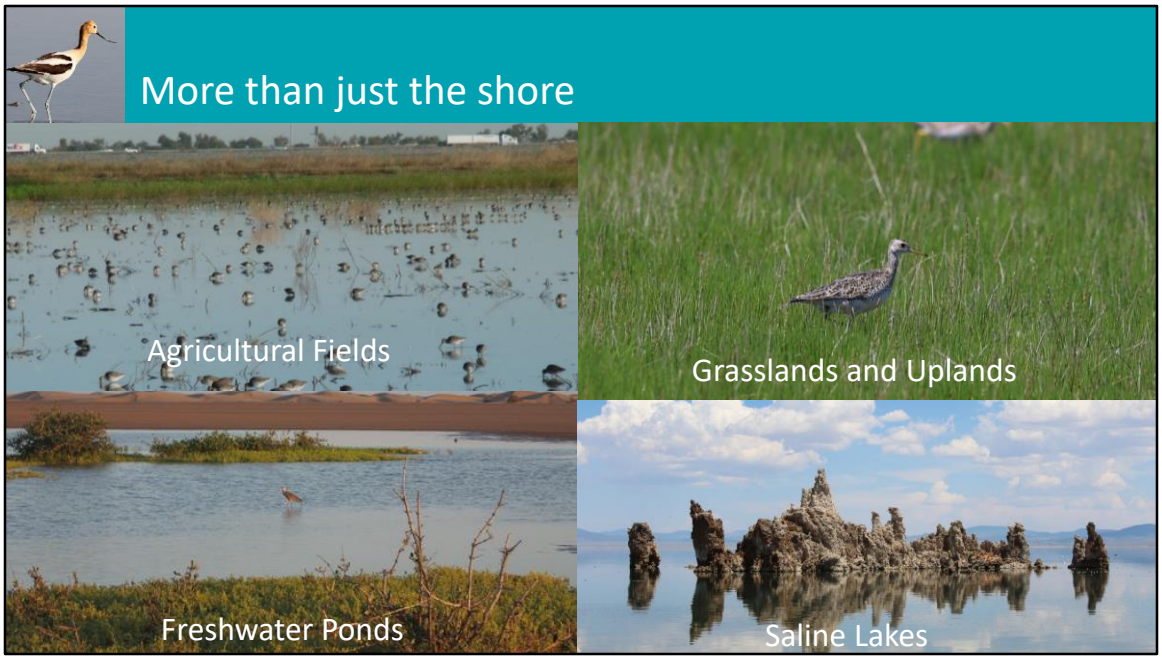
Globally – over 40% of all shorebird species have populations in decline.

An analysis of the populations of long-distance migrants found they had declined by more than 50% in the last 40 years – and for some species, like Semipalmated sandpiper, Red Knots, and Whimbrel- that number is higher than 80%.

The top threats to shorebirds include…..
Habitat loss -
Invasive and introduced species but also domesticated cats and dogs
Disturbance – caused by humans, or dogs on beaches, or even some forms of recreation – can render locations unusable by shorebirds.
Predation and Pollution

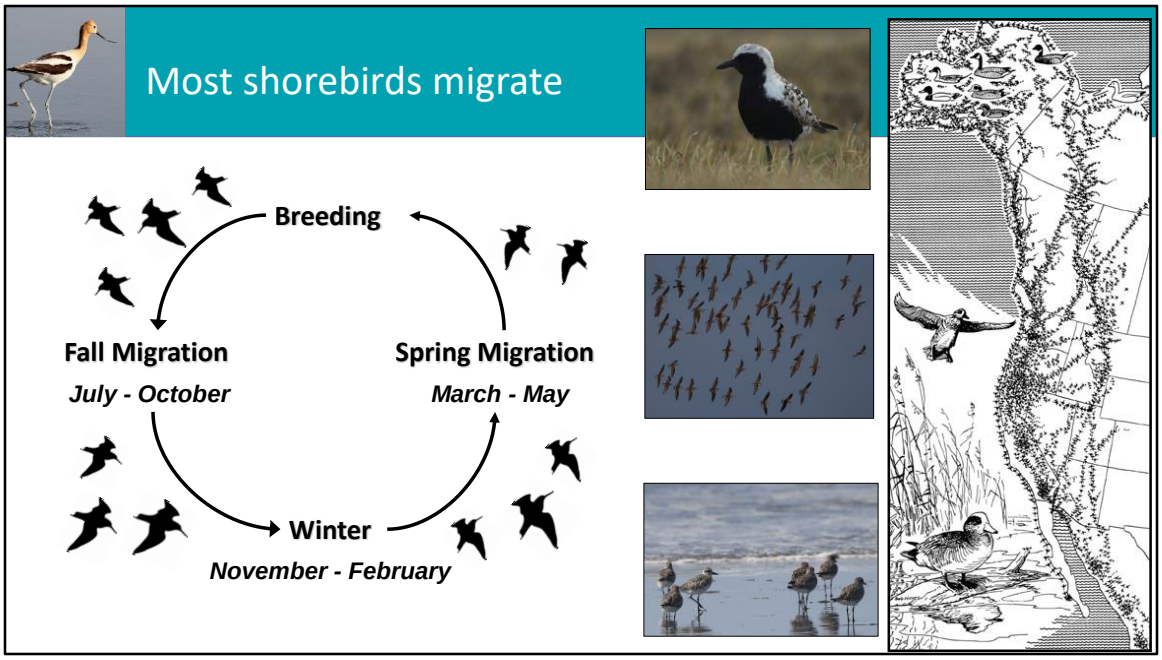
Pollution – increased rate or harmful algal blooms threatens the safety of the water, oil spills,

shorebirds rely on and use a variety of habitats



But, shorebirds are not just at the shore –

Shorebirds also use habitats in the interior of the continent like…



-Like ducks - Most shorebirds are migratory - moving between breeding grounds in the US and Canadian Arctic and wintering grounds here in California or as far south as Tierra del Fuego

- Then each spring, they make their harrowing journey back to the breeding grounds to lay their nest and raise their young.

~18,600 miles round trip in one year

Technologies like solar-powered satellite transmitters provide real time details about precisely where shorebirds go.

A Satellite transmitter placed on T6, a male Whimbrel tagged on the breeding grounds along the Colville River of Alaska uses ag lands in California and coastal sites in Mexico during migration, stops briefly in Peru and then spends its winter in Chile.

In spring, t6 flies over the Galapagos stopping again in Mexico and then heads back to Alaska

This bird relies on just a few places each year on this enormous migration.

To T6– these are the most important places in the world.

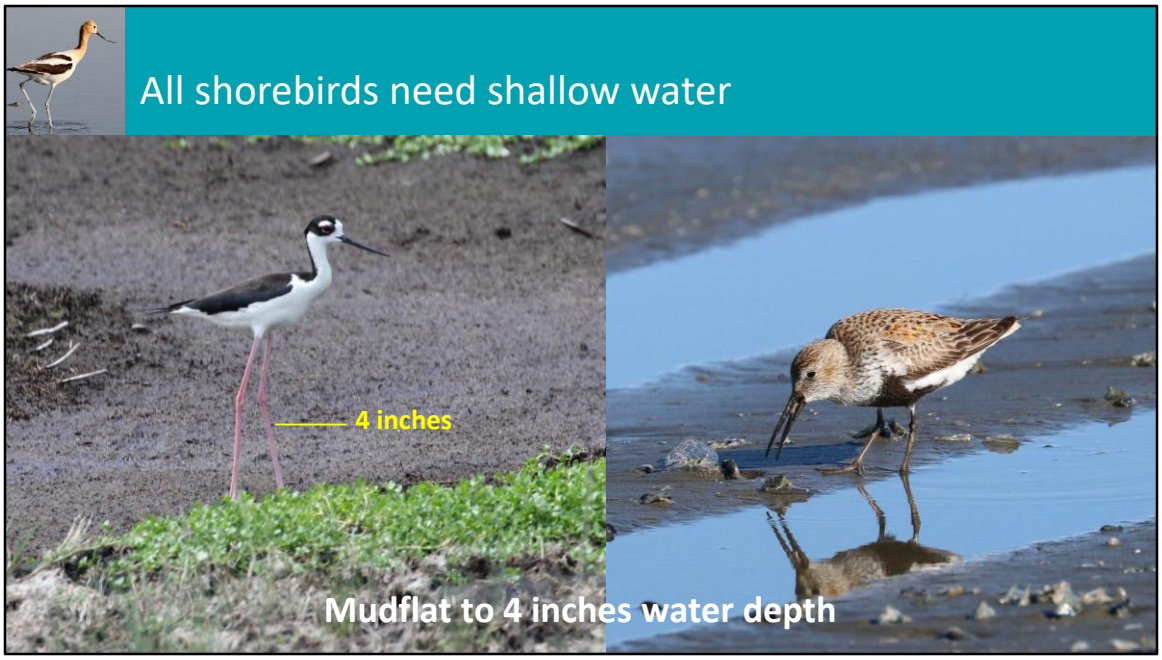
Most shorebirds rely on just a few places in the Hemisphere -

They can congregate in large numbers –like these semipalmated sandipipers in the Bay of Fundy- when they do it makes for incredible viewing opportunities but it makes them susceptible to changes in these habitats – like habitat loss, oil spills, and sea level rise

These 104 dots are part of the Western Hemisphere Shorebird Reserve Network representing some of the most biologically important places for shorebirds where the landowners and local communities have committed to protecting the site for these birds.

WHSRN is made up of hundreds of partners but its executive office is at Manomet.

THERE ARE 9 WHSRN Sites in CALIFORNIA- three that are very close – SF Bay, Sac Valley rice and wetlands, and Grasslands in the San Joaquin

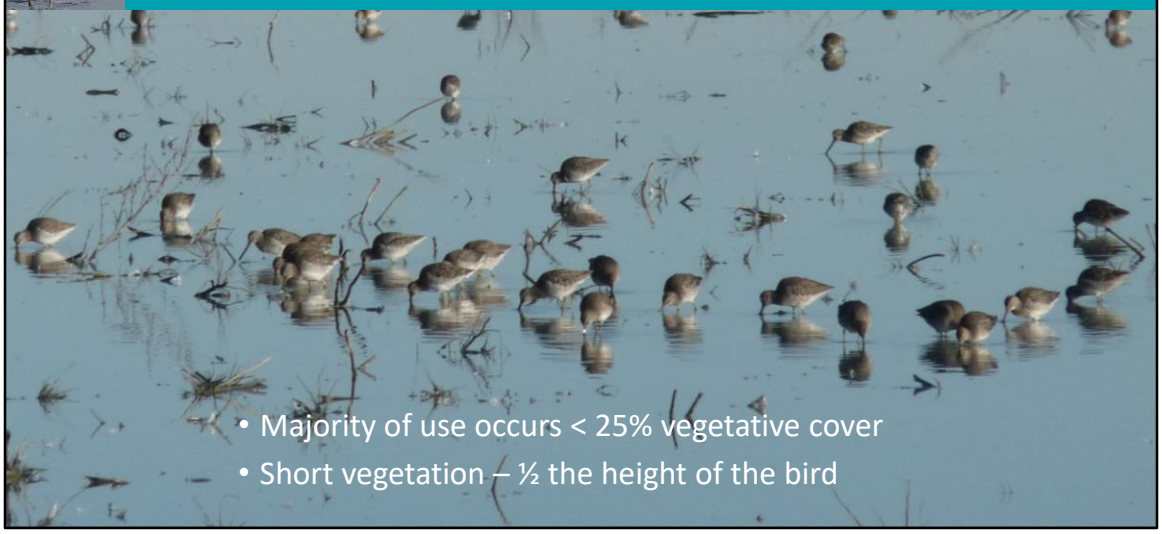


But no matter where they are– all shorebirds need shallow water

– this is where they to find the foods they eat – invertebrates in the mud, or the eggs of crabs and fish – and they need to eat a lot

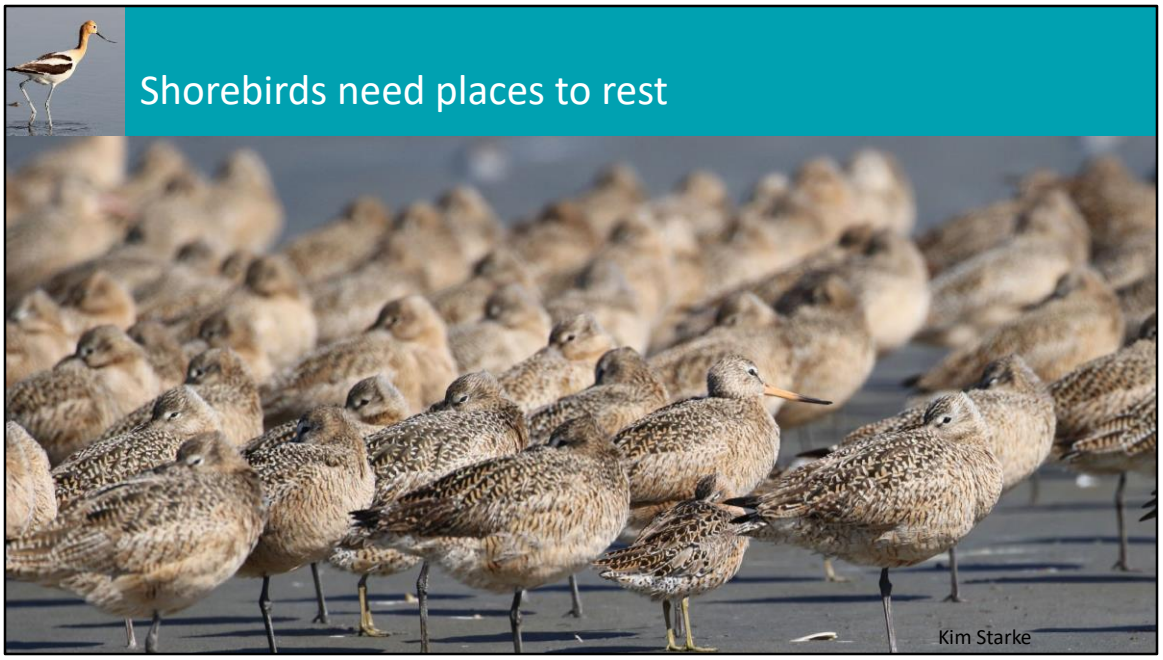
- For reference- BNST tarsus is approximately 4 inches.

Shorebirds prefer un-vegetated habitats



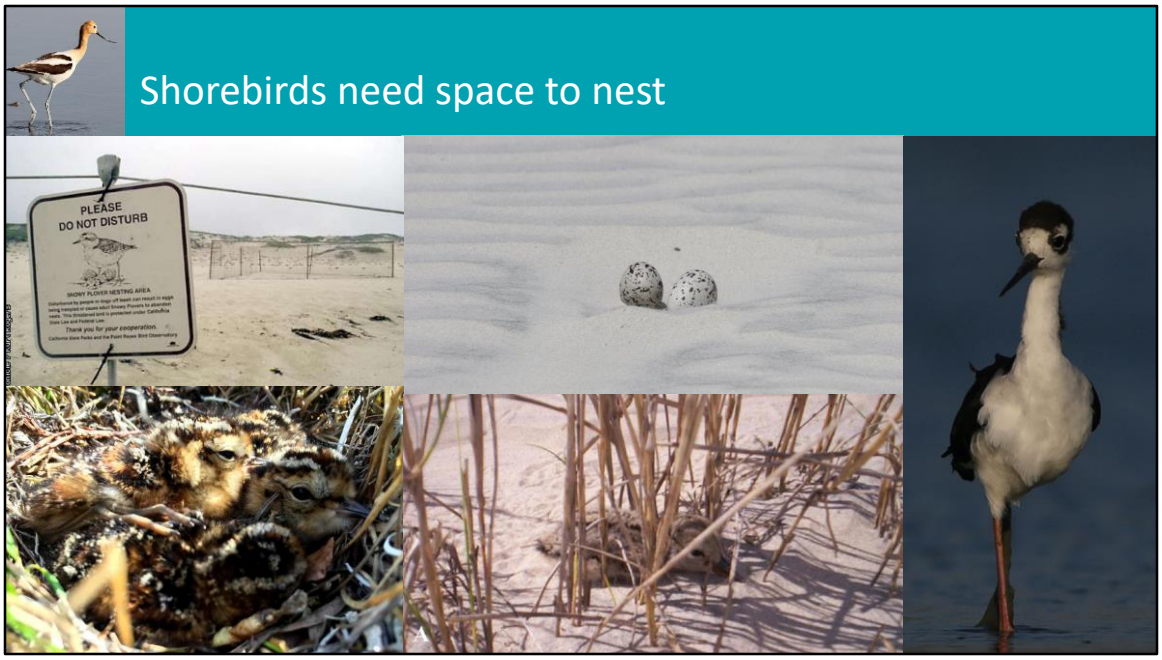
- Majority of use occurs < 25% vegetative cover
- Short vegetation – ½ the height of the bird

Keep an eye out for predators



And they need nearby places to rest and to sleep when they aren't forgaing

- They need to be free of disturbance while they rest so they have the energy to make these great flights or to maintain good body condition for future migrations



Shorebirds need safe places to nest

Whether these birds are nesting on arctic tundra or our coastal beaches- most shorebirds nest on the ground. While their nests are often well hidden - they are very vulnerable to predation and other disturbances like beach driving

This region is host to many birds that migrate- but it also hosts breeding BNST, AMAV, KILL, and others

Shorebirds respond to management

Waterbird Communities in Managed Wetlands of Varying Water Depth

M. A. Colwell and O. W. Taft[1]

Accessible Habitat for Shorebirds: Factors Influencing its Availability and Conservation Implications

Jaime A. Collazo[1], Dawn A. O'Harra[1] and Christine A. Kelly[1,2]

Implications of Coastal Wetland Management to Nonbreeding Waterbirds in Texas

Owen N. Fitzsimmons · Bart M. Ballard · M. Todd Merendino · Guy A. Baldassarre · Kevin M. Hartke

Journal of Applied Ecology 1998, **35**, 95–108

Winter management of Californian rice fields for waterbirds

CHRIS S. ELPHICK and LEWIS W. ORING

Ecology, Evolution & Conservation Biology/186, University of Nevada, Reno, 1000 Valley Road, Reno, NV 89512, USA

Fortunately, shorebirds respond well to habitat management.

If you build it – they will come.

The Habitats for Shorebirds Project

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To inspire and foster the implementation of management action on wetlands, coasts, and uplands, in order to improve life sustaining conditions for shorebird populations at regionally important locations.

That is why Manomet, we are working to….

We do this by teaching educational workshops to stakeholders and working with landowners and land managers to help reduce threats to shorebirds throughout their life cycle across the Western Hemisphere

Habitats for Shorebirds workshops

Participants are:

- Private landowners
- Land managers
- Industry
- Municipalities
- Biologists
- Citizen scientists
- Educators
- Students
- Decision Makers
- Interested stakeholders

Topics include:

- Shorebird biology and migration
- Local and hemispheric threats
- Habitat management techniques
- Field estimating and identification
- Population monitoring

Our workshops are designed in collaboration with local partners and attended by participants at important shorebird sites from Canada to Tierra del Fuego including…..

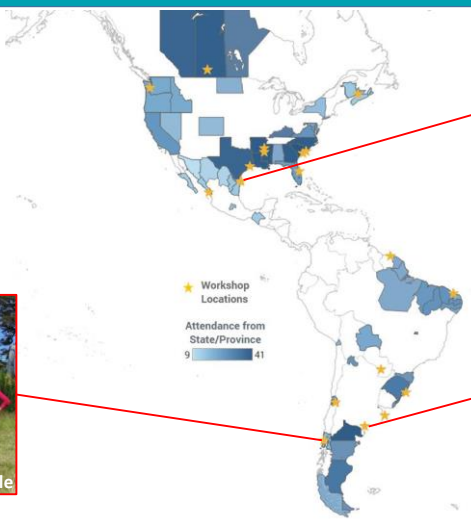
Over 1- 4 days, we cover the foundation of information to prepare participants to reduce threats and improve habitat management to benefit shorebirds from shorebird biology to population monitoring.

Each workshop is unique and the focal topics covered reflect the specific threats and needs of each area.

Focal topics have included wetland management, managing human-related disturbance, and working with local industries

Habitats for Shorebirds

- 24 workshops
- 620 participants
- 10 countries



To date, we have…

And helped implement habitat improvements on more than 100,000 acres

South Carolina, USA

Icapuí, Brazil

Some of the outcomes have included the expansion of the footprint of an existing Western Hemisphere Shorebird Reserve Network site, like the Cape Romain- Santee Coastal site in South Carolina

or

Supported the designation of new WHSRN sites – where in Icapui Brazil, our partner Aquasis successfully designated a new site in an area where shorebirds move back and forth between working salt ponds and nearby coastal mudflats.

Management to reduce disturbance in coastal Uruguay

- Kite surfing and beach driving

- Collaborate with kite surfing schools
- Zoning
- Ban driving and enforce

Participants and partners are working in many places across the Americas to reduce the threat of human disturbance

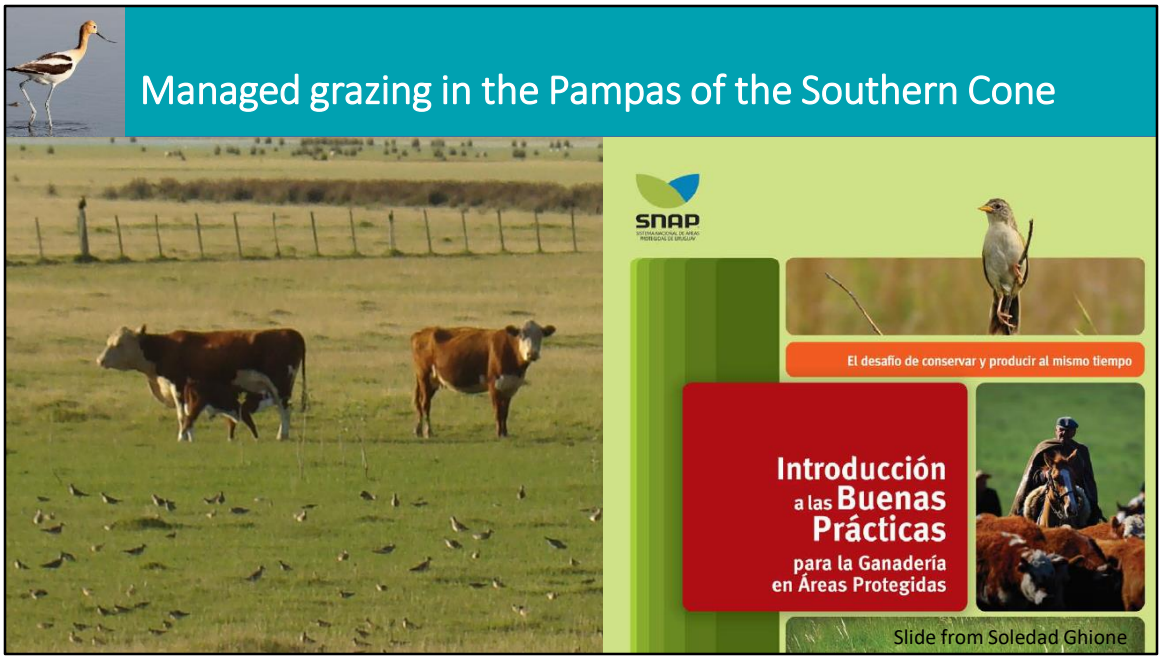
At Laguna Garzon, Kite surfing and associated beach driving had essentially extirpated shorebirds from an important wintering site

One workshop participant and colleague worked with local authorities and the kite surfing school identify a solution- which resulted in designation of zones where kite surfing would be allowed and where it would not

They banned driving on beaches- which reduced the traffic on the beaches

And she worked to educate the kite surfing schools about shorebirds

These actions reduced the disturbance on the beach = and shorebirds returned to using the area.



In the pampas – wet grasslands of Brazil and Uruguay– colleagues have defined best management practices for cattle grazing – which is an important tool to maintain short grass habitats for upland shorebird species like buff breasted sandpipers and American golden plover.

These are areas where the number native grazers like the pampas deer have been greatly reduced – and the grazing cattle serve as a substitute to manage these habitats

Management in wetlands : food and accessibility

- Food
  - ✓Decomposing vegetation
  - ✓Invertebrate production
- Accessibility
  - ✓Unvegetated or sparsely vegetated
  - ✓Mudflats, mixed with shallow water

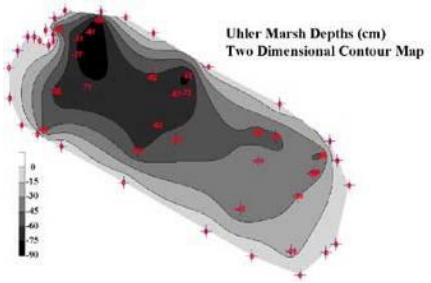
When thinking about the kinds of management that are possible in wetlands – some of the major components to providing shorebird habitat are about ensuring ample food resources and the ability for shorebirds to access those food resources.

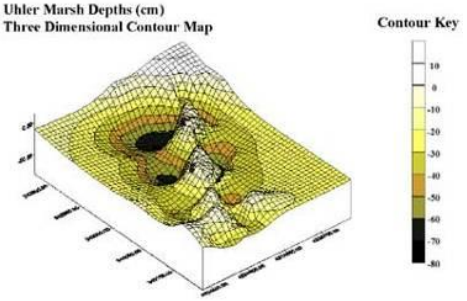
Shorebirds predominately eat invertebrates- so flooded and decomposing vegetation will support invertebrate production

And to ensure shorebirds can access those foods -→ they need

Water depths & topography

- Wetland features
- Slope
- Topography



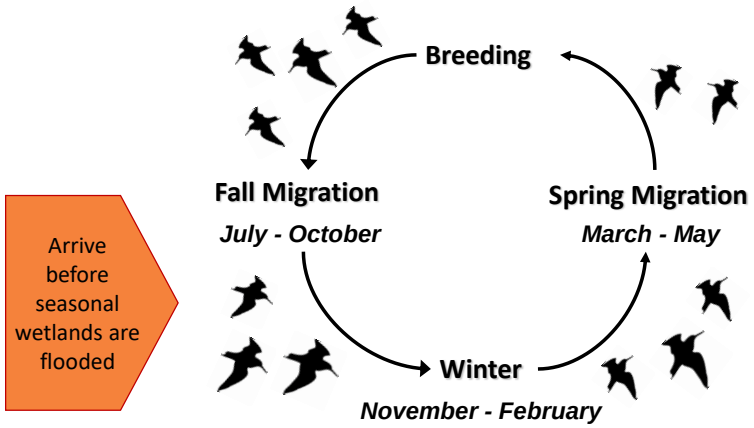


Because water depth is so critical to shorebird habitat –

The topography of the wetland will influence how shorebirds use it – a unit with steeply sloped sides will not provide as much habitat as a countoured unit with gentle slopes – where shorebirds can forage along the water line as water is reduced or increases.

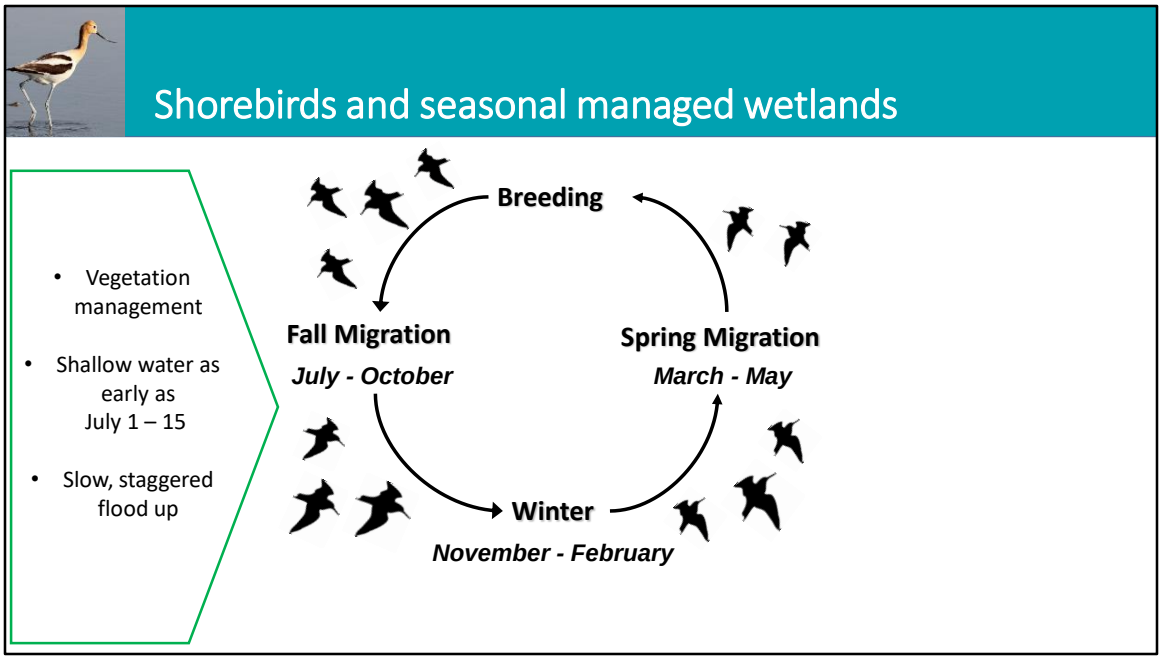
Bathymetric map are useful to drawing connections between the amount of water applied to a unit and the resulting habitat provided.

Shorebirds and seasonal managed wetlands



Fall migration for shorebirds begins earlier than for ducks

– migrating shorebirds returning from the breeding grounds show up in California as early as July – before most seasonal wetlands are flooded and most semipermanent wetlands are too deep



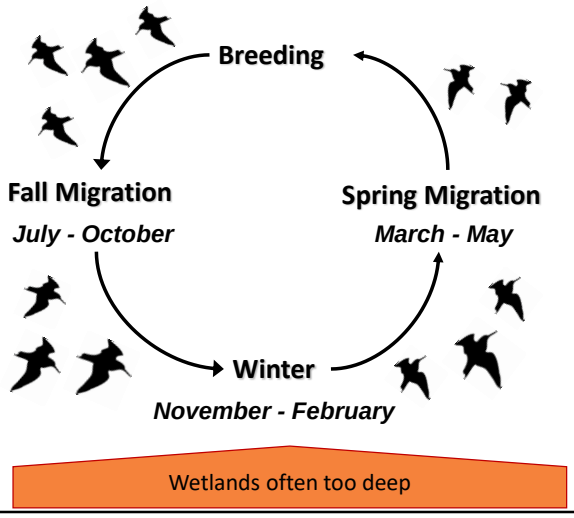
To provide habitat for shorebirds during fall migration → manage vegetation as needed to provide open habitat

And

Provide some shallow water in early July – a time when water is limited on the landscape

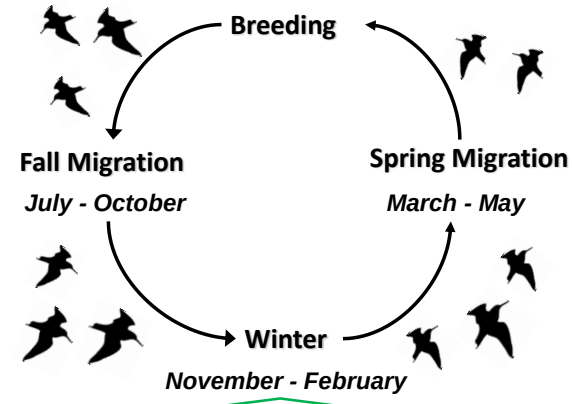
For units that are flooded on a traditional timeline– flood them slowly or stagger the flood up of multiple units

Shorebirds and seasonal managed wetlands



During the winter months- wetlands are typically too deep for most shorebirds -

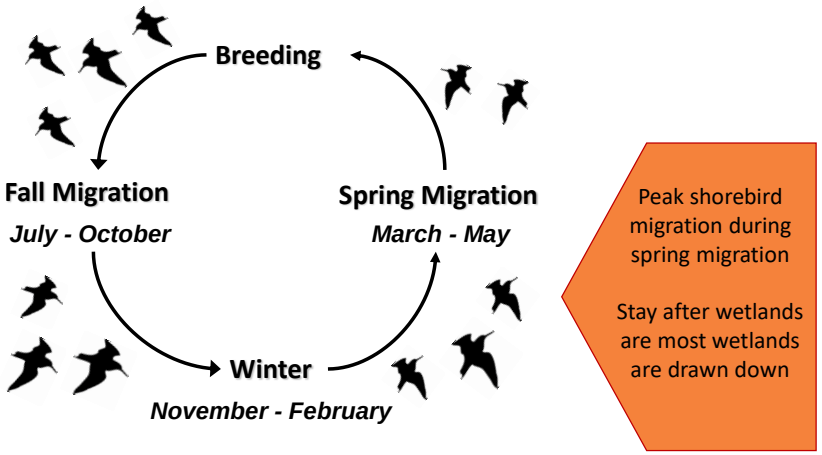
Shorebirds and seasonal managed wetlands



Ensure there are some areas with shallow water available

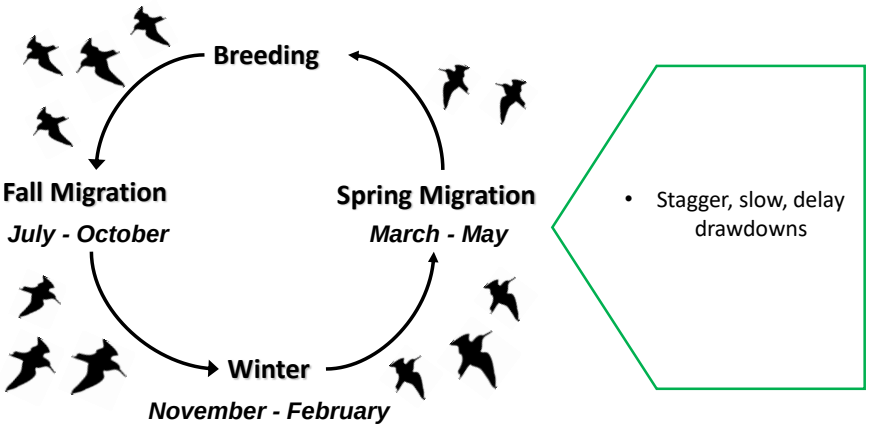
And, if possible, conduct partial drawdowns to provide shorebirds access to the habitat

Shorebirds and seasonal managed wetlands



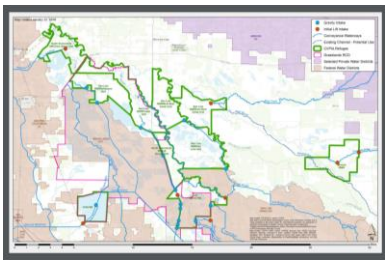
Shorebird abundance in the SF Bay and Central Valley reaches its peak during spring migration – and shorebirds continue to be in California after most wetlands are drawn down

Shorebirds and seasonal managed wetlands



Stagger drawdowns to provide extended shorebird habitat as shorebirds prepare to head north to the breeding areas – or prepare to nest here in California

Grasslands: Delayed drawdown during spring migration



- A delayed and gradual drawdown extended flooded habitat into April and May
- Shorebird densities were higher in wetlands with delayed and gradual drawdowns than traditional drawdowns

Souza-Cole et al. 2017, TWS West

Some recent work in the Grasslands illustrate the value of this kind of integrated management –

Point Blue Conservation Science, Audubon California, and The Nature Conservancy assessed the value of delaying spring drawdowns in seasonal wetlands in the Grasslands

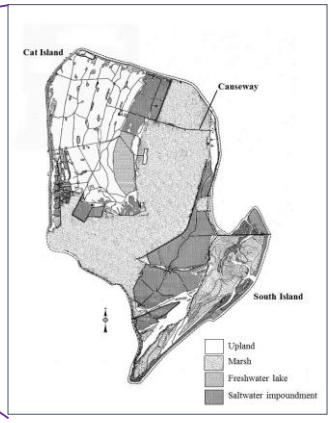
and found that shorebird densities were higher in wetlands with delayed drawdowns than those with traditional drawdowns (end of Feb)

Locally breeding shorebirds

- Spring/ summer water that is shallow and consistent
- Feathered edges with minimal vegetation
- Upland areas with short vegetation in proximity to shallow water

And for breeding shorebirds – species like AMAV and BNST

The Tom Yawkey Wildlife Center



- 31 managed wetland units
- Brackish to highly saline

- Priorities: waterfowl, wading birds, shorebirds, and more

I wanted to share some of the work occurring at The Tom Yawkey Wildlife Center in coastal South Carolina

A place we held a workshop in 2015.

The land was a privately owned property donated to the South Carolina Department of Natural Resources.

It has 31 managed tidal impoundments that vary in salinity from brackish to very saline

Priority- waterfowl

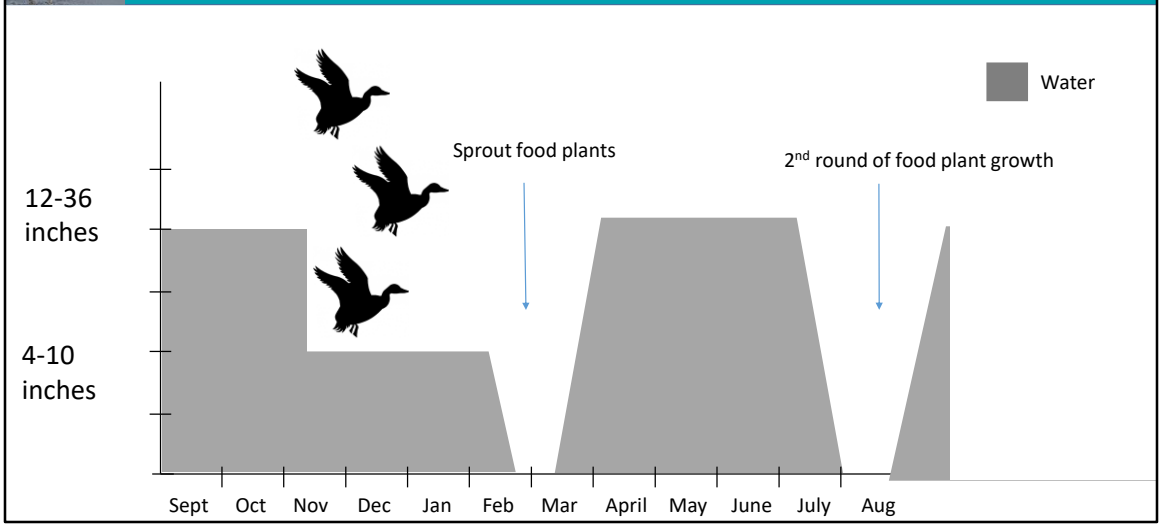
Water control

Converted to rice in 1800s

The area was originally freshwater cypress but was converted to rice agriculture in the 1800s and over time the land was converted to wetlands and managed for waterfowl.

Today, the managers still use wooden rice trunks for their water control structures and wetlands are flooded and drained using tidal amplitude.

Two - drawdown method: wintering waterfowl



At Yawkey – they use a two – drawdown method to manage for wintering waterfowl.

In this scenario – they drain wetlands in late February to sprout beneficial food plants like wigeon grass and dwarf spike rush and re flood units in mid March.

Then they drain the water again in late July/ early August to reset food plants and allow a second round of growth.

Re-flooding occurs by the end of August and ponds are kept relatively deep until the beginning of November when they lower water levels for arriving winter waterfowl.

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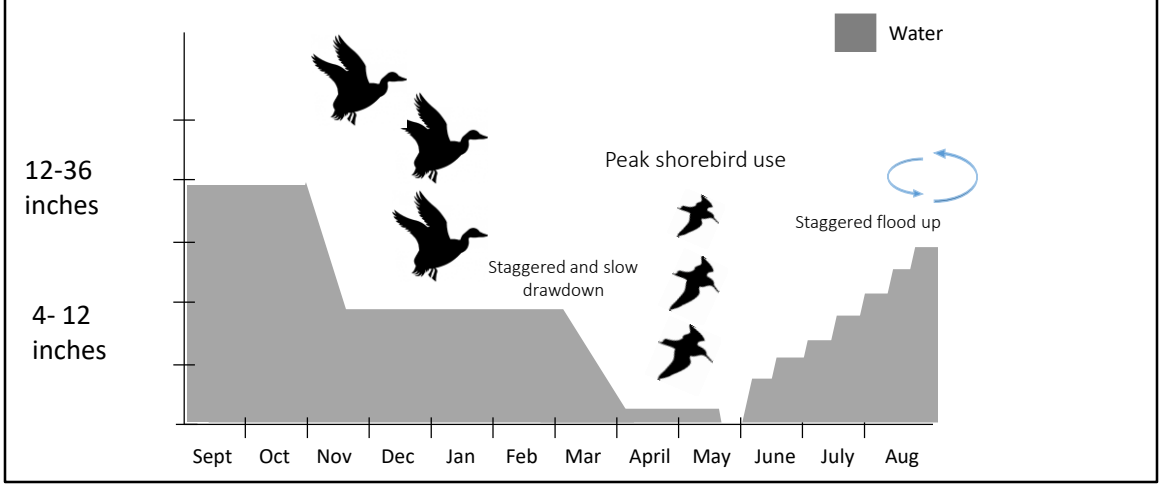
system promotes vegetation such as widgeon grass (*Ruppia maritima*) and dwarf spike rush (*Eleocharis parvula*)

Single -drawdown method: waterfowl + spring shorebirds



The use a different drawdown plan to provide habitat for both wintering waterfowl and spring migrating shorebirds

In this scenario – they do not conduct a drawdown in late-February. Instead water levels are maintained until mid-March.

The conduct a slow and staggered drawn down over a 4-5 week period to provide shallow water and mud flats during the end of April- beginning of May. – aligning with spring migrants

Units are re-flooded in a staggered pattern around June 1

Water is circulated in August by adding water at high tide and spilling water at low tide to help eliminate water quality issues such as turbidity, algal blooms, and low dissolved oxygen.

As waterfowl begin to arrive in November the water levels are dropped to appropriate levels to provide optimum waterfowl usage.

Jamie Dozier , manager at Yawkey reports that the units that have highest shorebird use in the spring are also often the ponds with highest waterfowl usage in the winter and that this process provides high quality waterfowl habitat.

Incorporating shorebirds into wetland management

- Know the shorebird community and timing of occurrence
- Providing a variety of water depths = greater bird diversity
- Stagger drawdowns, use multiple units
- Often only small adjustments in timing of drawdown and flooding may be necessary
- Rotate management
- Many aspects of shorebird management are compatible with waterfowl management

These are some of the ways that habitats can be improved to benefit shorebirds

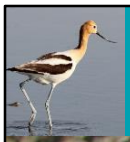
and how other taxa can be incorporated into wetland management to maximize the benefits of our wetlands in the face of significant habitat losses

By working with managers and biologists to reduce threats at regional locations we are working to improve habitats throughout the life cycle of shorebirds.

But at the end of the day - it is the individual people making decisions to take action that are behind all of those dots on a map –

People like Bill - the wetland owner that saw the least sandpiper for the first time at our workshop in Mississippi –

Three years after our workshop, he started a Twitter account and his first tweet was to me to let me know that they are still incorporating shorebirds into their wetland management and that they have become invertebrate growing fanatics.



Thank you

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