

**Walking In the Marsh:
Methods to Increase Safety and Reduce Impacts to Wildlife/Plants**

I. Safety

- A. *Before heading out into the marsh check the tides:* tides can affect your ability to move through the marsh. Be aware of how long you plan to be in the marsh, what channels you may have to cross, and how the tides will change while you are in the field.
- B. *Plan your route through the marsh:* use existing aerial imagery and maps to identify channels and sloughs that may impede access. When available, use high points such as boardwalks or levees to scope out a route. Scoping a route can be especially important in scenarios where visibility across the marsh is low (e.g., South Bay, Suisun). It may be necessary to flag stations and/or access corridors through the marsh prior to surveys. If more than one person is accessing the marsh, travel together along major access routes to avoid the development of multiple paths. At the end of the sampling period, persons furthest out should walk out first, meeting up with others along the major access route...this minimizes the potential of people getting lost and ensures that anyone who is injured will be found in a timely manner (before everyone else has left the marsh). The goal should be to plan a safe route into and out of the marsh while minimizing travel and pathways.
- C. *Channels and sloughs:* Avoid jumping channels in locations where you cannot see through vegetation on the opposite bank. Thick vegetation (e.g., pickleweed, gumplant) can obscure the edge of the bank. Considerations before jumping: depth of water/channel, steepness of the channel edges, tide levels. If you are not confident that you can make the jump and the edges have high dense vegetation that you cannot see through.....DO NOT JUMP.
- D. *Getting stuck in the mud:* If you are sinking into mud, try to keep moving to avoid getting stuck further. If a leg gets stuck, try to twist your leg to break the suction while leaning your weight on your other leg or knee. Use whatever material you have available (e.g., clipboard, backpack) for leverage (e.g., lean on those items).

E. *Other*: Besides general items such as water and food, it's a good idea to bring a flashlight and a phone (+GPS) in cases of an emergency. Let someone know what marsh area you will be in and when you plan to complete work for the day. Designate an end time and final meeting place when more than one person is out in the marsh at the same time.

II. Avoiding Impacts to Wildlife and Plants

- A. *Movement through the Marsh*. While walking through the marsh, keep noise to a minimum. Avoid using multiple pathways through the marsh. Use trails if they exist. Plan and map your route to minimize environmental impacts and decrease running into hazards/barriers such as large channels. When looking for a suitable place to jump a channel, do not walk along the edge of the channel/slough because these areas provide nesting habitat for many species including the endangered CA clapper rail. To find an alternate jump site, walk parallel to the channel at a distance where vegetation is lower in height and where visibility of the ground surface is greater. At all times, observe the environment you are walking through to avoid disturbance. Choose channel jump sites where vegetation is lower or you can clearly discern what you are jumping onto. In general, avoid walking adjacent and parallel to channels/sloughs.
- B. *Avoiding nests and nest substrates*. Tidal marsh species have nests that are well concealed and therefore easy to disturb when walking through the marsh. To avoid stepping on a nest, do not walk through thick vegetation or areas where you cannot see through to the ground. Avoid walking on vegetation whenever possible since plants serve as nesting substrate for many species in the marsh. In general, be aware of the area you are walking through. See Tables 1 for nest characteristics of common tidal marsh birds.
- C. *Bird Behavior*. If a bird vocalizes or flushes within close range of where you are standing or walking (e.g., < 10-m), it is possible that a nest or young are nearby. When these circumstances arise, stop whatever you are doing and leave the immediate area (be sure to watch where and what you are walking on). Choose an alternate route through the marsh, identify the new route and location of the sighting/occurrence on a map, and record coordinates of the location if possible. Be sure to pass this information on to others that may use the same route or are conducting surveys in the same area. Be very observant of where you walk as you leave the area. There exists the possibility that you could step on a nest or young, both of which can be

concealed by vegetation or cryptic. When alarmed, individuals may freeze in place (especially juveniles).

D. *Tidal lagoons/ponds*. Avoid walking along tidal lagoons and ponds in marsh interiors that support foraging, roosting, or nesting shorebirds and waterfowl. Be observant of the distance at which birds flush or become alarmed.

E. *Tides*. Avoid conducting surveys during high tides as much as possible. These are periods when many wildlife species are at greatest risk (e.g., predation). If your surveys require a high tide, be aware of the increased risk you may cause for wildlife and take all precautions to reduce that risk (e.g., avoiding areas where sensitive species are known to occur).

Table 1. Nest characteristics and breeding season of common tidal marsh birds.

Nest characteristics	Clapper Rails	Black Rail	Song Sparrow	Common Yellowthroat	Marsh Wren
Size and shape (approximate)	Platform, 21-cm (8.3")	Small cup or bowl w/ canopy, 10-cm (4-5")	Small cup Approx 4 inches (10cm)	Small cup Approx 3 to 4 inches (10cm)	Spherical/ Football shape
Concealment	High concealment	High concealment	High concealment	High concealment	Fairly obvious
Height	Ground or slight rise	Below 30 cm	Below 30 cm	Commonly below 30 cm	Above 30 cm
Nest substrate					
<i>Salicornia</i> (pickleweed)	X*	X*	X*	X	X
<i>Grindelia</i> (gumplant)	X*	X	X*	X*	X
<i>Distichlis spicata</i> (saltgrass)	X				
<i>Scirpus maritimus</i>		X*	X*	X*	X*
<i>Scirpus americanus</i>		X*	X*	X*	X*
<i>Scirpus acutus/californicus</i>		X	X	X	X*
<i>Scirpus robustus</i>	X				
<i>Spartina foliosa</i>	X	X	X	X	X*
<i>Typha</i> (cattails)		X	X*	X*	X*
Wrack	X				
Breeding season	March-July	April-July	March to June	March to July	

*common nest substrate

Sources: PRBO (IRWM training document, 2004), Goals Project (2000), The Birds of North America (No.'s 340, 448, 704).

The endangered salt marsh harvest mouse (SMHM) also constructs a nest within tidal marsh. The nest is commonly a ball of vegetation that is on the ground or up in pickleweed (Fisler 1965). The reproductive season for SMHM peaks during summer and fall (Fisler 1965, Bias 1993).