Suisun Marsh Rails

(not to be confused with AMTRACK)

Jules Evens, Avocet Research
Suisun Marsh Rallidae

- Class Aves
- Order Gruiformes (rails, cranes, and allies)
- Family Rallidae (rails, gallinules, and coots)
Yellow Rail
*Corturnicops noveboracensis*

- Rare winter (Oct. - Apr.) visitor.
- Habitat: shallow marshes & wet meadows; fresh, brackish, or salt.
- Status: Bird Species of Special Concern, Priority 2 (CDFG)
California Black Rail
Laterallus jamaicensis coturniculus

- Uncommon year-round resident.
- Habitat: shallow margins of salt, brackish, or fresh marsh.
- Status: State Threatened, Bird of Conservation Concern (USFWS 2002)
California Clapper Rail
Rallus longirostris obsoletus

- Rare “year-round” resident (??)
- Habitat: tidal channels in larger marsh parcels.
- Status: Federal and State “Endangered.”
Virginia Rail
*Rallus limicola*

- Common year-round resident, increasing in winter.
- Habitat: Fresh and brackish marshes. Salt marshes in winter.
- Status: none.
Sora
Porzana carolina

• Uncommon breeder and winter resident.
• Habitat: fresh water cat-tail marshes, brackish and salt in winter.
• Status: review species for BSSC (CDFG).
American Coot *Fulica americana*
Common Moorhen *Gallinula chloropus*

- Coot is common, moorhen is uncommon;
- Both breed in freshwater ponds and marshes;
- Coot inters in brackish and salt.
- Status: none.
Special Status Rails of Suisun

California Clapper Rail

California Black Rail
California Black Rail

- Secretive denizen of the high marsh plain;
- Suisun Marsh may hold half the extant population;
- Relatively high elevation and cover important factors
BLRA Habitat Requirements

- 100% vegetative cover
- Moist, undisturbed substrate
- Freshwater influence
- Marsh size
- Quality of peripheral vegetation
- Prey base: terrestrial insects, amphipods
Habitat variables

- Vegetation height
- Frankenia score
- Insect score
- Amphipod score (inverse relationship)
**BLRA abundance by region**

<table>
<thead>
<tr>
<th>Region</th>
<th>Size (total ha of habitat)</th>
<th>Mean Abundance Index ± S.E.</th>
<th>Median Abundance Index</th>
<th># sites</th>
<th>Abundance Estimate based on Median¹</th>
<th>Adjusted Abundance Estimate from DISTANCE²</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAN PABLO BAY</td>
<td>5531</td>
<td>1.25 ± 0.345</td>
<td>0.71</td>
<td>13</td>
<td>3,930</td>
<td>7,100</td>
</tr>
<tr>
<td>SUISUN &amp; CARQUINEZ</td>
<td>3780</td>
<td>1.43 ± 0.320</td>
<td>1.08</td>
<td>5</td>
<td>4,080</td>
<td>7,200</td>
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<tr>
<td>OUTER COAST</td>
<td>543</td>
<td>0.46 ± 0.196</td>
<td>0.30</td>
<td>5</td>
<td>163</td>
<td>289</td>
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</tbody>
</table>
BLRA priorities

- Refine abundance estimates (distance)
- Repeat surveys at key sites
- Confront contamination issues
- Answer demographic questions (telemetry)
- Identify sources and sinks
- Population (and metapopulation) modeling
- Incorporate habitat elements into restoration
- Inform resource management efforts
Limitations on habitat availability

- relatively undisturbed, or mature, old marsh with unrestricted tidal influence.
- limited predator population and/or well-developed refugia
- Urbanization, hardened edges, rising sea level, stochastic events, inadvertent hydrological changes...
CLRA abundance by region

- **South Bay** 0.23/ha  
  [range 0.17-0.26]
- **San Pablo** 0.27/ha  
  [range 0.17—0.91]
- **Suisun Bay** 0.15/ha  
  [range 0.01—0.33]
<table>
<thead>
<tr>
<th>Marsh</th>
<th>sta. no.</th>
<th>min</th>
<th>med</th>
<th>max</th>
<th>#/ sta.</th>
<th>D</th>
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<tbody>
<tr>
<td>Southhampton</td>
<td>10</td>
<td>1</td>
<td>1.0</td>
<td>1</td>
<td>0.10</td>
<td>0.03</td>
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<tr>
<td>Martinez shore</td>
<td>12</td>
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<td>0.0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Antioch shore</td>
<td>12</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Port Chicago</td>
<td>27</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Hastings Slough</td>
<td>3</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>Point Edith</strong></td>
<td><strong>16</strong></td>
<td><strong>13</strong></td>
<td><strong>14.5</strong></td>
<td><strong>16</strong></td>
<td><strong>0.91</strong></td>
<td><strong>0.29</strong></td>
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<td>Hammond Is.</td>
<td>5</td>
<td>0</td>
<td>0.0</td>
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<tr>
<td><strong>Bahia (Goodyear)</strong></td>
<td><strong>5</strong></td>
<td><strong>5</strong></td>
<td><strong>5.5</strong></td>
<td><strong>6</strong></td>
<td><strong>1.10</strong></td>
<td><strong>0.35</strong></td>
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<td>Pacheco Crk. W</td>
<td>8</td>
<td>0</td>
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<tr>
<td>Suisun Sl. mouth</td>
<td>20</td>
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<tr>
<td>Navy Point</td>
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<tr>
<td>Cutoff/1st</td>
<td>16</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
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<tr>
<td><strong>Mallard Slough</strong></td>
<td><strong>14</strong></td>
<td><strong>0</strong></td>
<td><strong>0.5</strong></td>
<td><strong>1</strong></td>
<td><strong>0.04</strong></td>
<td><strong>0.01</strong></td>
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<tr>
<td><strong>2nd Mallard Sl.</strong></td>
<td><strong>33</strong></td>
<td><strong>3</strong></td>
<td><strong>3.5</strong></td>
<td><strong>4</strong></td>
<td><strong>0.11</strong></td>
<td><strong>0.03</strong></td>
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<tr>
<td>Peytonia Sl.</td>
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<td>0.0</td>
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</tbody>
</table>
obsoletus habitat characteristics

- Fully tidal marshes
- Channelization
- Elevational range
- Marsh age & size
- Contiguity
- Refugia
- Spartina or Scirpus
Current research

- Suisun population study (CDFG) 2002-04
- Baywide population 2004-6 (Calfed, etc.)
- Invasive Spartina Project
- Discrete project impacts
- Infrastructure impacts (e.g. Cordelia Slough)
- Restoration monitoring (e.g. IRWM)
Research & management needs

- Annual surveys
- Restoration design
- Demographic info
- Predator control
- Habitat enhancement
- Habitat corridors
- Protection and ID of source populations
Take home message

• The bulk of the extant populations of each exist within the SFB estuarine system.
• Each species is a key component of a healthy and functional tidal marshland.
• Each is highly sensitive to environmental variables—changing salinity values, water levels, predation pressure, and human impacts.
• The presence or absence of these species are critical indicators of marsh viability.
• Enhancement of rail habitat benefits other marsh-dependent species!
Marsh-dependent birds