# Regulatory

# Regulatory

**CDFW Statutes & Regulations** California Threatened, Endangered, or Candidate Species

- Fish and Game Code, chapter 1.5, sections 2050-2115.5
- California Code of Regulations, title 14, chapter 6, sections 783.0-787.9
- Fully protected species- can only be changed by the State Legislator

**USFWS Statutes & Regulations**

- United States Code, title 16, chapter 35, sections 1531-1544
- Code of Federal Regulations, title 50, chapter 1, subchapter B, part 17, sections 17.1-17.108
- https://www.wildlife.ca.gov/Conservation/CESA/FESA

| | Federal Endangered Species Act of 1973 | California Endangered Species Act |
|---|---|---|
| | | |
| **Endangered Species** | - Any species which is in danger of extinction throughout all or a significant portion of its range. | - A native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease. |
| **Threatened Species** | - Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. *16 U.S.C., §1532 (20); 50 C.F.R. § 17.3* | - A native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this |
| **Candidate Species** | - Not defined or addressed in statute or regulations. Candidate species are those which USFWS has sufficient information on their biological status and threats to propose listing, but for which the development of a proposed listing | - A native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the Department for listing. Candidates are given full CESA protection. *Fish & G. Code, §2068* |

| Take | - **Harass, harm**, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. *16 U.S.C., §1532 (19)* | - Hunt, pursue, catch, capture, or **KILL**, or attempt to hunt, pursue, catch, capture, or kill.*Fish & G. Code, §86* |
|---|---|---|
| **Harass** | - An intentional or negligent act or omission which *creates the likelihood of injury* to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns (e.g., breeding, feeding, or sheltering). *16 U.S.C., §1532 (20); 50 C.F.R. § 17.3* | - No state equivalent |
| **Harm** | - An act which actually kills or injures wildlife. May include significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavior patterns. *16 U.S.C., §1532 (20); 50 C.F.R. § 17.3.* | - No state equivalent |
| **Incidental Take** | - Take that is otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. *16 U.S.C., §1532 (20); 50 C.F.R. § 17.3.* | - "Incidental Take" is not defined in state statutes or regulations. |

| Exceptions to the Prohibitions of Take | | |
|---|---|---|
| **Research, Management, Enhancement** | - Permits allow take for scientific purposes to enhance the propagation or survival of the affected species (e.g., establishment and maintenance of experimental populations). Referred to as enhancement of survival permit. *16 U.S.C. §1539 (a)(1)(A) [Section 10 (a)(1)(A)]; endangered species: 50 C.F.R. §17.22 (a); threatened species: 50 C.F.R. §17.32 (a)* | - Permits and memorandums of understanding (MOUs) authorize individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess endangered, threatened, or candidate species for scientific, educational, or management purposes. *Fish & G. Code §2081, subd. (a)* |

# California Threatened, Endangered, or Candidate Species

**Species:** Includes all species listed under the California Endangered Species Act by the California Fish and Game Commission (FGC Section 2080 et. seq., Title 14 CCR, Section 670.5)

**Allowable Purpose for Take**: may be taken for scientific, education, or management purposes

**Authorization Mechanism for Take: Memorandum of Understanding** (MOU) issued by the Department pursuant to FGC subsection 2081(a)
Take of threatened or endangered species incidental to an otherwise lawful activity requires a Section 2081(b) permit.

Contact for Authorization:
Birds, mammals, amphibians and reptiles - Wildlife Branch, Esther.Burkett@wildlife.ca.gov

# Fully Protected Species

**Species:** Certain birds, mammals, amphibians and reptiles, and fish (Fish and Game Code, Sections 3511, 4700, 5050, and 5515, respectively) categorized as Fully Protected receive special protections, on top of any concurrent Candidate, Threatened or Endangered designation by the California Endangered Species Act.

**Allowable Purpose for Take: Necessary scientific research, including efforts to recover** [any] Fully Protected, threatened, or endangered species.
**For Fully Protected, "Scientific research" does not include an action taken as part of specified mitigation for a project**, as defined in _ Section 21065 of the Public Resources Code.

**Authorization Mechanism for Take:** Memorandum of Understanding (MOU) issued by the Department. Requires a **30 day Public Interest Notice** (PIN)

- Contact for Authorization: Birds, mammals, amphibians and reptiles - Wildlife Branch, Esther.Burkett@wildlife.ca.gov

# Nomenclature

**SCP (Scientific Collecting Permit)**
required to take, collect, capture, mark, or salvage, for scientific, educational, and non-commercial propagation purposes, mammals, birds and their nests and eggs, reptiles, amphibians, fishes, and invertebrates

**MOU (Memorandum of Understanding)**
for take of species, subspecies, or groups of animals designated as Standard Exceptions to the SCP process (now restricted to CESA-listed and Fully Protected species)

- 2081(a) Permit (CESA MOU)
  for take of CESA-listed species for scientific, educational, or management purposes
- MOU for take of Fully Protected species
  for scientific purposes only; requires Public Notice

2081(b) Permit (Incidental Take Permit, ITP)
"for take of threatened or endangered species incidental to an otherwise lawful activity

# Permit Types by Species Category

| Species Category | Type of Permit | | |
|---|---|---|---|
| | SCP | Special Condition Attachment | MOU |
| Fully Protected Animals | YES | | YES |
| Threatened, Endangered, or Candidate Species | YES | | YES |
| Species of Special Concern | YES | YES | Possibly |
| Other Standard Exception Animals | YES | Possibly | Possibly |
| Other Animals | YES | Possibly | |

# Fully Protected Animals F&G Code §§ 3511 §§ 4700

American peregrine falcon
California brown pelican
California black rail
California clapper rail
California condor
California least tem
golden eagle
greater sandhill crane
light-footed clapper rail
bald eagle
trumpeter swan
white-tailed kite
Yuma clapper rail

S.C. long-toed salamander
limestone salamander
black toad
blunt-nosed leopard lizard
San Francisco garter snake

Morro Bay kangaroo rat
bighorn sheep
northern elephant seal
Guadalupe fur seal
ring-tailed cat
Pacific right whale
**salt-marsh harvest mouse**
southern sea otter
wolverine

Colorado pikeminnow
thicktail chub
Mohave tui chub
Lost River sucker
Modoc sucker
shortnose sucker
razorback sucker
Owens pupfish
unarmored threespine stickleback
rough sculpin

# CDFW MOU Application Process

- Cover letter
- Résumé or Curriculum vitae
- Statement of qualifications (species, methods)
- Letter(s) of recommendation
- Research proposal- suggest looking at the USFWS TMRP
- Copies of other permits or applications

# Research Proposal

- Title and contact information
- Introduction (background and justification)
- Study Area
- Methods
- Schedule of Work
- Literature Cited
- List of Authorized Individuals (LAI)

# Public Interest Notice

- Fully Protected Species
- Publication in the California Regulatory Notice Register of CDFW's intent to issue an MOU
- 30-day Public Notice
- The Public Notice and MOU process requires a minimum of ***6 weeks processing time*** after application is completed

# Other Considerations

- For species both ESA- and CESA-listed, a USFWS recovery permit [10(a)(1)(A)] is also needed
- **CDFW will not issue permit authorizing work on a Federally-listed species until a copy of the appropriate federal permit is obtained**
- Renewals: MOUs are generally written for a term of 3-5 years
- Failure to comply with the reporting requirements may result in non-renewal or suspension/revocation of the MOU.
- Reminder:  SCP required if bycatch likely

# Recovery Permits USFWS Section 10(a)(1)(A)

**Minimum Qualifications for Federally Listed Species**

- Possess a Bachelor of Science degree in biology or a resource management-related field, or equivalent field/work experience;
- Have completed course work in mammalogy and study-design/survey-methodology, or equivalent field experience;
- Have extensive, verifiable, experience in the design and implementation of small mammal research.
- Identification of a minimum of 10 salt marsh harvest mice per each subspecies (*Reithrodontomys raviventris halicoetes* or *R. r. raviventris*)
- Identification of the distinguishing characteristics of western harvest mice (*Reithrodontomys megalotis*).

# Recovery Permits USFWS Section 10(a)(1)(A)

**Minimum Qualifications for Federally Listed Species**

**To handle the smhm:**

- Minimum of 40 hours of field experience through assisting in surveys for smhm where positive identification is made.
- A letter from an authorized individual, as previously defined, stating the completion of the required training and level of competence
- Have familiarity with suitable habitats for the species;
- Have familiarity with rodents, native and non-native, that may co-occur with the listed species (shrews);
- Identify the major vegetative components of tidal wetland ecosystems in which smhm surveys or research may be conducted.
- Individuals not qualified to conduct scientific research or other activities covered under a recovery permit or sub-permit will be required to work under the supervision of a qualified, permitted individual until the minimum qualifications are met.

# Recovery Permits USFWS Section 10(a)(1)(A)

**Minimum Qualifications for Federally Listed Species**

- Adequate field experience and qualifications. Typically, one field season of supervised experience is required for all species.
- A copy of your resume and qualifications statement (educational background, work history, details of their direct field experience).
- Letter(s) of reference by the permitted individual(s) from whom you acquired the field experience/training
- Qualification statements should include verifiable field experience (either listed species or non-listed species).
- Reference any scientific journal articles you have written and/or published
- Educational and biological background (degrees, thesis, independent studies)
- Experience working at universities, museums, consulting firms, government agencies, other environmental organizations, a statement of your familiarity with pertinent environmental laws and regulations.

# USFWS Biological vs Construction Monitors

A permit holder is a higher bar than a qualified biologist/monitor for a construction project

- At least 15 days prior to the onset of any construction-related activities submit to the Service, for approval, the name(s) and credentials including:
  - Relevant education;
  - Relevant training on species identification, survey techniques, handling individuals of different age classes, and handling of different life stages by a permitted biologist or recognized species expert authorized for such activities by the Service;
  - A summary of field experience conducting requested activities (to include project/research information and actual experience
    with the species);

# USFWS Biological vs Construction Monitors

- A summary of biological opinions and/or informal consultations under which they were authorized to work with the listed species and at what level (such as construction monitoring versus handling), include the names and qualifications of persons under which the work was supervised and amount of work experience including detail on whether the species was encountered or not; and
- A list of Federal Recovery Permits [10(a)1(A)] if any, held or under which individuals are authorized to work with the species (to include permit number, authorized activities, and name of permit holder).

# When do you need a qualified biologist or biological monitor

- When surveying and monitoring for CDFW Fully Protected species:
- During vegetation removal
- During exclusion fencing construction
- When working within 300 feet of tidal or pickleweed/mixed wetland habitats
- The qualified biologist or biological monitor shall have the authority to stop work if deemed necessary for any reason to protect the species

- High Tide Restrictions.
- No project activities shall occur within 50 feet of suitable tidal marsh habitat for the salt marsh harvest mouse (SMHM) within two (2) hours before and after an extreme high tide event (6.5 feet or higher measured at the Golden Gate Bridge and adjusted to the timing of local high tides) or when adjacent marsh is flooded unless SMHM proof exclusion fencing has been installed around the work area.

# When do you need a qualified biologist or biological monitor

- <u>Vegetation</u>
- An approved qualified biologist, familiar with salt marsh harvest mouse (SMHM), shall walk through and inspect suitable habitat prior to vegetation removal and search for signs of harvest mice or other sensitive wildlife and plants.
- Following inspection, personnel, under the supervision of the qualified biologist, will disturb (e.g., flush) vegetation to force movement of SMHM into adjacent marsh areas.
- Flushing of vegetation will first occur in the center of the site then progress toward the two sides away from the open water areas.
- Immediately following vegetation flushing, personnel, under the supervision of the qualified biologist, will remove vegetation with hand tools (e.g. weed-eater, hoe, rake, trowel, shovel, grazing) so that vegetation is no taller than 2 inches.

# When do you need a qualified biologist or biological monitor

- Exclusion Fencing
- After vegetation removal, a mouse proof barrier shall be placed along the edge of the area removed of vegetation to further reduce the likelihood of SMHM returning to the area prior to construction.
- Made of a heavy plastic sheeting material that does not allow salt marsh harvest mice to pass through or climb
- The bottom shall be buried to a depth of 4 inches so that salt marsh harvest mouse cannot crawl under the fence.
- Fence height shall be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet.
- All supports for the exclusion fencing shall be placed on the inside of the work area.
- An approximately 2-foot wide de-vegetated buffer shall be created along the habitat side of the exclusion fence.
- A qualified biologist shall daily inspect the integrity of the exclusion fencing to ensure there are no gaps, tears or damage.
- Activities within or adjacent to tidal marsh or suitable Ridgway's rail or California black rail habitat shall be avoided during rail breeding season January 15 – August 31 for CCR, February 1 – August 31 for CBR

- Take or possession of these CDFW Fully Protected species is prohibited (Fish and Game Code Sections 3511and 4700) and no permits may be issued for such.
- **Take =** Hunt, pursue, catch, capture, **or kill,** or attempt to hunt, pursue, catch, capture, or kill.
- ***CDFW may consider permanent loss of habitat as take to the species***

# Example BO

## Suisun Marsh
## Habitat Management, Preservation, and Restoration Plan

U.S. Department of the Interior
Bureau of Reclamation

U.S. Fish and Wildlife Service

California Department of Fish and Game

May 2013

# SMHM Monitoring taken from Suisun Marsh Plan BO

1. A Service-approved biologist, with previous smhm monitoring and surveying experience, will conduct **preconstruction surveys** for the mouse prior to project initiation.
2. Disturbance to wetland vegetation will be avoided to the extent feasible in order to reduce potential impacts on smhm. If wetland plants cannot be avoided, it will be removed by hand **(and/or by a another Service- and DFW-approved method).** The Service-approved biologist will be on site to monitor all wetland vegetation removal activities.
3. The upper 6 inches of soil excavated within salt marsh harvest mouse habitat will be stockpiled separately and replaced on top of the backfilled material.
4. Vegetation will be removed using hand tools (and/or by another Service and DFW approved method).

# SMHM Monitoring taken from Suisun Marsh Plan BO

5. Vegetation must be cleared to bare ground.
6. Vegetation should be removed from all areas (driving roads, action area, or anywhere else that vegetation could be stepped on).

7. Work will be scheduled to avoid extreme high tides when there is potential for salt marsh harvest mouse to move to higher, drier grounds. All equipment will be staged on existing roadways away from the project site when not in use.

8. To prevent smhm from moving through the project site during construction, temporary exclusion fencing will be placed around a defined work area before construction activities start and immediately after vegetation removal.

The fence should be made of a material that does not allow salt marsh harvest mouse to pass through or over, and the bottom should be buried to a depth of 2 inches so that mice cannot crawl under the fence.

Any supports for the smhm exclusion fencing must be placed on the inside of the project area.

# SMHM Monitoring taken from Suisun Marsh Plan BO

9. Prior to the start of daily construction activities during initial ground disturbance, the Service-approved biologist will inspect the smhm-proof boundary fence to ensure that it has no holes or rips and the base is still buried. The fenced area also will be inspected to ensure that no mice are trapped in it. Any mice found along and outside the fence will be closely monitored until they move away from the construction area.

10. If a smhm is discovered, construction activities will cease in the immediate vicinity of the individual until **the Service is contacted** and the individual has been allowed to leave the construction area.

11. A Service-approved biologist with previous smhm experience will be on site during construction activities occurring in wetlands. The biologist will document compliance with the project permit conditions and avoidance and conservation measures.
The Service-approved biologist has the authority to stop project activities if any of the requirements associated with these measures is not being fulfilled. If the Service approved biologist has requested work stoppage because of take of any of the listed species, **the Service and DFG will be notified within 1 day by email or telephone.**

# CDFW Reporting Requirements

- CNDDB
- Annual report, due by Jan 31 for work the previous year
- Format:
  - Introduction
  - Methods
  - Results
  - Discussion
  - Description of known threats to the species
  - Management recommendations
  - Literature cited

# CDFW Reporting Requirements

- Annual reports should also include:
  - Maps of the study area, sample locations, detection locations
  - Tabular summary of all sampling efforts, both positive and negative
  - Numbers of individuals collected, or unintentionally injured, killed, or salvaged
- If no activities in the previous year, the annual report consists of a brief letter stating this

# CNDDB California Natural Diversity Data Base

- Online form at: https://nrm.dfg.ca.gov/myaccount/default.aspx
- Please include any and all reports

- In addition, please, please! include:
  - All measurements!
  - How they were taken if not using SMHM workgroup protocol
  - All distinguishing traits used to identify the animal
  - Number of nights and number of traps used

# USFWS BMPS

- Review Biological Assessment and Biological Opinion for full list of BMP's.
  - (If the project has a federal nexus)
- Access into tidal marsh areas is prohibited unless approved by USFWS
- Seasonal Closures
  - Salt Marsh Harvest Mouse: March 1- November 1
- Read *Walking in the Marsh: Methods to Increase Safety and Reduce Impacts to Wildlife/Plants*.
- Activities within SMHM habitat will be avoided within two hours before or after extreme high tides (>6.5 at GG) or when the marsh plain is inundated.
- Travel on non-established roads/paths along the edges of tidal channels and sloughs will be minimized

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# USFWS BMPS

**Vegetation Removal and Ditching**

- Vegetation removal within SMHM habitat will be limited to the minimum amount necessary to allow the required project action to be accomplished.
- Prior to commencement of work in areas containing suitable SMHM habitat where work will involve use of large equipment, such as the rotary ditcher, efforts will be made to ensure the SMHM are not present by first removing suitable marsh vegetation within the immediate area.
- Marsh vegetation that is not submerged must be hand mowed and removed to bare ground before digging
- Before digging, trained crews must walk ahead of equipment to scatter mice
- Mowing must move from the center of the area to be cleared or from non-habitat to habitat, working toward the edges to avoid trapping mice
- Mowed vegetation should be stockpiled for later re-use if possible
- To reduce the spread of non-native invasive plants all construction equipment, vehicles and personnel gear will be cleaned of seeds, soil or plant material before arriving on site.

# Avoidance and Minimization Measures

- Clear vegetation in two cuts
- Biological monitor flushes vegetation in front of cutters
- Once vegetation is cleared to ground level, install fence
- Biological monitor supervises fence installation
- Biologist checks fence periodically

# Best Management Practices for Marsh habitat (USFWS Lands)

- Review Biological Assessment and Biological Opinion for full list of BMP's.
- Access into tidal marsh areas is prohibited unless approved by USFWS
- Seasonal Closures
  - Salt Marsh Harvest Mouse: March 1- November 1
- Read *Walking in the Marsh: Methods to Increase Safety and Reduce Impacts to Wildlife/Plants*.
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# GOATS!

USFWS Approved at CDFW Hill Slough WA

Cheaper than hand clearing

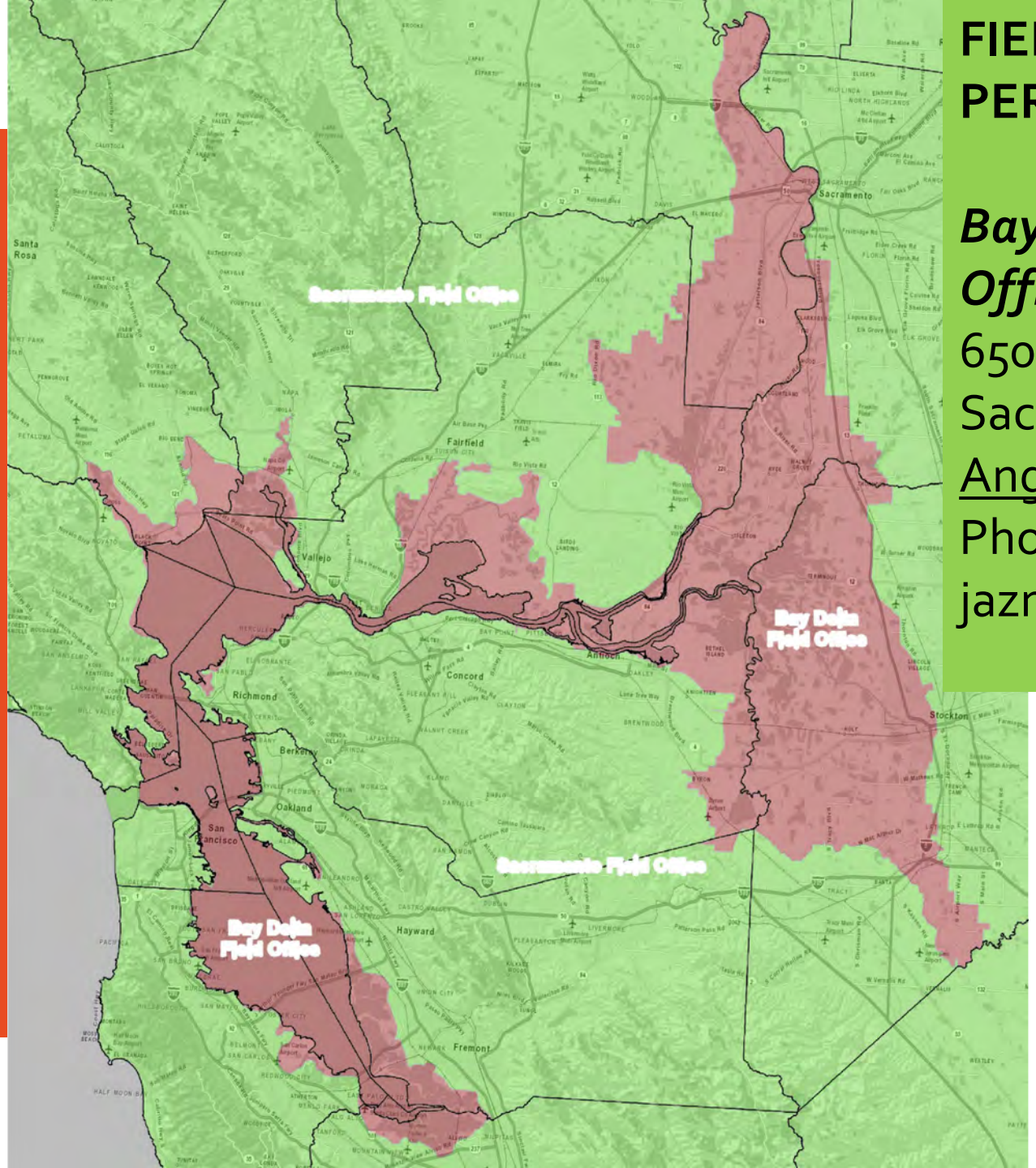
Deemed weed & disease free

Ate most everything

Did not like wet ground

# Partnerships/Primary Contacts?

# USFWS




## FIELD OFFICE RECOVERY PERMIT CONTACTS:

***Bay-Delta Fish and Wildlife Office***

650 Capitol Mall, 8th Floor
Sacramento, CA 95814
Angela Galarreta
Phone: (916) 930-5636
jazmine_galarreta@fws.gov

# CDFW

- Laureen Barthman-Thompson
- Laureen.Thompson@wildlife.ca.gov

- Contact for Authorization: Birds, mammals, amphibians and reptiles - Wildlife Branch
- Esther Burkett
- Esther.Burkett@wildlife.ca.gov

# UC Davis


- Mark Statham
- statham@ucdavis.edu

- Katie Smith
- ratsmith@ucdavis.edu

# Survey Methods

# Habitat Evaluation Exercise

**Near Eden Landing -** Development project

- Wetlands Inventory showed no wetland plants
- Previously farmed

**Mare Island -** Contaminant clean up project

- Salt grass with very little Salicornia present
- Past paint disposal site

**Collinsville -** Possible mitigation site

- Weedy habitat with salt grass and some pickleweed
- Muted tidal with permanent cattail patches

**McNabney Marsh –** wetland preserve

- Narrow wetland vegetation along Hwy 680
- Muted tidal with large permanent water
- Vegetation is primarily salt grass, with some pickleweed

# Sampling Equipment Demo

# Densities

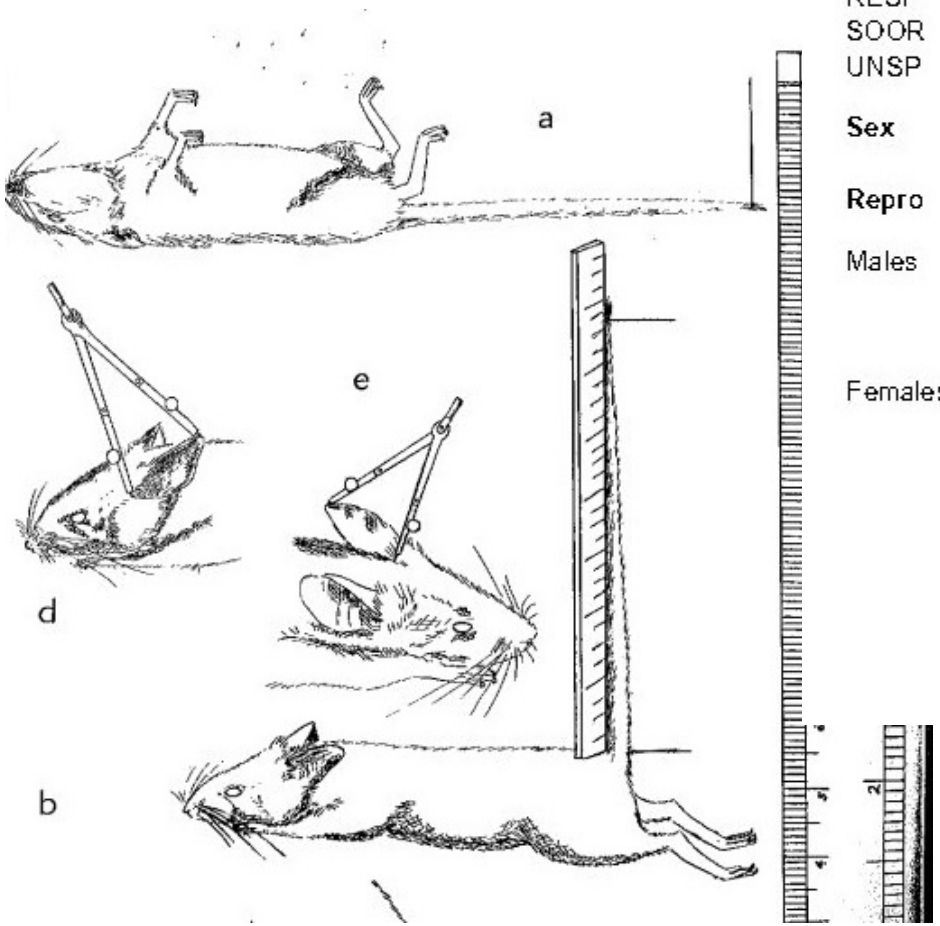
Densities:

- Tidal Marsh (Suisun Bay): 35 mice/ha[1] and 18.9mice/ha[2]
- Managed Marsh (Suisun Bay): 31.5 mice/ha[1]and 32.3 mice/ha[2]
- Warm Springs Mouse Pasture: 3.6 mice/ha[3]
- New Chicago Marsh: 0.38 mice/ha[4]

Capture Efficiency: relative abundance index

- #new animals/trap nights x 100
- high effort-low return on trapping
- High difficulty-high cost obtaining dependable density estimates on a regular basis
- TMRP goals of 5.0 CE

# Survey Methods




| **Species** | | | **Age** |
|---|---|---|---|
| MICA | Microtus californicus | | J Juvenile |
| MUMU | Mus musculus | | S Subadult |
| PEMA | Peromyscus maniculatus | | A Adult |
| RANO | Rattus norvegicus | | |
| REME | Reithrodontomys megalotis | | |
| RERA | Reithrodontomys raviventris | | |
| RESP | Reithrodontomys species | | |
| SOOR | Sorex ornatus | | |
| UNSP | unidentified sp.(escaped) | | |
| **Sex** | male (M)/female (F) | | |
| **Repro** | Minimum | Y or N | |
| Males | S or SC | scrotal | |
| | SSC | slightly scrotal | |
| | N | non-scrotal | |
| | A or P | abdominal/palpable | |
| Females | | | |
| | P | pregnant | |
| | MD | mammaries developed | |
| | MG | mammaries developing | |
| | PL | post lactating | |
| | L | lactating | |
| | E | in estrus | |
| | N | non-reproductive | |
| | O | vaginal opening is open/swollen | |

# Mousing Equipment list

Updated March 2017

List of basic equipment used to successfully complete a trapping and/or telemetry ses

Pin Flags (30 inch)(104+ per each 100 trap grid)
•Flagging tape -rolls (not green or dark blue)
•Pin flag container/case (optional)
•Traps (LFA or LFATDG Sherman traps)
•Backpack/trap containers
•Batting – cotton (road kill futon)
•Bird seed (Parakeet mix, no large seed or thistle)
•Ground walnut (ration of 1:5 with bird seed)
•Seed container (with birdseed and walnut mix)
•Bait/chalk bags (1 per trapper/helper)
•Paperclips (large -1 per trap)
•Sharpies
•Measuring tapes (50 or 100 meter)
•Shrew food?
•GPS unit
•Large containers (for storage in truck)
•Data sheets (water proof paper)
•Clipboards
•Pencils
•Field Notebook
•Wind/temp meter (Kestrel 2000)
•Fanny packs or other bag to carry ID equipment
•Scissors (for hair clipping)
•Calipers (0.1mm)
•Rulers (mm)(at 0)
•Spring scales (30g)
•Sharpie (red)
•Hand lens
•Plastic bags (Ziploc sandwich small ~2.5 grams)
•Plastic bags (Any gallon size for Mus, Microtus, Rattus)
•5 gallon buckets (1 per trapper)
•Styptic pencils (optional)
•Fresh water/ soap/hand sanitizer/spray bottle with 2% bleach



When collected: All quadrat species
Field width: 1 digit
MQO: No errors, at least 80% of the time

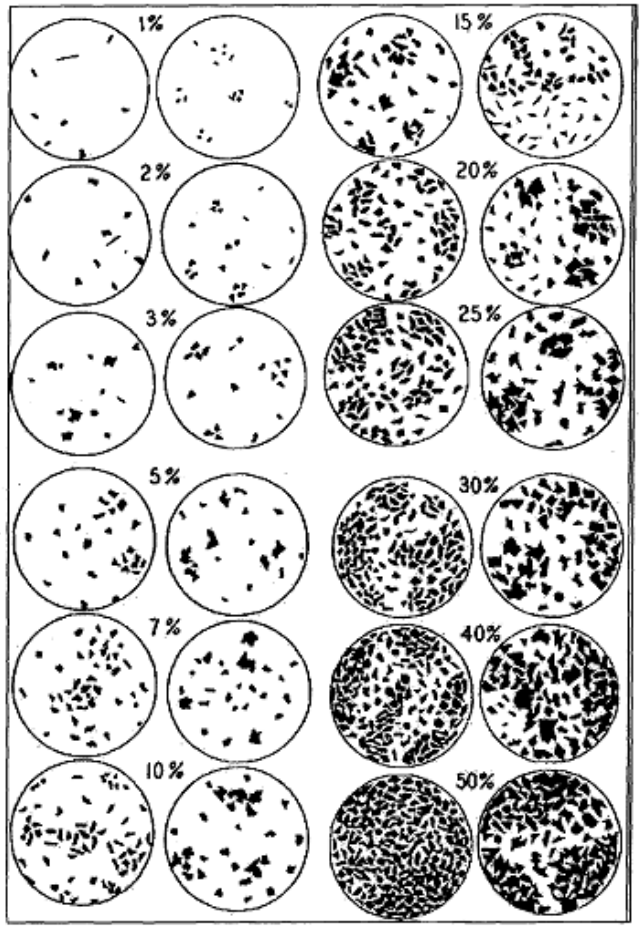



Figure 13-4. Reference plots for cover estimation.

LOCATION: _____

Date Set ____/____/____ Start _____ End _____ Sunset _____ Moon Phase ___

Wind Avg _____ % Cloud _____ Temp _____ Precip _____ # OF TRAPS IN GRID & C

COMMENTS _____

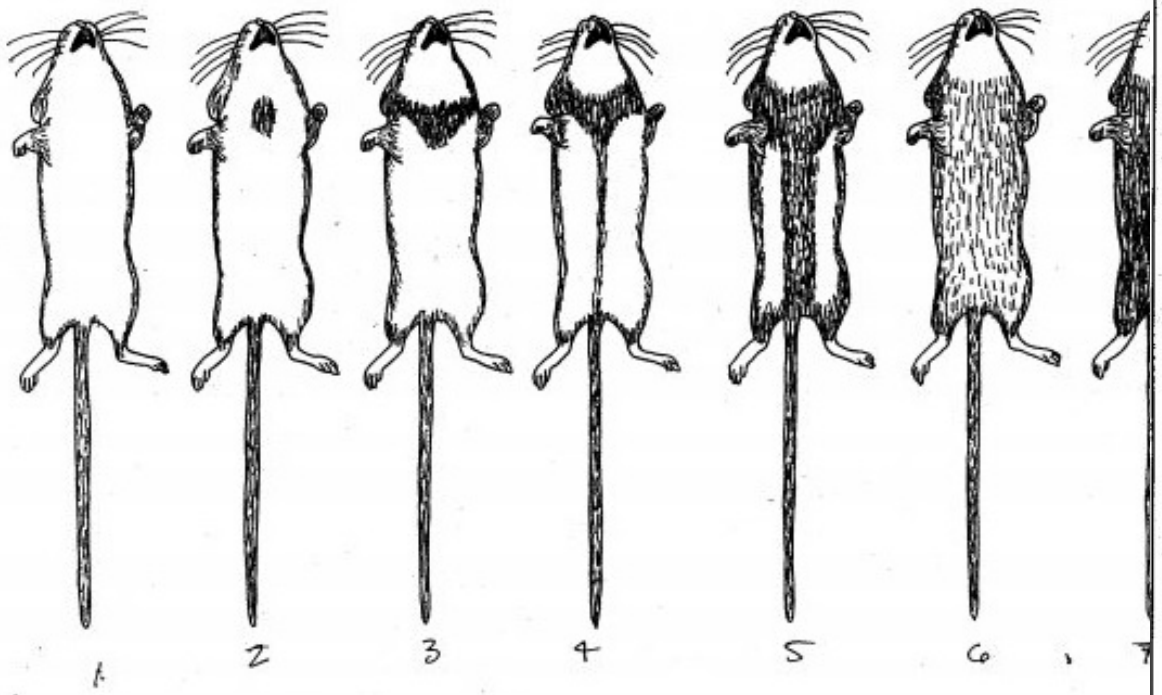
Date Checked ____/____/____ Start _____ End _____ Sunrise _____ Crew ___

Wind Avg _____ % Cloud _____ Temp _____ Precip _____ BAG TARE WEIGHT ___

| Trap # | Trap Stat (1) | Mark/ Tag | Species | Dominent Veg % (2) | IOr | Re cap y/n | Sex | Repro (3) | Nips (4) | Age A/SA /J/P | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

Date:

Ventral




**BC 1**

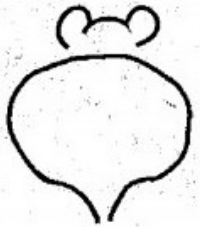
Mouse is emaciated.
- *Skeletal structure extremely prominent; little or no flesh cover.*
- *Vertebrae distinctly segmented.*

**BC 2**

Mouse is underconditioned.
- *Segmentation of vertebral column evident.*
- *Dorsal pelvic bones are readily palpable.*

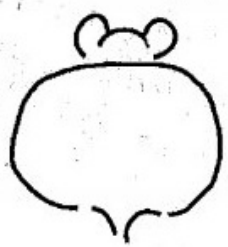
**BC 3**

Mouse is well-conditioned.
- *Vertebrae and dorsal pelvis not prominent; palpable with slight pressure.*



**BC 4**

Mouse is overconditioned.
- *Spine is a continuous column.*
- *Vertebrae palpable only with firm pressure.*



**BC 5**

Mouse is obese.
- *Mouse is smooth and bulky.*
- *Bone structure disappears under flesh and subcutaneous fat.*

*A "+" or a "-" can be added to the body condition score if additional increments are necessary (i.e. ...2+, 2, 2-...)*

# Ear tags

# Vegetation Data!

## Rapid Habitat Assessment Methods

Individual Traps

- For the three dominant species record the following: species, % cover, average height. Vegetation is assessed within a one meter radius of the trap location. Also record overall total cover for each location.
- Percent cover of individual species may add up to over 100%, if vegetation is overlapping.
- Also note the presence and height of thatch.
- Record any other species of interest (i.e. lepidium, salsola soda, phragmites, etc.).
- Make other notes such as the presence of water/flooding.
- Take a photo facing down the grid (i.e. if you are standing at trap one, the photo should be facing trap ten).

# Data Management

- Complete and double check all data sheets immediately while everything is fresh in your mind.
- Make sure to add notes of what happened that day: note injuries, parasites, unusual trap events,
- Show Excel data entry form

# Disease

UCDAVIS VETERINARY MEDICINE

California Animal Health and Food Safety Laboratory
PO Box 1770, Davis, CA, 95617

CAHFS Accession #: D1807749
FINAL REPORT
Ref.#: Z18-0401

Coordinator: Leslie Woods, DVM, PhD, Dipl. ACVP

**Specimen Details**

| Animal/Source | ID Type | Taxonomy | Gender | Age |
|---|---|---|---|---|
| Z18-0401 | Unknown | Salt Marsh Harvest Mouse | Female | Adult |

**Laboratory Findings/Diagnosis**

Hepatitis, moderate, pleocellular (neutrophilic, lymphocytic) and diffuse hepatic anisokaryosis.

**Case Summary**

06-12-18. This mouse had a significant portal hepatitis with mostly neutrophilic inflammation. This could be associated with an infection from the intestines. Unfortunately, the intestines were externalized (mouse was eviscerated) and microscopic evaluation of the intestines was not possible. I did not culture the liver for bacteria because of the contamination associated with the open abdomen. The mouse carcass and tissues have been saved for your retrieval.

The necropsy revealed interstitial pneumonia and hemorrhage in the lungs, **as well as hepatitis**. **High numbers of neutrophils showing signs of fighting a bacterial infection** were present in the lung and liver. No trauma and no trace of anticoagulant rodenticides were found. The signs, taken together, are suggestive of overwhelming bacterial infection (septicemia/toxemia) which may have resulted in DIC (disseminated intravascular coagulopathy – basically accumulation of small clots in the body that then depletes the body's clotting factors in severe end stage diseases) causing the hemorrhage. Aerobic bacterial culture was negative. The exact cause of the disease is unknown.

# Disease Risk to Surveyors


## Threat of Hantavirus Pulmonary Syndrome to Field Biologists Working with Small Mammals

Douglas A. Kelt,* Dirk H. Van Vuren,* Mark S. Hafner,† Brent J. Danielson,‡ and Marcella J. Kelly§

*Journal of Mammalogy*, 91(6):1524–1527, 2010

## Updated guidelines for protection of mammalogists and wildlife researchers from hantavirus pulmonary syndrome (HPS)

Douglas A. Kelt,* Mark S. Hafner, and the American Society of Mammalogists' Ad Hoc Committee for Guidelines

utionary measures that
urate assessment of oc-

e wild rodents are pre-
sure to SNV (2). Thus,
r Disease Control and
ational conferences and
mmalogists whose jobs
sure to small mammals
17 of these donors were

## DEPARTMENT OF FISH AND GAME PHYSICIAN'S ALERT CARD

For information on symptoms, diagnosis, and recommended treatment of zoonotic diseases please contact:

Department of Public Health
Veterinary Public Health Section
(916) 552-9740 (8 AM – 5 PM)

Revised 5/12

## PHYSICIAN'S ALERT

The holder of this card is likely to be exposed to certain zoonotic diseases which are not routinely considered in the differential diagnosis of febrile illnesses. We request that you consider the following diseases in case of serious illness: Rabies, Hantavirus, Rocky Mountain Spotted Fever, Q Fever, Plague, Tularemia, Leptospirosis, Brucellosis, Typhus, Arbovirus Encephalitis, Spirochaetal Relapsing Fever, Psitticosis, Anthrax, Lyme Disease, Ascariasis, Coccidioidomycosis, Giardiasis, and Hydatid Disease.

U.S. DEPARTMENT OF HEALTH & HUM
Public Health Service

occurred in the "Four Corners" region of the southwestern United States (http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/history.htm, accessed 10 August 2010) With an initial mortality rate >90%, the United States Centers for Disease Control and Prevention (CDC) promptly initiated a

every capture (e.g., using Lysol [Reckitt Benckiser, Berkshire, United Kingdom] or dilute bleach) and both washed and disinfected after every trapping session; and traps containing rodents being handled with heavy rubber gloves, placed in doubled plastic bags (tied closed), and processed at a central

1285

# CDFW Wildlife Investigations Lab

- https://www.wildlife.ca.gov/Conservation/Laboratories/Wildlife-Investigations
- Deanna Clifford, Senior Veterinarian Specialist, Non-Game and Public Safety - Deana.Clifford@wildlife.ca.gov

# Torpid, Injury, Mortality

## Check your permit for instructions !

**Torpid**- Put animal in trap with plenty of batting and bait. Place animal in a warm area (inside vehicle) with a hand warmer. Torpid animals usually warm up within 15 to 10 minutes and can be released.

**Injury** – Minor, should be ok to release. Possible life threatening injuries should be kept in a warm place and wait for instructions.

**Mortality** - Place animal in a sealed container with a label including:

- Your name, Date, the Location, All Measurements, Id of the animal
- Contact CDFW Wildlife Investigations lab to have animal delivered there or where instructed.
- If unable to contact a live person, place the animal in a refrigerator or freezer.

# SMHM Working Group

- USFWS and CDFW staff first met in 2010 to compare notes on survey methods, data collected, identification, etc.
- A more formal group was developed in 2016 with permitting agency staff, & smhm researchers.
- Improving data collection to inform the SMHM TMRP Recovery & answer questions as they arise.
- Developed a Draft Priorities List of Information needed to inform Recovery of SMHM
- Developing a standard protocol for survey methods and identification.

# CNDDB

https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data

Login Contact Us

California Department of
**Fish and Wildlife**

Home Fishing Hunting Licensing Conservation Learning

## Submitting Data to the CNDDB

The CNDDB accepts data on rare species in a number of formats. The method of submission will likely depend on the amount of data that was collected, the format the data was collected in, and the type of project being carried out. For all data submissions, the more information that is provided to the CNDDB on population size, site condition, threats, etc., the better the CNDDB can assign an accurate occurrence rank to the site. The occurrence rank is then taken into consideration when determining rarity status and when prioritizing sites for conservation purposes.

Below are the most common ways data is submitted to the CNDDB. **The preferred method of data submission for animal detections is the CNDDB Online Field Survey Form.** If you are unclear as to how to submit your data, please contact the CNDDB and we can work with you to determine the best way to submit your data.

Online Field Survey Form | PDF Field Survey Form | Digital Data | Other

### Online Field Survey Form

CNDDB Online Field Survey Form

This Internet application allows users to fill out and submit a field survey form online. It contains a mapping tool to help

### California Natural Diversity Database

- About the CNDDB
- CNDDB News
- CNDDB QuickView Tool
- CNDDB and Spotted Owl Data Viewer
- RareFind
- Submitting Data
- CNDDB Tutorials and Training

# Let’s Recap!


Napa Sonoma Marsh


Eden Landing

Pure Schoenoplectus americanus

Chairmaker's or tricorner bullrush

Pure Sesuvium verrucosum

Western sea-purselane

Questions?

# Katie Smith, PhD

ratsmith@ucdavi.edu

ksmith@wra-ca.com

@iheartrats