

## Discovery of invasive nutria in California

### Landowners, we need your help...

CDFW has deployed nutria survey teams from the Delta through the San Joaquin Valley and needs written access permissions to enter or cross private properties for the purposes of conducting nutria surveys and, where detected, implementing trapping efforts. Landowners and tenants, [we need your help](#); so CDFW can survey for and remove destructive nutria from your properties, complete and submit the [Nutria Project Temporary Entry Permit](#).

### How to Report a Sighting

Suspected observations or potential signs of nutria should be **photographed** and immediately reported to CDFW's [Invasive Species Program online](#), by e-mail to [invasives@wildlife.ca.gov](mailto:invasives@wildlife.ca.gov), or by phone at (866) 440-9530. Observations on state or federal lands should be immediately reported to local agency staff on the property. Reports will be followed up on by the interagency nutria response team and will help in their eradication effort. If possible, photos of animals should include views of the whiskers, front or hind foot, or tail; for optimal photos of tracks, include an object for size reference (e.g., pencil, quarter, wallet) and take the photo from the side, at an angle ( $\leq 45^\circ$ ) to cast shadows into the track.

Please consult the [nutria identification flyer \(PDF\)](#) or "Nutria Identification" section below for reference images and other commonly confused species. Additionally, the Delta Stewardship Council has developed a convenient [nutria pocket guide](#) to aid in field identification of nutria; to request the printed pocket guide(s), please contact CDFW at [Invasives@wildlife.ca.gov](mailto:Invasives@wildlife.ca.gov) or (866) 440-9530.

### General Information

For general information on nutria biology and ecology please see the [nutria species profile page](#).



**Large, male nutria trapped in a private wetland in Merced County, June 2017. CDFA photo.**

## Nutria Impacts

Through their extensive herbivory and burrowing habits, nutria have devastating impacts on wetland habitats, agriculture, and water conveyance/flood protection infrastructure. Nutria consume up to 25% of their body weight in above- and below-ground plant material each day. Due to their feeding habits, up to 10 times the amount of plant material consumed is destroyed, causing extensive damage to the native plant community, soil structure, and nearby agricultural crops. The loss of plant cover and soil organic matter results in severe erosion of soils, in some cases converting marsh to open water. Further, nutria burrow into banks and levees, creating complex dens that span as far as 6 meters deep and 50 meters into the bank and often cause severe streambank erosion, increased sedimentation, levee failures, and roadbed collapses.



**Wetland loss caused by nutria damage in Blackwater National Wildlife Refuge, Delmarva Peninsula, Chesapeake Bay. Left, normal marsh in 1939 before nutria introduction in the 1940s. Right, by 1989, over 50% of the Refuge's marshes had been converted to open water due to the destructive feeding habits of nutria. Photos courtesy of USFWS.**





An exclosure experiment in a Louisiana marsh demonstrating the severe ecological damages caused by nutria herbivory in wetland habitats. Photo courtesy of Louisiana Dept. of Wildlife and Fisheries.







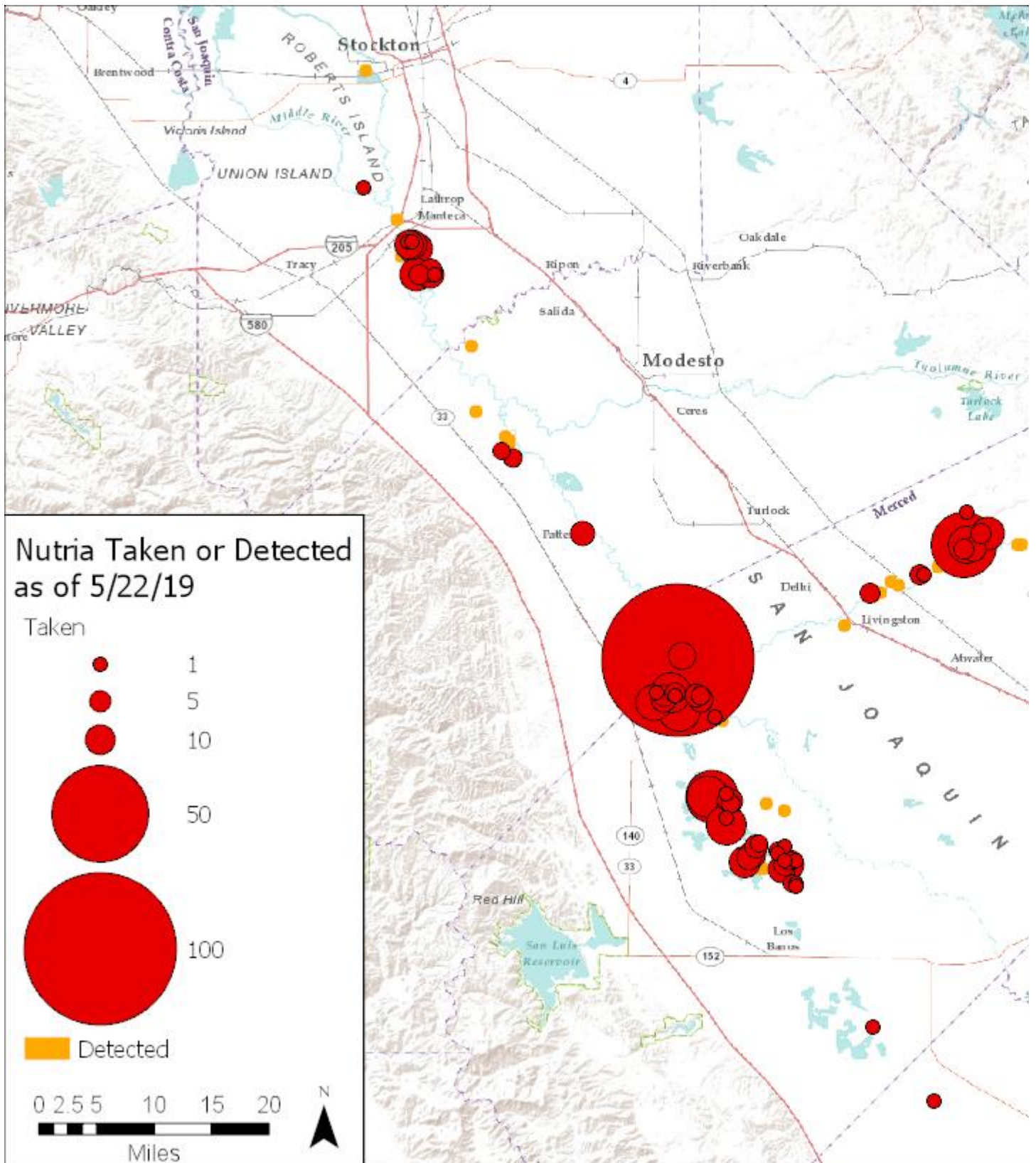
**Nutria burrowing causes extensive damage to water infrastructure, banks, and levees, and creates a hazard for people, livestock, and machine operators. Potential levee and dike failures due to nutria burrowing have serious implications for flood protection, water delivery, and agricultural irrigation in California. Left, nutria burrow in Tualatin National Wildlife Refuge in Oregon. Photo courtesy of USFWS. Right, extensive burrowing damage by nutria in Oregon. Photo courtesy of Trevor Sheffels, PSU.**

## Discovery in California

Confirmed detections of nutria in California can be viewed in the [nutria detection map \(PDF\)](#). As of May 22, 2019, 510 nutria have been taken in California, with several additional animals confirmed present, across Merced, Stanislaus, San Joaquin, Fresno, Tuolumne, and Mariposa Counties. In September 2018, the first reproducing population of nutria within the legal Sacramento-San Joaquin Delta boundary was discovered south of Lathrop (San Joaquin County). In May 2019, a nutria was detected near Rough and Ready Island, approximately 16 miles north of the nearest known population and previous detections.

### **Nutria Taken in California, by County (as of 5/22/19)**

<b>Total</b>	Merced	San Joaquin	Stanislaus	Mariposa	Fresno
<b>510</b>	430	65	12	2	1

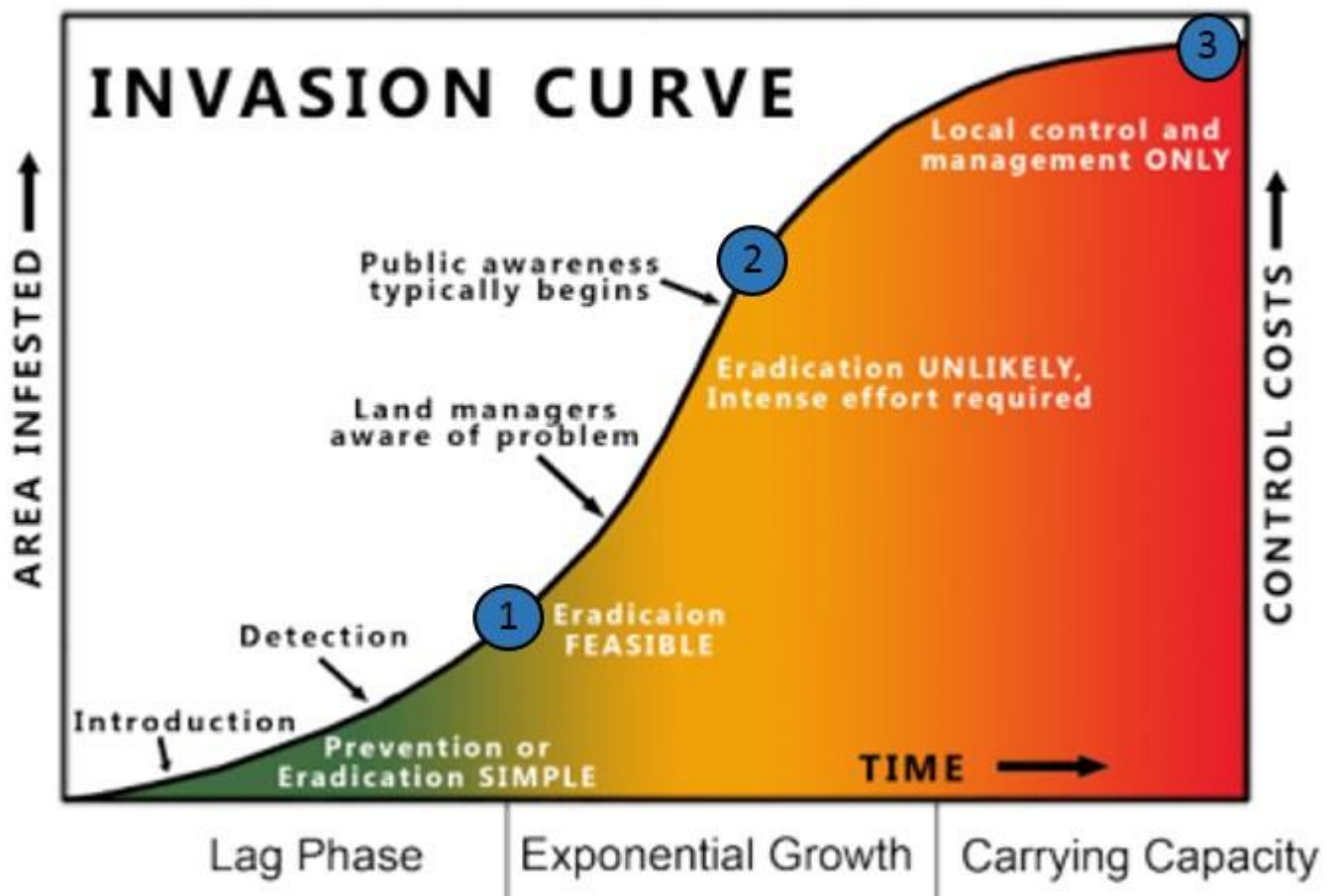




## Eradication Effort

CDFW is collaborating with other agencies and local partners to develop the most effective strategy for eradicating nutria from California. As depicted in the "Invasion Curve" figure below, invasive species infestations typically experience a lag phase, while population size and area infested are relatively small, successful eradication is most feasible, and control efforts are most cost-efficient. As time progresses, the population size, area infested, and costs required for control increase exponentially, and the probability of successful eradication is lost.

Conceptually, (1) represents where we believe the current extent of the nutria population is in California; eradication is feasible with rapid response; (2) represents the nutria population in the Chesapeake Bay (Delmarva Peninsula) prior to implementation of the [Chesapeake Bay Nutria Eradication Project \(CBNEP\)](#). The CBNEP strategically removed over 14,000 nutria from 2000-2015 and has not detected a nutria since early 2015. (3) represents the [nutria population in Louisiana](#), where population control costs up to \$2 million dollars each year for bounty harvests alone.



Currently, there is a small window of opportunity to successfully eradicate the population of nutria from California. As time progresses, the population size and geographic area of infestation are increasing, along with the effort, resources, and funds required for successful eradication. Over time, the probability of successful eradication decreases, and California would be left to manage and mitigate the devastating impacts of nutria on wetlands, agriculture, and water conveyance/flood control infrastructure.

The interagency Nutria Response Team includes representatives from CDFW, the California Departments of Food and Agriculture, Parks and Recreation, and Water Resources, the U.S. Department of Agriculture, the U.S. Fish and Wildlife Service and local county agricultural commissioner offices. The team is currently preparing an eradication plan, the first stage of which is determining the full extent of the infestation. Assistance from local landowners and the public throughout the Central Valley, Sacramento-San Joaquin Delta, and beyond is critical to successfully delineating the population.

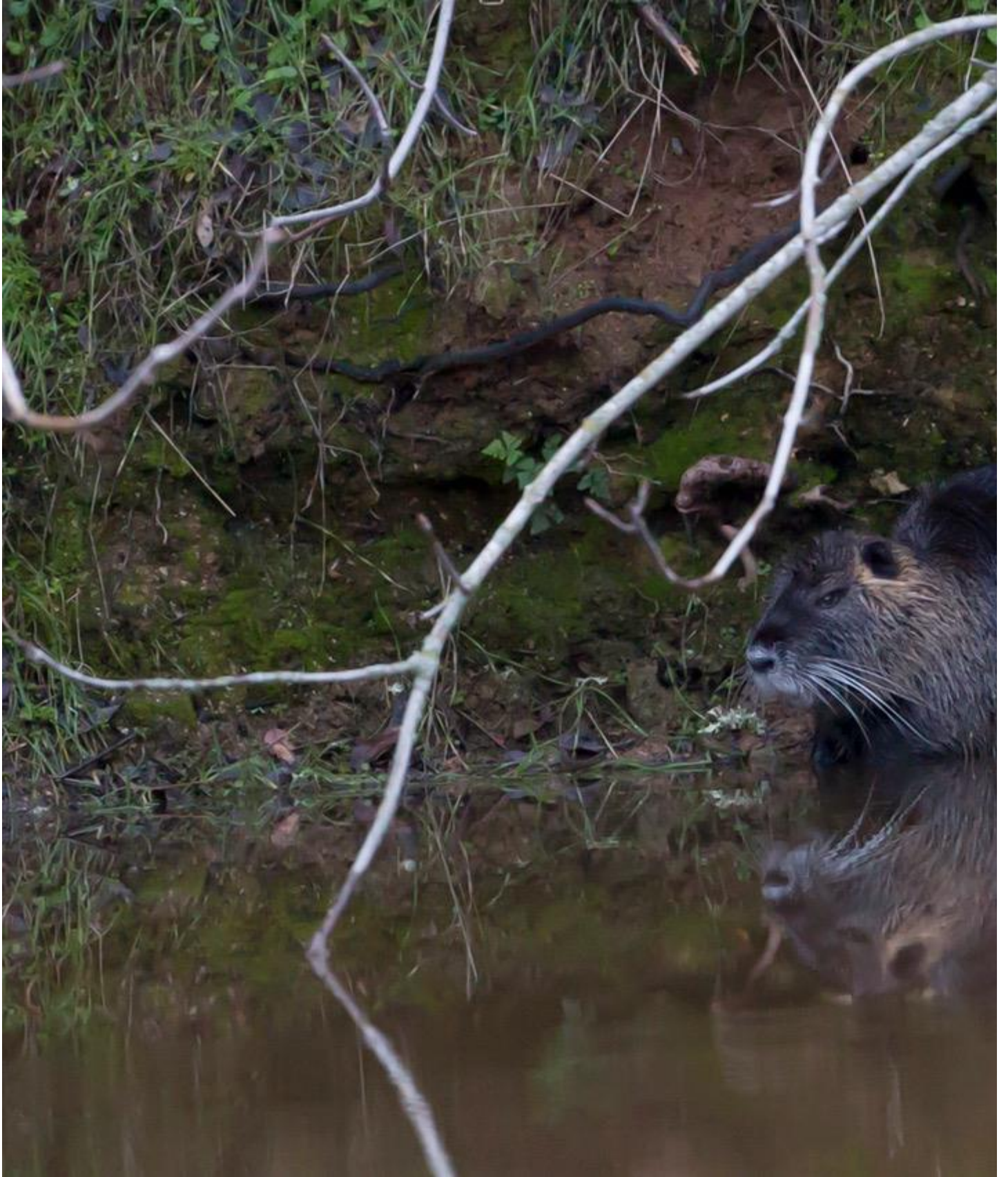
## Take by Landowners/Hunters

CDFW has classified nutria as a nongame mammal. [Fish and Game Code §4152](#) specifies property owners or their agents (who possess written permission from the owner or tenant) may take nutria at any time by any legal means to address damage to crops or property. Restrictions apply to the use of traps and types of traps. Nutria are a Restricted Species in California under the California Code of Regulations, Title 14, Section 671, and cannot be imported, transported, or possessed live in the state of California.

Given their very similar appearances, particularly in overlapping size classes, citizens should take extra precaution to [distinguish nutria from other aquatic mammals \(PDF\)](#); the majority of nutria reports received by CDFW have been muskrats, as have been some "nutria" featured in the media. Any nutria taken on private or public land should be reported to CDFW as soon as possible for purposes of delineating the extent of the infestation. At minimum, CDFW needs photos to confirm identification; preferably, CDFW needs the carcass to determine sex, age, and reproductive status.

## Nutria Identification

Nutria are large, semi-aquatic rodents that reach up to 2.5 feet in body length, 12- to 18-inch tail length and +20 pounds in weight. Nutria strongly resemble native beaver and muskrat, but are distinguished by their round, sparsely haired tails and white whiskers (see CDFW's [nutria ID guide \(PDF\)](#) or Delta Stewardship Council's [nutria pocket guide](#)). Both nutria and muskrat often have white muzzles, but muskrats have dark whiskers, nearly triangular (laterally compressed) tails and reach a maximum size of five pounds. Beavers have wide, flattened tails and dark whiskers and reach up to 60 pounds. Other small mammals can sometimes be mistaken for nutria if seen briefly or in low light conditions, including river otters and mink.





**Adult nutria discovered in a private pond in Tuolumne County, east of Don Pedro Reservoir. Though muskrats may have a white muzzle, both muskrats and beaver have dark whiskers. Nutria have characteristic white whiskers, and most often have conspicuous, dark ears with light-colored fur underneath, as seen in this image. Photo courtesy of Peggy Sells.**





California has several aquatic mammals that occur in the same habitats and may be confused with nutria. Top left, muskrat, note the nearly triangular tail and dark whiskers that distinguish muskrats from small nutria, photo courtesy of Missouri Dept. of Conservation. Top right, American beaver, note the broad, flat tail that, along with dark whiskers, distinguishes small beavers from nutria, CDFW photo. Bottom, American mink, note the fully furred tail, dark whiskers, and weasel-like body form, photo courtesy of Alaska Dept. of Fish and Game.



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Left, juvenile river otters, pictured here in a cattail marsh, may also be mistaken for nutria. Note the long body and thick, fully-furred tail, CDFW photo. Right adult river otter, photo courtesy of National Park Service.



Nutria often have a dark undercoat, with lighter-colored guard hairs. Their dark, conspicuous ears, with lighter fur underneath, are helpful in distinguishing nutria from other aquatic mammals when their round tail is not clearly visible. CDFW photos.





**Left, nutria front foot, showing the four toes visible in tracks and the barely visible fifth, residual toe on the inner, lower area of the foot. Right, nutria hind foot, showing the webbing between the inner four toes and outer, fifth toe free from webbing. CDFW photos.**

## Habitat

Nutria can be found anywhere in or near freshwater or estuaries. Thus far, they have been found in cattail and tule marshes, ponds, canals, sloughs, and rivers. All currently known locations are upstream of the Sacramento-San Joaquin Delta, which provides a vast amount of ideal and interconnected habitat for nutria.

Look for nutria and signs of nutria presence in wetlands, canals, rivers, and creeks, along levees and riparian areas, in flooded agricultural fields adjacent to waterways, and in the transition zone between wetland and terrestrial habitat.

Because nutria are wasteful feeders, signs of presence typically include cut, emergent vegetation (e.g. cattails and bulrushes), with only the basal portions eaten and the cut stems left floating, or grazed tops of new growth. Nutria create runs between feeding sites and burrows. Nutria often pile cuttings to create feeding/grooming platforms. Nutria construct burrows with entrances typically below the water line, though changing water levels may reveal openings. Nutria tracks have four visible front toes and, on their hind feet, webbing between four of five toes. Tracks are often accompanied by narrow tail drags.&







**Nutria cuttings have a 45 degree angle bite and often have a residual strip attached to the stem. CDFW photos.**





**Top left, nutria often pile their vegetation cuttings into feeding/grooming beds. Top right, cattails cut by nutria and left lying in the marsh, a characteristic sign of nutria presence. Bottom, a vegetation clearing or "eat out" with cuttings floating throughout the area, characteristic signs of nutria herbivory damage. CDFW photos.**





**Nutria create "runs" in the vegetation between feeding areas and near entry/exit points along the water's edge. CDFW photo.**



**Nutria scat is distinctly grooved and floats on the water's surface. CDFW photos.**



Left, closeup of nutria tracks showing webbing between 4 of 5 toes on the hind foot. CDFW photo. Right, nutria tracks and tail drag. Photo courtesy of USDA.

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