Vertebrate Pest Control

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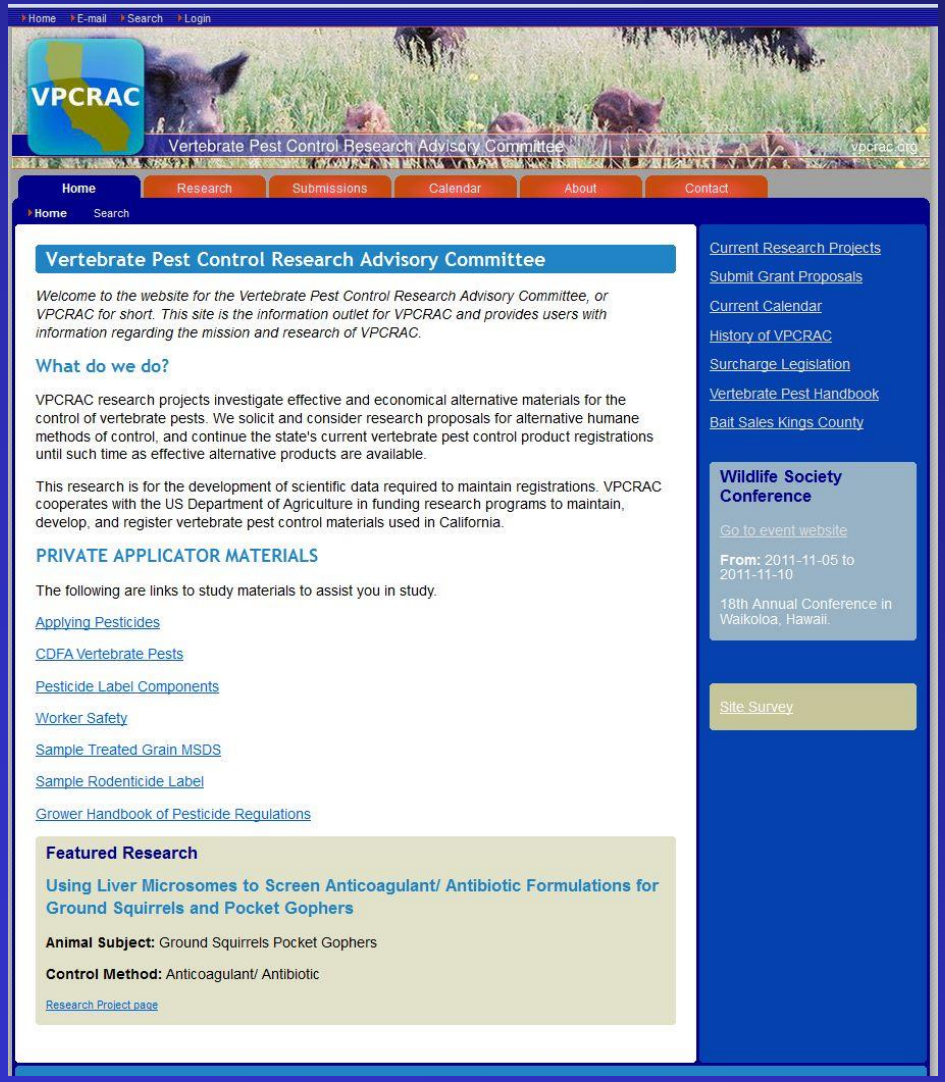
Purpose of this training?

- Overview of Vertebrate Pest Control Research Advisory Committee, VPCRAC
- CDFA Rodenticides
- Anticoagulant Application
- Recent Rodenticide and Trapping Legislation
- Nutria in California

Vertebrate Pest Control Research Advisory Committee



Vertebrate Pest Control Research Advisory Committee

How is VPCRAC Funded?

In 1990, the Rodenticide Surcharge Program (Assembly Bill 2776) requested each agricultural commissioner to collect a fee or surcharge of 50 cents for each pound of vertebrate pest control material sold, distributed, or applied by the county.

On average $500,000 per year is collected.

Food Ag Code sec. 6029, extended through Jan. 2026

Vertebrate Pest Control Research Advisory Committee

What does VPCRAC Fund?

The money generated by this surcharge is used to fund the research required by the EPA to maintain current registrations, payment of registration fees, to improve existing rodenticides, and to find new materials and methods to solve vertebrate pest problems.

To date over 130 VPCRAC funded vertebrate pest related studies have been completed.

CDFA Maintained Labels

Product	Pests	Use Sites	Methods
Diphacinone Grain .005%	**Ground Squirrels**, Norway and Roof Rats, Wood Rats, Voles, Jack Rabbits, Cottontail, Chipmunks, Muskrats	Ag Buildings, Crops, Range, Forestry, NonCrop, Waterways (muskrat)	Bait Stations, Spot Baiting
Diphacinone Grain .010%	**Ground Squirrels**, Deer Mice, House Mice	Vineyards, Orchards, Groves, Forestry, Pasture, Range, NonCrop	Broadcast Baiting
Chlorophacinone Grain .005%	**Ground Squirrels**, Voles, Chipmunks, Muskrats, Jackrabbits, Norway, Roof and Wood Rats	Ag Buildings, Crops, Range, Forestry, NonCrop, Waterways (muskrat)	Bait Stations, Spot Baiting
Chlorophacinone Grain. 010%	**Ground Squirrel**, Voles, Deer Mice, House Mice, Pocket Gophers	Vineyards, Orchards, Groves, Forestry, Pasture, Range, NonCrop	Broadcast Baiting, Mechanical (gophers)
Zinc Phosphide.Grain 2%	**Ground Squirrels**, Voles, Norway and Roof Rats	Dormant Fruit, nonbearing nursery stock, Tree Plantations, Vineyards, Range, Pasture, NonCrop, Ornamentals. NonResidential Lawns, Golf Courses	Handbaiting, broadcast, aerial, trail builder, bait stations
Diphacinone .005% Wax Block	Norway Rats, Roof Rats, House Mice	Within 100' of buildings and transport vehicles	Bait stations
Chlorophacinone .010% Artichoke	Voles	Artichoke fields	spot baiting

Anticoagulants

Inhibit the formation of Vitamin K in the liver. Reduces blood's ability to clot.

Death occurs 7-10 days after feeding begins

1st Generation: Chronic, continuous feeding over several days required. Field use.

2nd Generation: Acute, single feeding incident is lethal. Commensal use (rats & mice) in and around homes or human structures.

Directions of Use

- **Do not** apply this product in or around homes or other human residences.
- **Do not** apply this bait at sites or to control pests not indicated on this label.
- **Do not** apply this product by application methods that are not specified on this label.
- **Do not** pile bait.
- **Do not** graze livestock or plant food or feed crops in spot-treated areas while bait is present. Applications in vineyards, orchards, and groves may only be made after harvest and during the dormant period and may not be made after tree and vine growth resumes in the spring.

Hand Baiting

Do not clump or pile bait!

Directions of Use

Apply baits in locations out of reach of **children, pets, and domestic animals**. If this is not possible, **baits shall be used only in tamper-resistant bait stations** that are resistant to destruction by dogs, wildlife, domestic animals, and children under six years of age.

FOLLOW-UP OPERATIONS – All Rodenticide Baits

Collect dead rodents and dispose of them by deep burying, burning (if permitted in your County or community), or double plastic bagging or by wrapping in newspaper and discarding in the trash. Wear disposable plastic gloves or other suitable hand protection if you must pick up carcasses by hand.

CPDR Memo June 27, 2013
SECOND GENERATION ANTICOAGULANT RODENTICIDEASSESSMENT

Table 1. Half-life (in days) of a single dose of rodenticides in the blood and liver of rats[1, 2]

Class of Rodenticide	Rodenticide	Dose (mg ai/kg)	Half-life (in days) in Blood	Half-life (in days) in Liver
Second Generation Anticoagulant Rodenticides	Brodifacoum	0.02 to 0.35	6.5 to 91.7[7]	113.5[3] to 350
	Bromadiolone	0.2 to 3.0	1.0 to 2.4	170 to 318
	Difenacoum[4]	1.2	NA	118
	Difethialone	0.5	2.3	126
First Generation Anticoagulant Rodenticides	Chlorophacinone	4 to 5	0.4	Less than 2
	Diphacinone	0.32	NA	Between 2 and 3[1, 3]
	Warfarin	NA[9], 1[3]	0.7 to 1.2[1]	7[1] to 26.2[3]
Non-anticoagulant Rodenticides[2]	Bromethalin[5]	NA[9]	5.5	NA
	Cholecalciferol[6]	NA[9]	1	~19[8]

1 Data summarized from Erickson and Urban, 2004, except where noted.
2. Data is not available for zinc phosphide, so it is not included on the chart.
3. Fisher et al, 2003.
4. U.S. EPA, 2007.
5. Spaulding and Spannring, 1988.
6. Marrow, 2001.
7. Vandenbroucke et al, 2008.
8. Body half-life (instead of liver half-life).
9. NA is defined as Not Available.

CPDR Memo June 27, 2013
SECOND GENERATION ANTICOAGULANT RODENTICIDEASSESSMENT

Table 2. Number (and percent) of the rodenticides among all animals (n=492) and among the positive animals (n=368)[1].

Total	Number	Second Generation Anticoagulant Rodenticides			First Generation Anticoagulant Rodenticides		
Samples	492	359 (72.9%)			65 (13.2%)		
Positives	368	359 (97.6%)			65 (17.7%)		
Total	Number	Brodifacoum	Bromadiolone	Difethialone	Chlorophacinone	Diphacinone	Warfarin
Birds	194	124 (63.94%)	42 (21.7%)	10 (5.2%)	1 (0.5%)	5 (0.3%)	0 (0.0%)
Mammals	298	215 (72.2%)	141 (47.3%)	31 (10.4%)	17 (5.7%)	48 (16.1%)	4 (1.3%)
Total	492	339 (68.9%)	183 (37.2%)	41 (8.3%)	18 (3.7%)	53 (10.8%)	4 (0.8%)
Positives	368	339 (92.1%)	183 (49.7%)	41 (11.1%)	18 (4.9%)	53 (14.4%)	4 (1.1%)

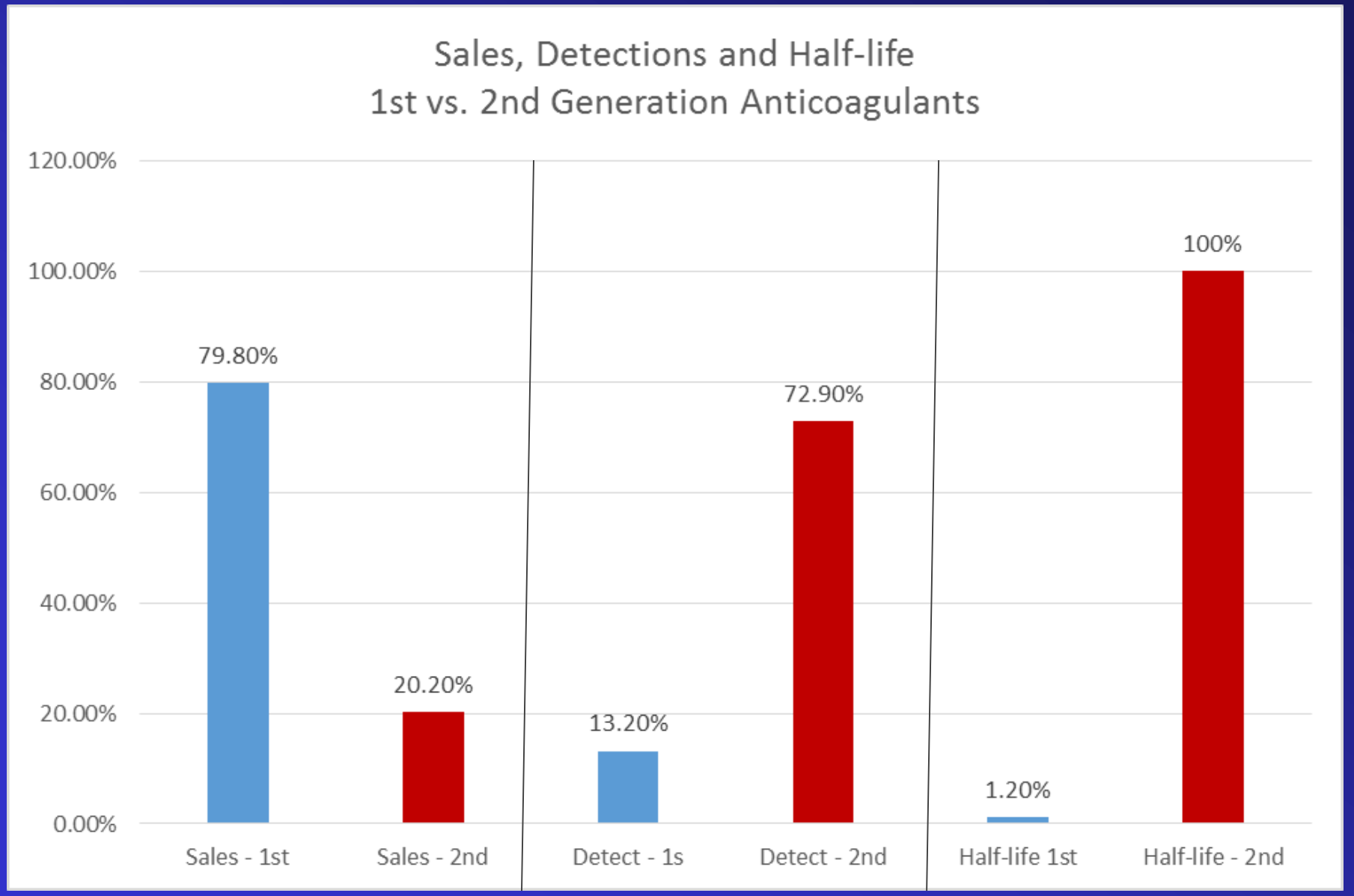
1. Animals may be positive for more than one rodenticide.

CPDR Memo June 27, 2013
SECOND GENERATION ANTICOAGULANT RODENTICIDEASSESSMENT

Table 14. A comparison of the average per year (2006 to 2010) of rodenticides sold (in pounds a.i.) to the average per year (2006 to 2010) of pounds of rodenticides reported used (PUR) (in pounds a.i.) to an estimated pounds of use of rodenticides by non-licensed personnel (calculated by subtracting the PUR from the total sold).

Type of Rodenticide	Rodenticide	Total Sold[1] (lbs. of a.i. (%))	PUR[2] (lbs. of a.i. (%))	Estimated Non-licensed Use[3] (lbs. of a.i. (%))
Second Generation Anticoagulant Rodenticides	Brodifacoum	26.58 (6.54%)	3.07 (2.66%)	23.51 (8.09%)
	Bromadiolone	51.02 (12.56%)	32.48 (28.10%)	18.54 (6.38%)
	Difencoum[4]	0.25 (0.06%)	0.015 (0.01%)	0.235 (0.08%)
	Difethialone	4.49 (1.1%)	3.64 (3.15%)	0.85 (0.29%)
First Generation Anticoagulant Rodenticides	Chlorophacinone	66.54 (16.38%)	17.42 (15.07%)	49.12 (16.79%)
	Diphacinone	226.99 (55.9%)	56.70 (49.05%)	170.29 (58.57%)
	Warfarin	30.44 (7.49%)	2.27 (1.96%)	28.17 (9.69%)
Total Rodenticides		406.32 (100.00%)	115.595 (100.00%)	270.485 (100.00%)

1. From the Mill Assessment Database.
2. From the PUR database. The PUR includes pesticide applications on parks, golf courses, pastures, structural pest control, landscape maintenance, roadsides/right of ways, and crops, and all pesticide applications made by licensed applicators.
3. Calculated by subtracting the "PUR" Use from the Total Sold. Estimates the rodenticides applied by non-licensed applicators (i.e., homeowners, building and maintenance workers, custodians).
4. Two (2) year (2009 and 2010) average.


Sales, Detections and Half-life
1st vs. 2nd Generation Anticoagulants
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
79.80%
20.20%
13.20%
72.90%
1.20%
100%
Sales - 1st
Sales - 2nd
Detect - 1s
Detect - 2nd
Half-life 1st
Half-life - 2nd

BAIT STATION APPLICATIONS – Diphacinone .005%

- It may take several days or longer for target animals to become accustomed to a bait station and to begin to accept bait from it.
- Maintain an uninterrupted supply of bait in the bait stations for as long as target species are taking bait, which often will last form 1 to 4 weeks after feeding begins.
- Check stations one or more times per week and replace consumed, spoiled or contaminated bait. Properly dispose of bait that is removed from bait stations or is spilled or scattered from bait stations.

CALIFORNIA GROUND SQUIRRELS
Diphacinone .005%

- **BAIT STATION BAITING:** Secure tamper-resistant bait stations near active ground squirrel burrows or runways. Place stations at intervals of 20 to 100 feet.
- Load 1-5 pounds of bait into bait station.
- Maintain uninterrupted supply, dispose of spoiled bait.

CALIFORNIA GROUND SQUIRRELS
Diphacinone .010%

- **SPOT BAITING:** Using a bait spoon, evenly scatter 1/3 cup (0.1 lb) of bait over 40 to 50 square feet near active squirrel burrows and runways.
- Do not place bait in piles. Using the same procedure, make a second application 4 days after the first.
- Do not apply more that 10 pounds of bait per acre per treatment.
- **Do Not** graze livestock or plant food or feed crops in spot-treated areas while bait is present. Applications in orchards, groves, and vineyards may only be made after harvest and during the dormant period and may not be made after tree and vine growth resumes in the spring

Recent Legislation

- AB 711 Hunting: nonlead ammunition
- AB 789 Trapping
- AB 2657 Anticoagulants
- SB 1332 Carbon Monoxide
- AB 2210 Nongame Animals
- AB 1126 Carbon Monoxide
- AB 1788 Use of Anticoagulants

AB 711, Rendon. Hunting: nonlead ammunition
PASSED

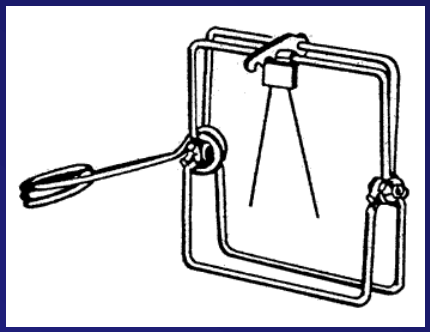
1) Requires use of nonlead ammunition for the taking of all wildlife in California, including mammals, game birds, nongame birds, and nongame mammals, with any firearm.

2) Requires the Fish and Game Commission (FGC), by July 1, 2014, to certify by regulation, nonlead ammunition for these purposes.

3) Phase 2 – Effective July 1, 2016, nonlead shot will be required when taking upland game birds with a shotgun, except for dove, quail, snipe, and any game birds taken on licensed game bird clubs. In addition, nonlead shot will be required when using a shotgun to take resident small game mammals, furbearing mammals, nongame mammals, nongame birds, and any wildlife for depredation purposes.

4) Phase 3 – Effective July 1, 2019, nonlead ammunition will be required when taking any wildlife with a firearm anywhere in California.

AB 789, Williams. Trapping
PASSED



1) Reduces the maximum size of conibear traps (spring-loaded body-crushing traps, without teeth) used to kill mammals, except where they are submerged, partially submerged, or set in a managed wetland, from 10” X 10” to 6” X 6”.

2) Requires a sign warning that dogs should be kept away from areas where conibear traps are set on publicly owned land or land that is open to the public.

3) Prohibits killing any trapped mammal by intentional drowning, injection with any chemical not sold for the purpose of euthanizing animals, or thoracic compression.

AB 2657, Bloom. Anticoagulants
PASSED

- Prohibits the use of second generation anticoagulants in “wildlife habitat areas”.

- Wildlife habitat areas - any state park, state wildlife refuge, or state conservancy.

SB 1332, Wolk. Carbon Monoxide
PASSED

- "**carbon monoxide** pest control device" means any method or instrument using **carbon monoxide** to prevent, eliminate, destroy, or mitigate burrowing rodent pests.
- Require the director of DPR to regulate the use of **carbon monoxide** pest control devices, and adopt and enforce regulations to provide for the proper, safe, and efficient use of these devices for the protection of public health and safety, and the environment.

AB 2210, Williams. Nongame Animals
DEAD

- Specifies nonative eastern fox squirrel (*Sciurus niger*) replacing red fox squirrel.
- Changes once daily trap check to once every 24-hour period.
- Requires nontarget species be released unharmed and not taken.

AB 1126, Ag. Comm. Carbon Monoxide
Passed

Food and Ag Code 6025.4:

- ~~(b)This section shall become inoperative on January 1, 2018, and, as of January 1, 2018, is repealed, unless a later enacted statute, that becomes operative on or before January 1, 2018, deletes or extends the dates on which it becomes inoperative and is repealed~~.

Extends sunset date for Carbon monoxide use through 2023.

AB 1788, Bloom. Use of Anticoagulants **Introduced Feb 2019**

- *California EcosystemsProtection Act of 2019*
- Would prohibit use of: Brodifacoum, Bromadiolone, Bromethalin, Difenacoum, Difethialone (2nd Gen) statewide and Chlorophacinone Diphacinone and Warfarin (1st Gen.) on State owned property.
- This section does not apply to the use of pesticides for agricultural activities, as defined in Section 564.

Control Options – Carbon Monoxide

PERC Machine

Control Options – Carbon Monoxide

Burrow RX

Cheetah

DPR 2nd Generation Restricted Use

- Designate all SGARs as restricted materials
  - Only certified applicators can purchase and use these products
- Limit the aboveground use of baits within 50 feet of a man-made structure unless there is a "feature" associated with the site that is harboring or attracting the target pest between the 50-foot limit and the limit specified on the label (typically 100 feet)
- Revise definition of private applicator to refer to the federal definition of agricultural commodity.
- **Effective July 1, 2014**

CA Dept Fish & Game Regulations

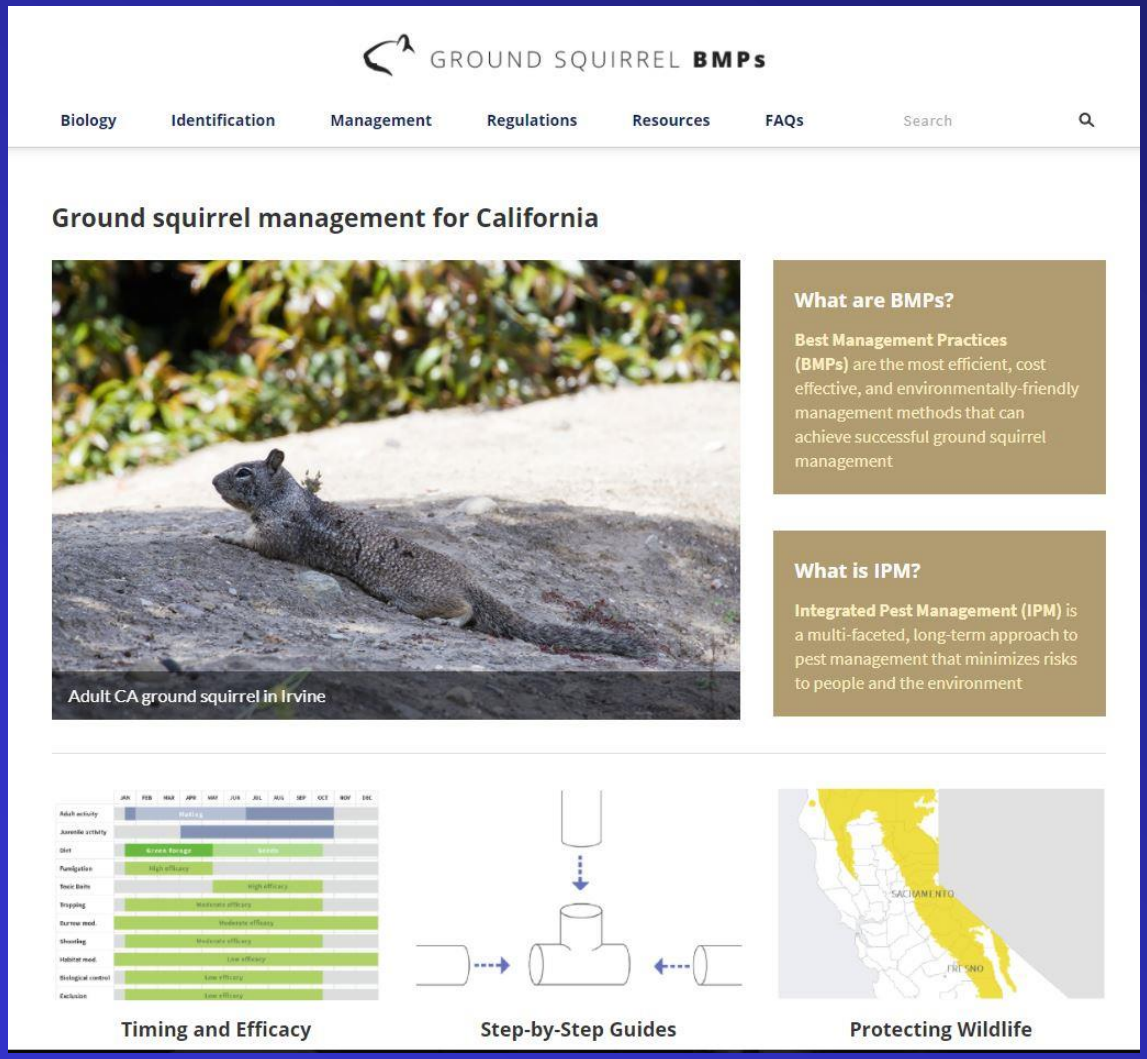
§465.5. Use of Traps.

(g) (1) Immediate Dispatch or Release. All furbearing and nongame mammals that are legal to trap must be immediately killed or released….

(2) Trap Visitation Requirement. All traps shall be visited at least once daily by the owner of the traps or his/her designee… Each time traps are checked all trapped animals shall be removed.

Ground Squirrel BMP's

http://www.groundsquirrelbmp.com



Ground Squirrel BMP's

GROUND SQUIRREL **BMPs**

Biology | Identification | Management | Regulations | Resources | FAQs | Search

Biology

Where, when, what, why: ground squirrel biology plays a big role in management. Knowing when to expect seasonal changes in ground squirrel activity and food preferences can help make management efforts as efficient as possible.

Range and Habitat

Which regions and environments do ground squirrels inhabit in California?

Behavior and Diet

When are ground squirrels active, and what do they forage for?

Seasonal Activity

Adjust management schedules according to hibernation and mating periods.

Disease

Understand the human health risks associated with ground squirrels.

Ground Squirrel BMP's

GROUND SQUIRREL **BMPs**

Biology | Identification | Management | Regulations | Resources | FAQs | Search

Identification

Management efforts are more effective when directed at the right pest. Identify which species of ground squirrel is causing damage - and make sure that another burrowing pest isn't responsible.

Signs and Characteristics

California or Belding's Ground Squirrels? Learn how to tell the two species apart and how to recognize signs of activity.

Damage

See examples of ground squirrel damage to crops and infrastructure.

Look-alike Pests and Damage

Tree squirrels, gophers, and voles -- oh my. Distinguish ground squirrels and their damage from other burrowing pests.

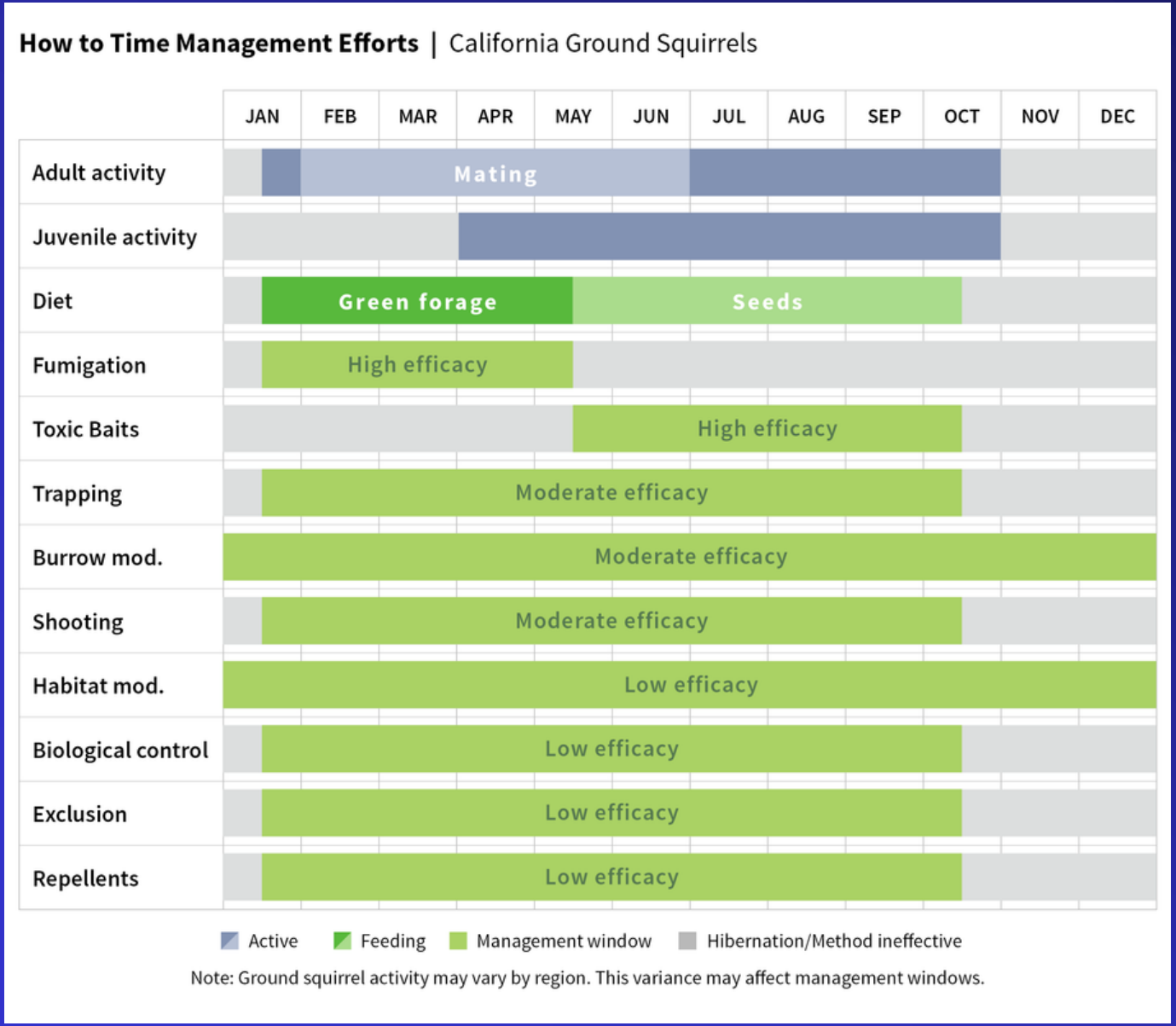
Non-pest Species

Learn about other burrowing species in California that do NOT cause damage:

- Burrowing Non-Target Wildlife
- Ground Squirrel Species of Lesser Concern

Signs and Characteristics photo: Jack Kelly Clark/UC IPM. Non-pest Species photo: Robert Sivinski.

Ground Squirrel BMP's



Ground Squirrel BMP's

GROUND SQUIRREL **BMPs**

Biology | Identification | Management | Regulations | Resources | FAQs | Search

- Behavior and Diet
- Seasonal Activity
- Disease

tructionn

T-type bait stations only require basic tools to construct and are very easy to assemble. Below are step-by-step guides for construction of the traditional T-type bait station and two variations.

Jump to: Traditional T-type | Modified T-type | T-type with Flow Restrictor

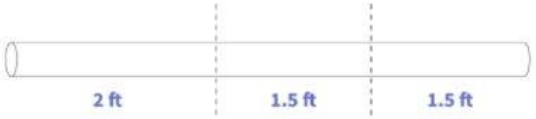
Traditional T-type bait station

Materials

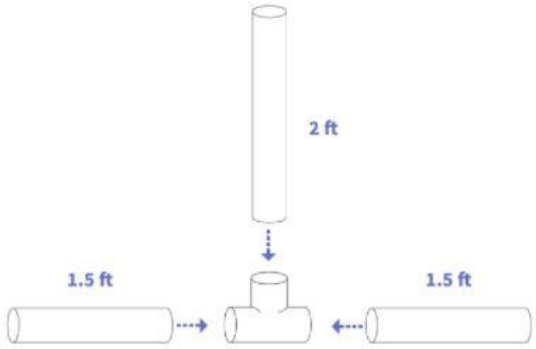
- Five feet of 4-inch PVC/NDS drainage pipe
- One T-junction
- Two 4-inch to 3-inch reducers
- One end cap
- PVC tape, PVC cement, or silicon glue
- Label

Download these instructions in a PDF

1. Cut the PVC pipe into one 2-foot section and two 1.5-foot sections.



2. Attach the T-junction to the 2-foot pipe.
3. Attach the two 1.5-foot sections into opposite ends of the T-junction.



Ground Squirrel BMP's

GROUND SQUIRREL **BMPs**

Euthanasia

According to California Fish and Game Code, once a live animal is trapped, it must either be released where it was trapped or it must be euthanized. Animals can be euthanized by a shot to the head if it is legal to discharge a firearm in the trapped area. Drowning is not an acceptable method of euthanasia and it is illegal under California State law. Alternatively, ground squirrels can be euthanized by carbon dioxide; remember, it is illegal to use carbon monoxide for euthanasia of captured animals. Ground squirrels can be easily dispatched in euthanasia chambers. These can be commercially acquired from specialized vendors or assembled using few materials.

See also:

- Live Trapping
- Kill Trapping

Assembling a chamber

It is not recommended to handle live ground squirrels. It is therefore a good idea to make sure that live traps can fit directly into the euthanasia chamber. This minimizes direct contact with the trapped squirrel and reduces injury to squirrel. In any case, a chamber at least twice the size of an adult ground squirrel is required. A portable insulated cooler with a drain hole is a suitable euthanasia chamber, for the chamber should not be airtight. Attach rubber tubing to the drain hole and then to a CO_2 tank with a flow regulator attached. A window that allows you to see inside the chamber can be very helpful. You can install a window in a cooler by using a jigsaw to drill an opening, cutting a custom piece of Plexiglas to fit, then attaching it to the cooler using epoxy.

Calculating CO_2 Flow

Humane euthanasia requires optimal CO_2 flow, which depends on the size of your euthanasia chamber. Finding the optimal flow for your chamber (approximately 10 to 30% of the chamber's volume per minute) takes just a few simple calculations, as demonstrated in the example below. Complete the calculations for CO_2 flow with the same units used by the flow regulator (cubic feet/hour or liters/minute).

Download calculations for CO_2 flow as a PDF

1. Measure the euthanasia chamber's size in inches: **16** in × **17** in × **35** in

Nutria, *Myocastor coypus*

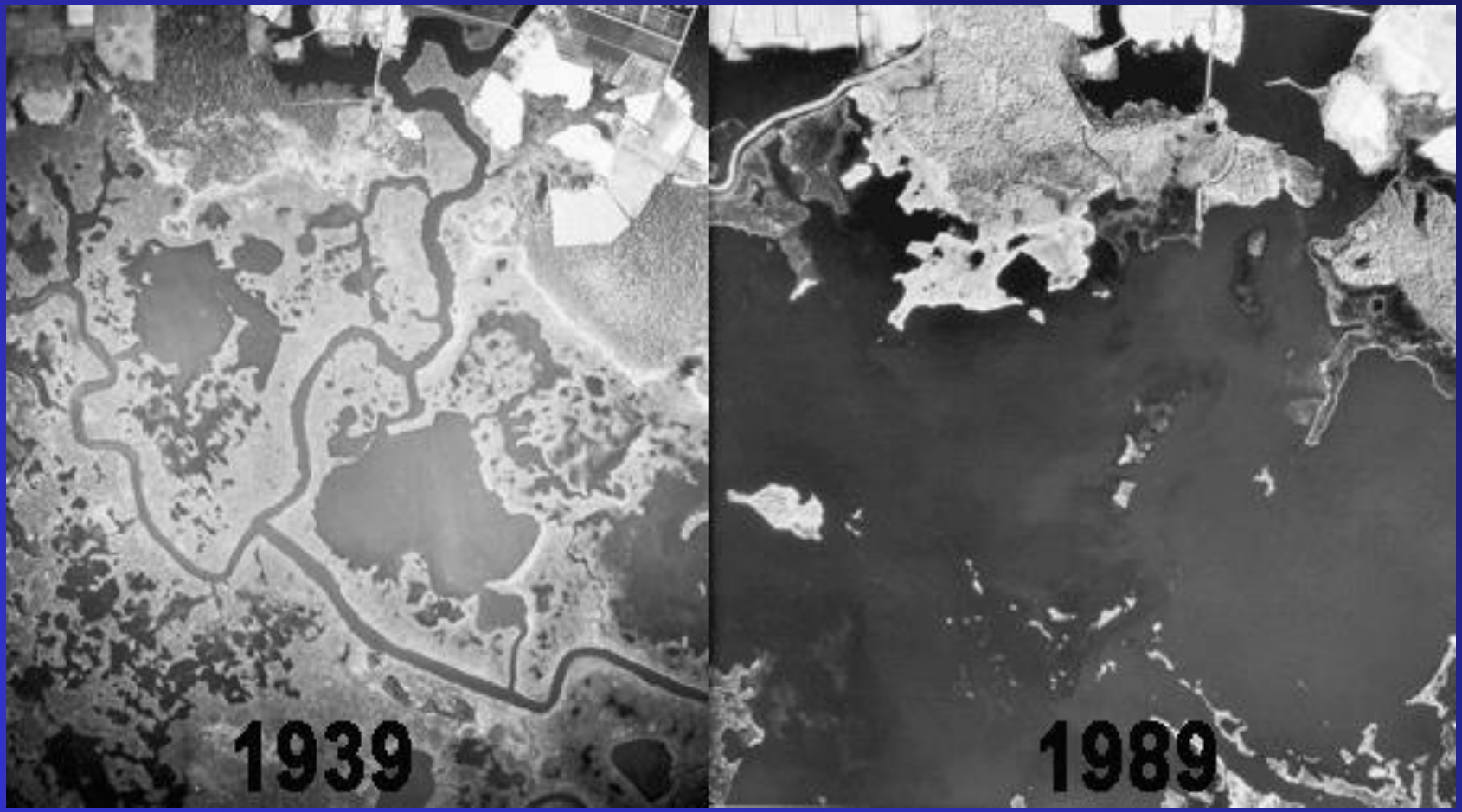
- Native to South America
- Semiaquatic rodent, 15-20 lbs. distinct white whiskers
- Consume 1/3 their body weight per day, waste up to 90% of harvested plant mass
- Believed to be eradicated from CA in late 1960's
- CDFW, CDFA, State Parks, USDA Wildlife Services, USFWS
- CDFA A-rated Vertebrate Pest

Failed fur market in the 1960's lead to widespread release of animals across United States. Established in Chesapeake, Mississppi Delta and Pacific Northwest

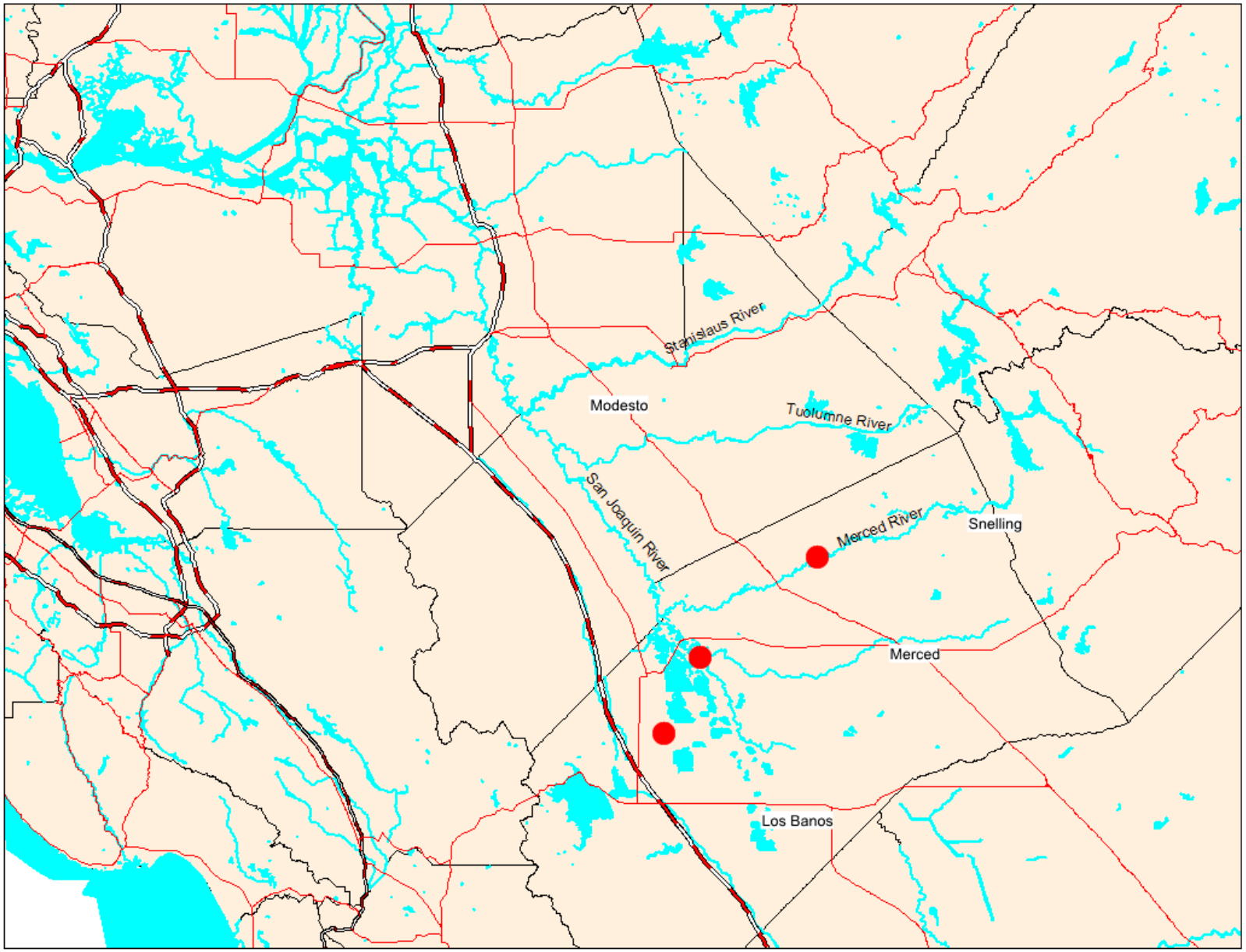
Feeding damage and eat-out

Louisiana Wildlife and Fisheries

http://www.nutria.com/site4.php



Nutria damage, Chesapeake Bay
Blackwater Nat. Wildlife Refuge


Stanislaus River
Modesto
Tuolumne River
San Joaquin River
Merced River
Snelling
Merced
Los Banos


KRATVILLE
DAVID

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cdfa
CALIFORNIA DEPARTMENT OF
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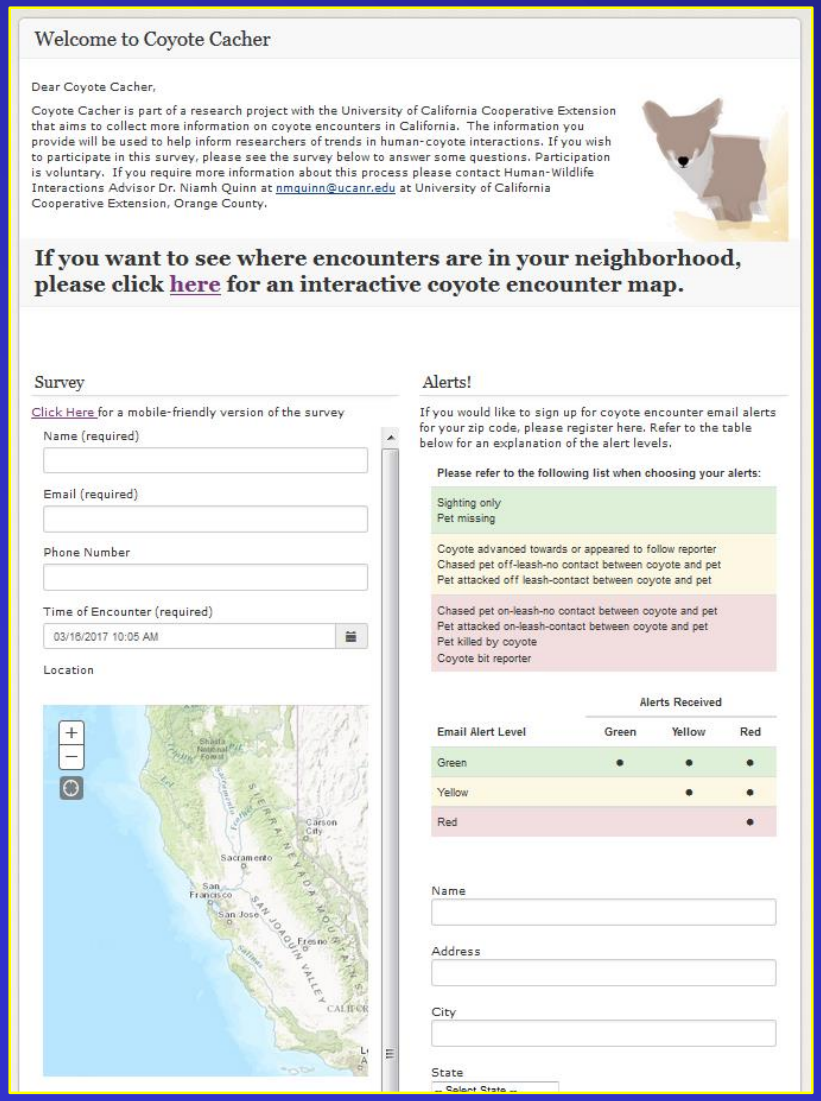
University of California
Coyote Cacher



http://ucanr.edu/sites/CoyoteCacher/

Track coyote sightings

Mobile or desktop versions

Vertebrate Pest Control Options

Best to follow an integrated approach:

- Biocontrol
- Habitat Modification
- Exclusion
- Trapping
- Baiting
- Fumigation
- Shooting
- Other

*check with County Ag. Commissioner office for any Endangered Species Restrictions.

Control Options—Biocontrol

- Natural predators have been used to control vertebrate pests.
- Owl boxes are inconclusive at best.
- Gopher snakes kill a few gophers but are unlikely to control populations.

Control Options—Habitat Modification

- Involves altering habitat to reduce the desirability for pests.
- Example:
  - remove brush piles to control ground squirrels.
  - reduce cover for voles.

Control Options—Exclusion

- Wire baskets and raised flower beds can be used to exclude gophers.

- Tree protectors can reduce or eliminate damage caused by voles.

Control Options—Exclusion

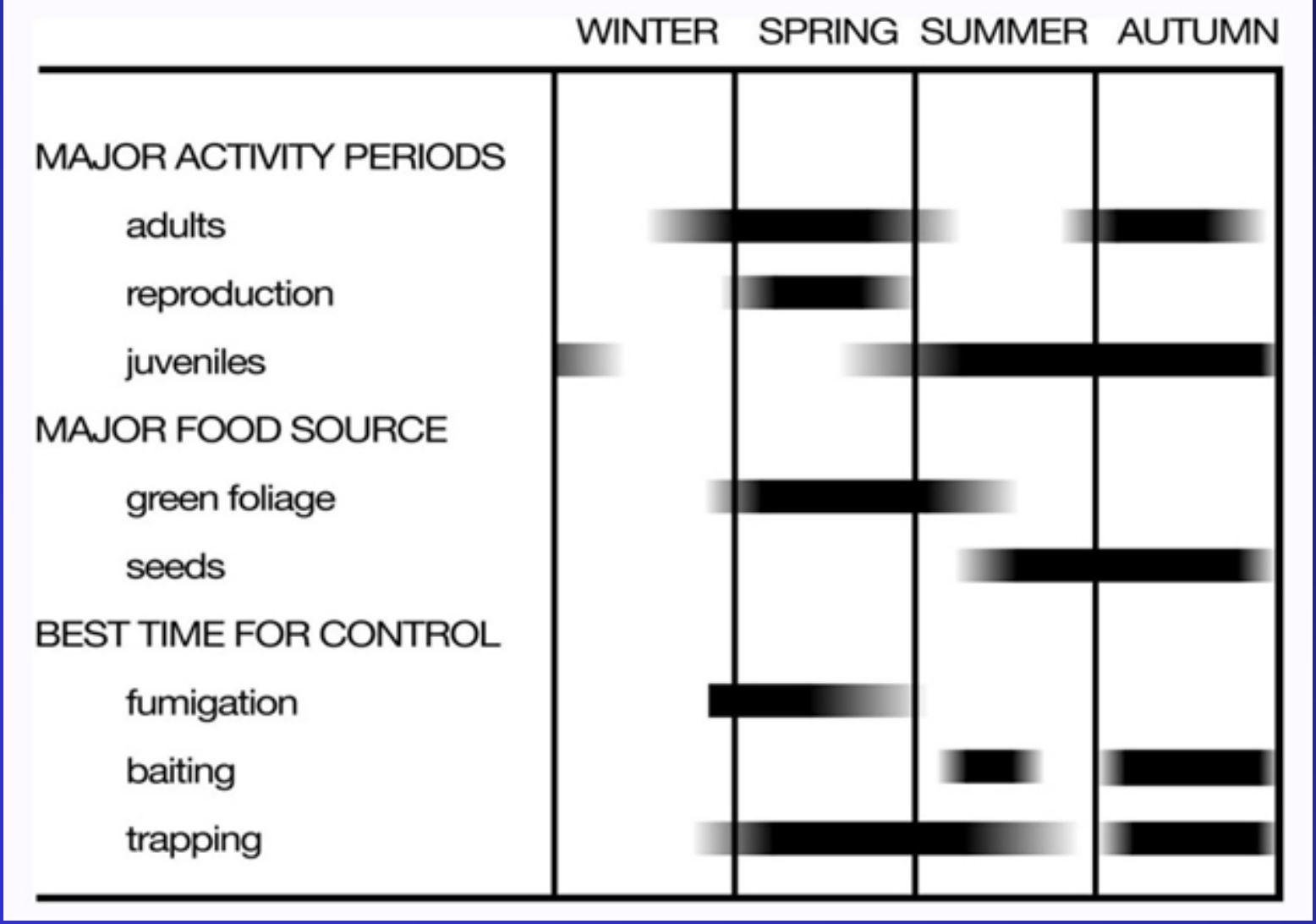
- May be a control option to consider for voles.
- Plastic mesh-style fencing has been effective at slowing movement of voles into artichoke fields.
- Fencing should be buried at least 6 inches below ground and extend 6-10 inches above ground.
- Aluminum flashing may provide more long-term functionality.
- Must consider equipment movement into and out of fields.

Control Options—Baiting

- Involves use of poison baits to control vertebrate pests.
- There are acute and multiple-feed toxicants.

	Anticoagulants	Zinc phosphide	Strychnine
Ground squirrels	X	X	
Pocket gophers	X	X	X
Voles	X	X	

Control Options—Baiting



Anticoagulants

- Toxic bait that inhibits the coagulation of blood in the target pest.
- Widely used for commensal rodent control.
- Also used for the control of field rodents.
- Can be separated into two distinct groups:
  - first generation anticoagulants (warfarin, chlorophacinone, diphacinone)
  - second generation anticoagulants (brodifacoum, bromadiolone, difenacoum, difethialone)

1st Generation Anticoagulants

- Warfarin, the first anticoagulant rodenticide, discovered in1943.
- The first generation anticoagulants are chronic in their action.

2nd Generation Anticoagulants

- Genetically linked resistance in rats and mice to 1st generation anticoagulants.
- Concern over resistance stimulated research in Europe.
- Research led to the development and marketing of brodifacoum, bromadiolone, difethialone, and difenacoum.
- Acutely toxic to rodents.

Control Options—Baiting

Anticoagulants

- require multiple feedings
- can be used for spot treatment, broadcast or in bait stations.

Control Options—Baiting

<u>Zinc phosphide</u>

- Is an acute toxicant
- Potential bait shyness
- Can be used for spot treatment and broadcast baiting
- Not to be used in or around buildings

Control Options—Baiting

Pocket gophers

- Strychnine works best.
- Use probe to find tunnel.
- Dispense bait in tunnel.

Bait Stations

- Bait stations can be used to provide a continuous supply of treated grain when large numbers of ground squirrels are invading from open areas.
- Pre-bait first.
- Bait with anticoagulant .005% treated grain

Hand Baiting

Do not clump or pile bait!

Broadcast Baiting

Aluminum Phosphide

- **Restricted Material – Permit required**
- Use is strictly prohibited around all residential areas: homes, hospitals, nursing facilities, day care and schools (except athletic fields, where use may continue).
- The products must only be used outdoors for control of burrowing pests, and are for use only on agricultural areas, non-crop areas and non-residential institutional or industrial sites.

Aluminum Phosphide

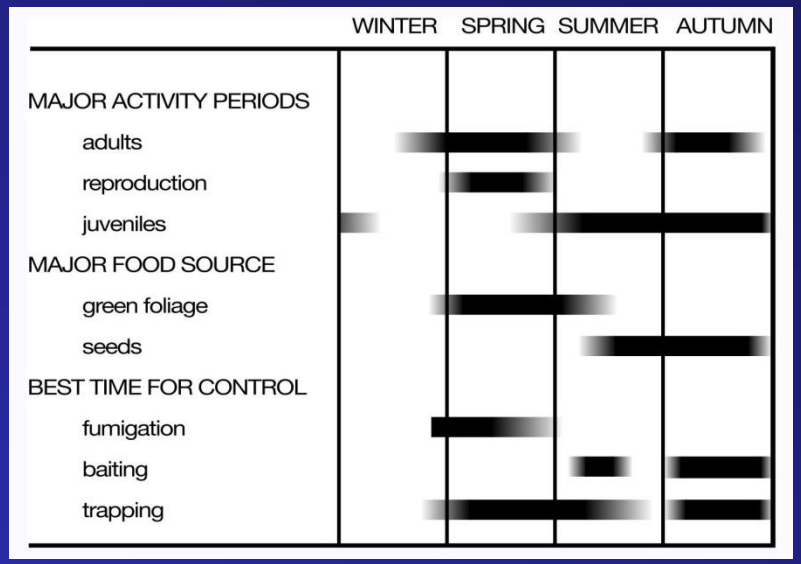
- Products must not be applied in a burrow system that is within 100 feet of a building that is or may be occupied by people or domestic animals.
- Posting requirements: the applicator shall post a sign at the application site containing the signal word DANGER/PELIGRO (Athletic fields: DO NOT ENTER/NO ENTRE, FIELD NOT FOR USE), skull and crossbones, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.
- Fumigant Management Plan.

EPA Review of small gas cartridges

- Periodic Registration Review
- Ecological Risk Assessment indicates some endangered species could be at risk
- Waiting on USFWS to release Biological Opinion
- Geographic restriction as means of mitigation to be considered
- Next step – release Proposed Interim Decision for public comment

Control Options—Fumigation

- Involves use of poison gas in burrows to control vertebrate pests.
- Works best when soil moisture is high (late winter early spring for gophers, after ground squirrels emerge in spring).
- Fumigants should not be used around buildings.



Control Options—Fumigation

Aluminum phosphide

- Tablets can be used for ground squirrels and gophers.
- Is a restricted use pesticide.

Control Options—Fumigation

Gas cartridges

- Only work on ground squirrels.
- Caution must be used with gas cartridges to prevent fires.

AB 634 Carbon Monoxide

DANGER: Carbon monoxide is a poisonous gas that is odorless and colorless. Exposure to carbon monoxide can kill within minutes. Never use in structures inhabited by humans or livestock. The device must be used in accordance with all existing laws and regulations including Chapter 1.5 (commencing with Section 2050) of Division 3 of, known as the California Endangered Species Act, and Sections 4002 and 4003 of, the Fish and Game Code.

Control Options—Trapping

- Control of small populations of ground squirrels, gophers, and rabbits.
- Also effective at certain times of the year when other methods are less effective and can be a good follow up to alternative control methods.
- There are many different kinds of traps but all fall into 2 categories:
  - Kill traps
  - Live traps

Control Options—Trapping

- Body-gripping traps, box-type squeeze traps, snap traps, and pincer traps are common kill traps.
- Wire cage traps are common live traps.
- Live traps require euthanization of vertebrate pests.

CA Dept Fish & Game Regulations

§465.5. Use of Traps.

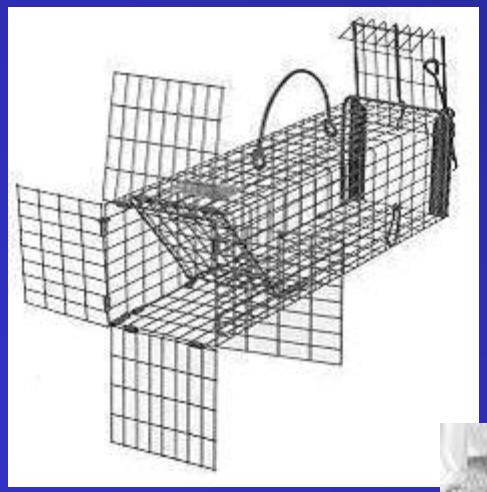
(g) (1) Immediate Dispatch or Release. All furbearing and nongame mammals that are legal to trap must be immediately killed or released….

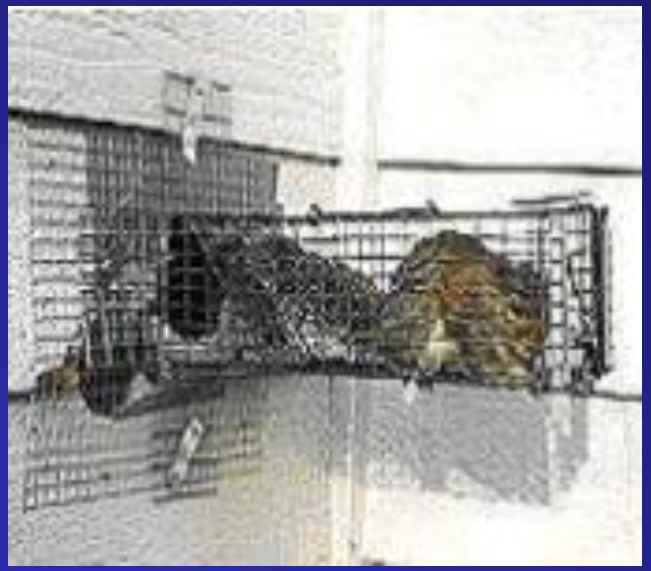
(2) Trap Visitation Requirement. All traps shall be visited at least once daily by the owner of the traps or his/her designee… Each time traps are checked all trapped animals shall be removed.

Cage traps

Cage Trap

One way traps

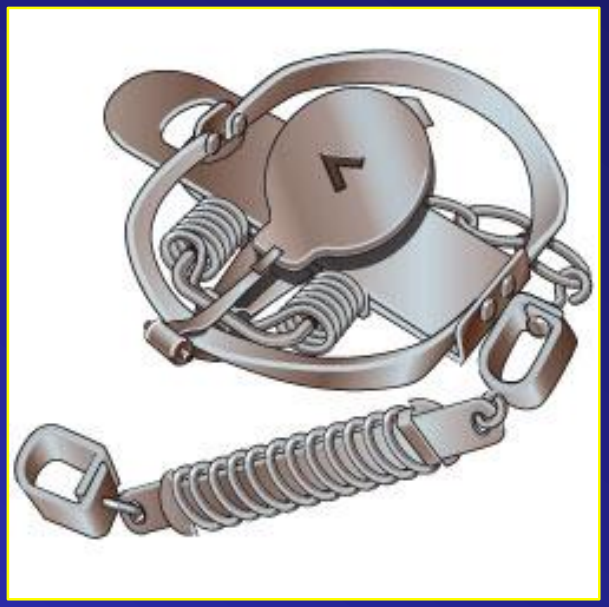




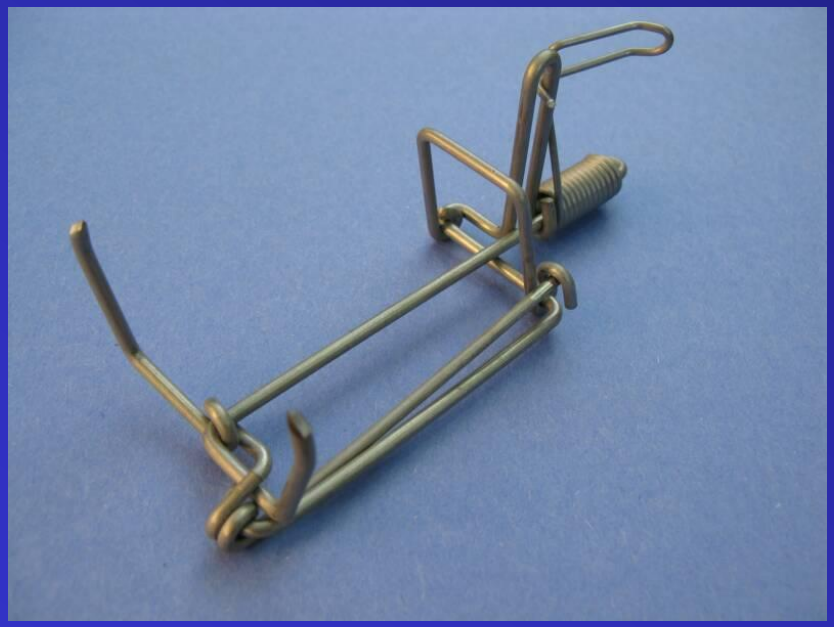
Tunnel traps

Conibear #110

Body Gripping Traps
ILLEGAL in California



Gopher Traps



Trapline Gophinator
Mole trap for smaller gophers

Macabee style

Control Options—Shooting

- Shooting can be effective for controlling ground squirrels although it is labor intensive.
- Lead bullets are no longer allowed in California Condor range, soon to be entire state.

Control Options - Other Strategies

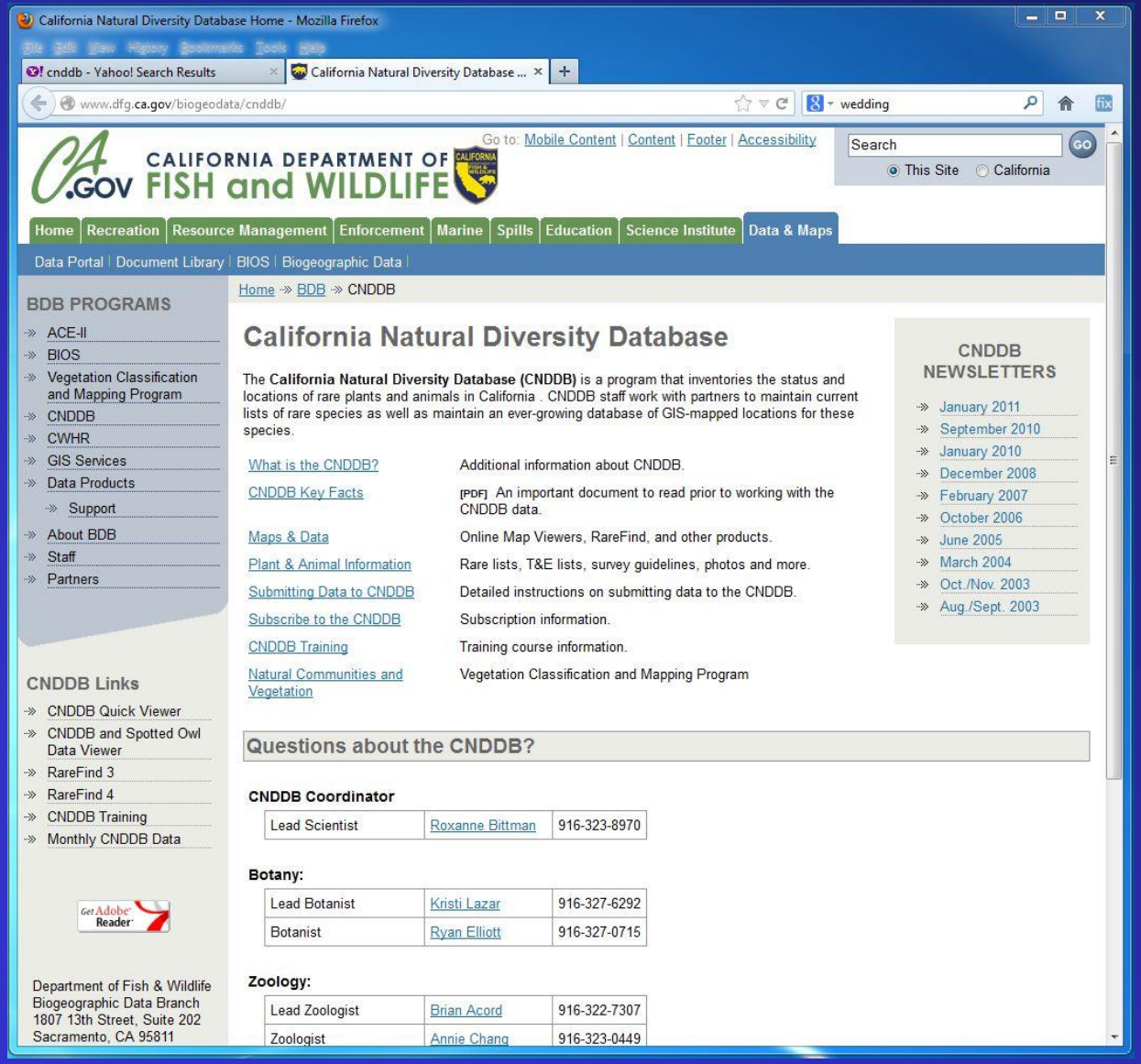
Gas explosive device

Endangered Species

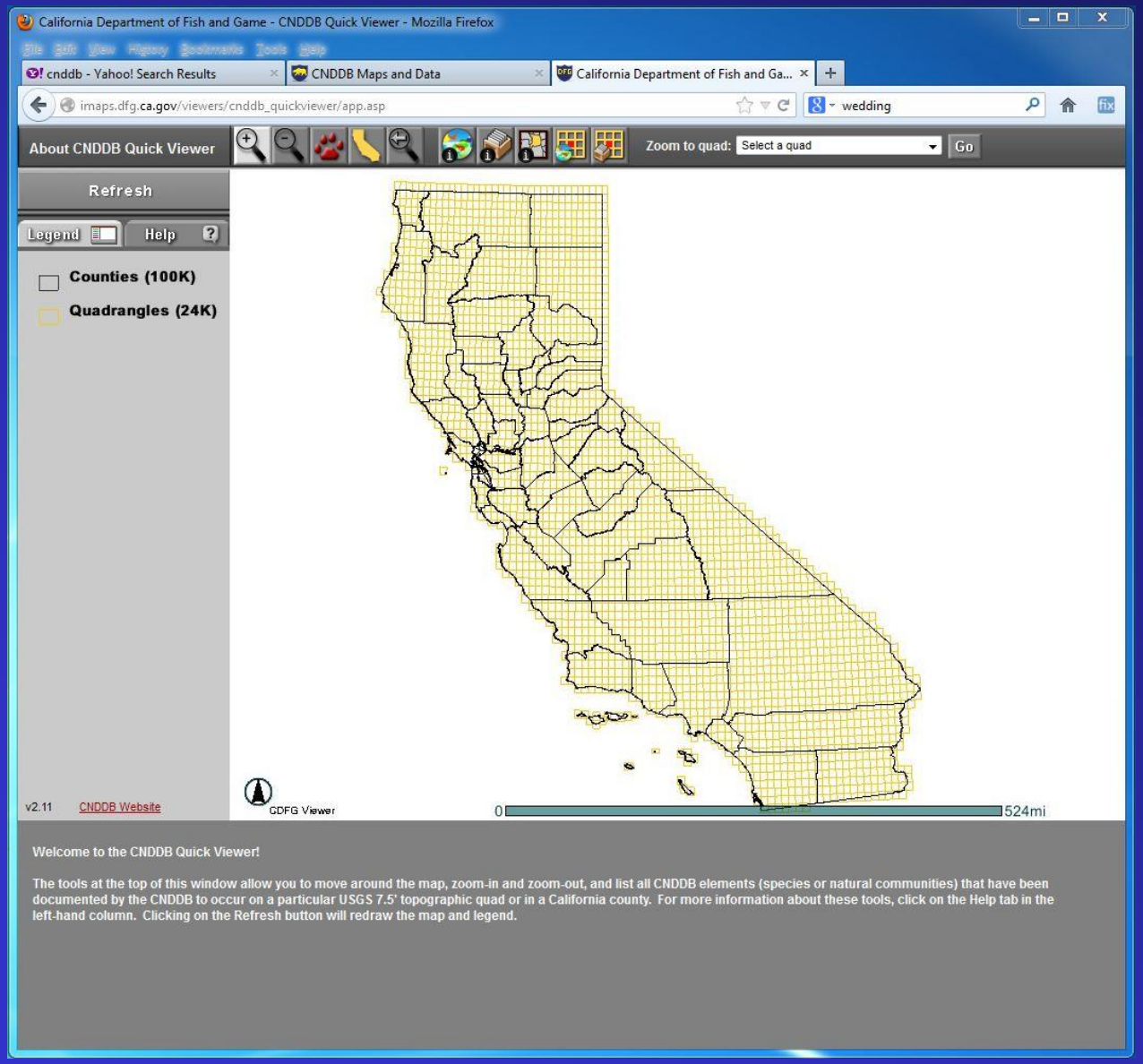
Sources for info.

- Ag. Comm. - County Bulletins
- CA Dept. Fish and Wildlife – CNDDB
- CA Dept Pesticide Regulation - PRESCRIBE

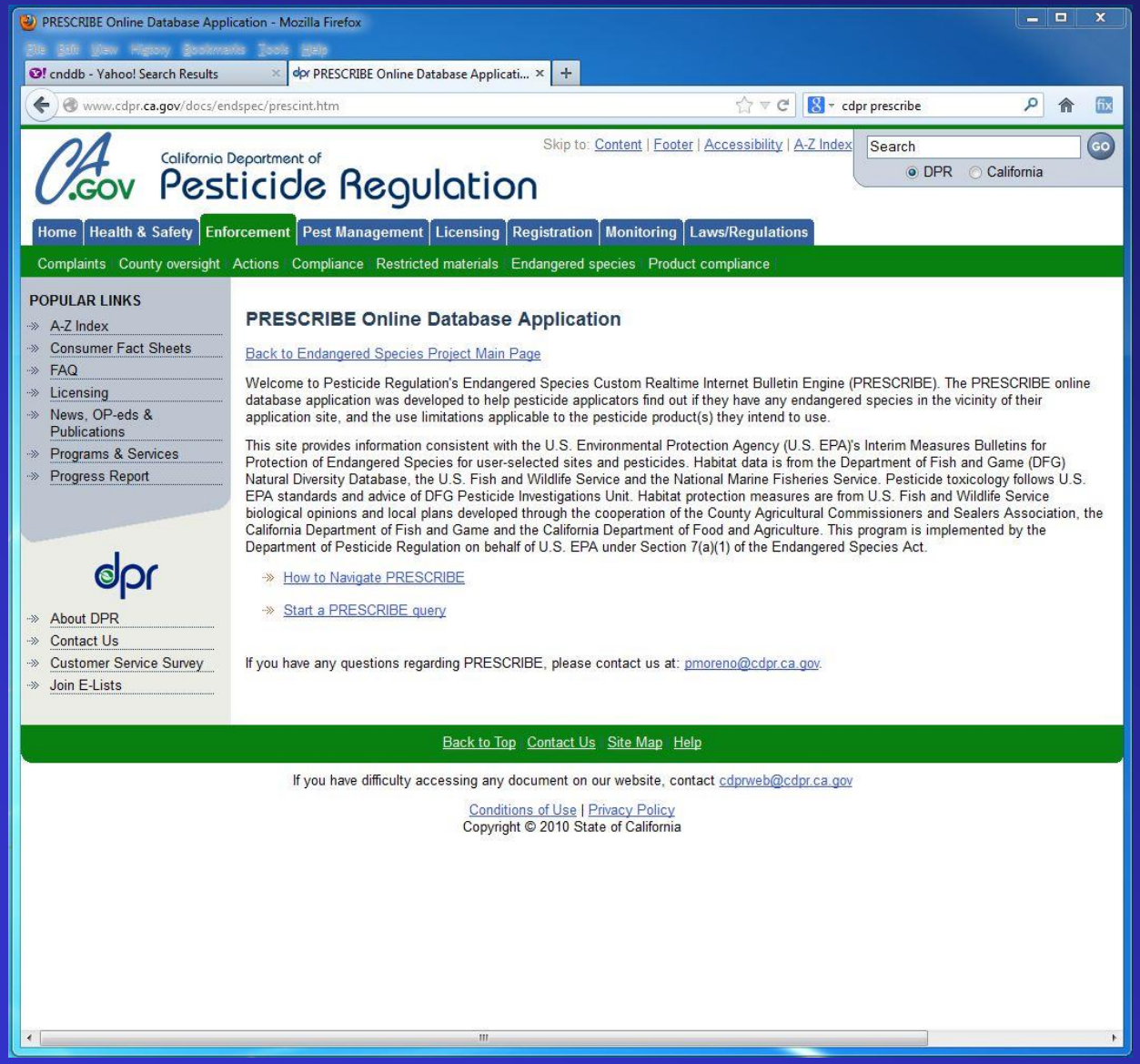
CA Natural Diversity Database



CA Natural Diversity Database



CDPR PRESCRIBE



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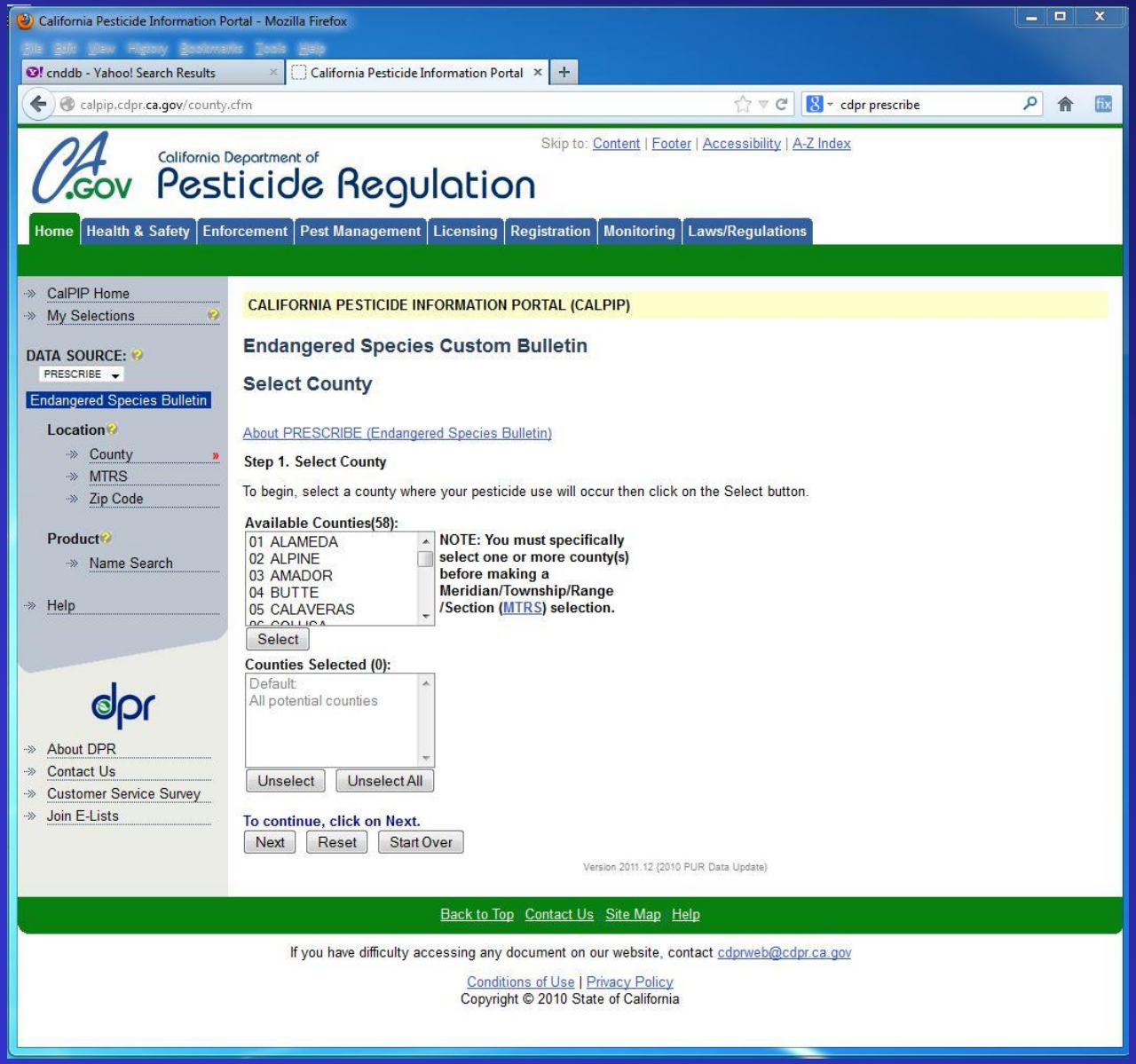
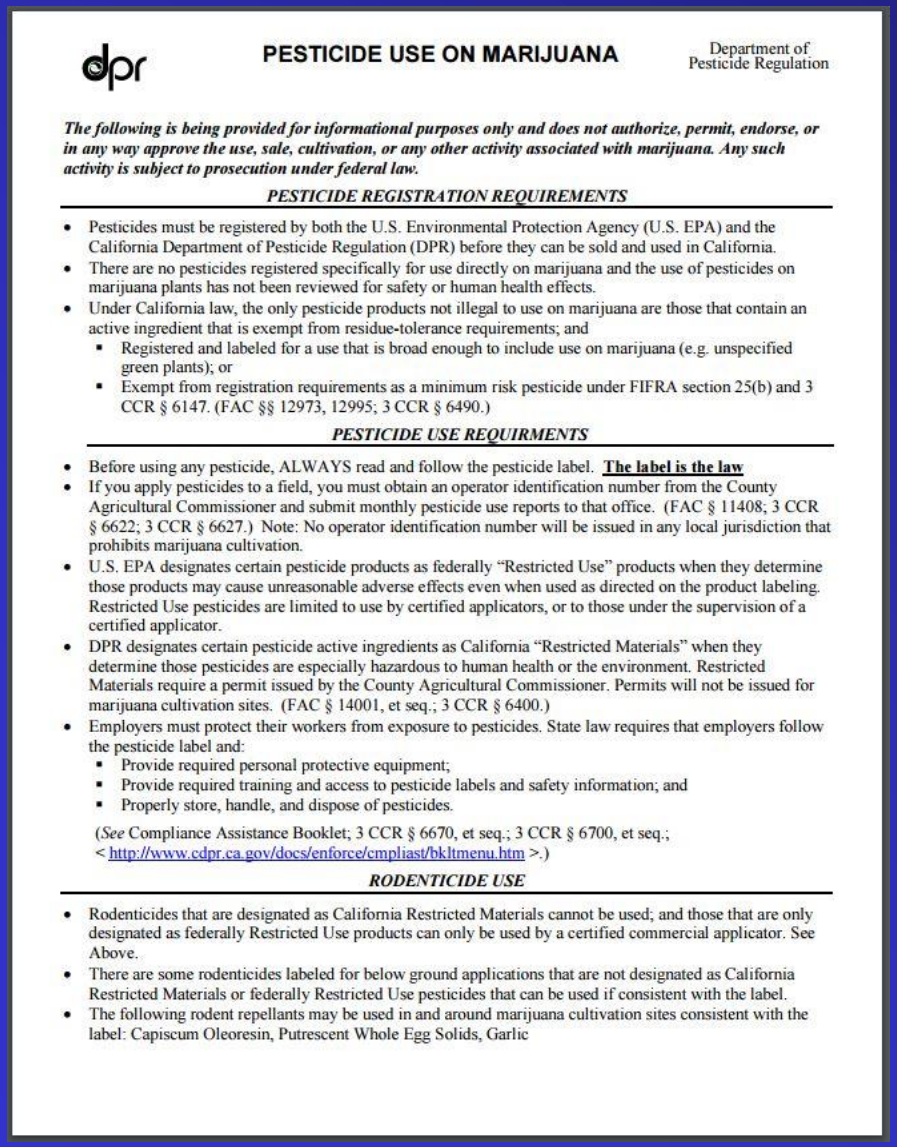


Pesticide use on Marijuana



dpr

PESTICIDE USE ON MARIJUANA

Department of Pesticide Regulation

The following is being provided for informational purposes only and does not authorize, permit, endorse, or in any way approve the use, sale, cultivation, or any other activity associated with marijuana. Any such activity is subject to prosecution under federal law.

PESTICIDE REGISTRATION REQUIREMENTS

- Pesticides must be registered by both the U.S. Environmental Protection Agency (U.S. EPA) and the California Department of Pesticide Regulation (DPR) before they can be sold and used in California.
- There are no pesticides registered specifically for use directly on marijuana and the use of pesticides on marijuana plants has not been reviewed for safety or human health effects.
- Under California law, the only pesticide products not illegal to use on marijuana are those that contain an active ingredient that is exempt from residue-tolerance requirements; and
  - Registered and labeled for a use that is broad enough to include use on marijuana (e.g. unspecified green plants); or
  - Exempt from registration requirements as a minimum risk pesticide under FIFRA section 25(b) and 3 CCR § 6147. (FAC §§ 12973, 12995; 3 CCR § 6490.)

PESTICIDE USE REQUIRMENTS

- Before using any pesticide, ALWAYS read and follow the pesticide label. **The label is the law**
- If you apply pesticides to a field, you must obtain an operator identification number from the County Agricultural Commissioner and submit monthly pesticide use reports to that office. (FAC § 11408; 3 CCR § 6622; 3 CCR § 6627.) Note: No operator identification number will be issued in any local jurisdiction that prohibits marijuana cultivation.
- U.S. EPA designates certain pesticide products as federally "Restricted Use" products when they determine those products may cause unreasonable adverse effects even when used as directed on the product labeling. Restricted Use pesticides are limited to use by certified applicators, or to those under the supervision of a certified applicator.
- DPR designates certain pesticide active ingredients as California "Restricted Materials" when they determine those pesticides are especially hazardous to human health or the environment. Restricted Materials require a permit issued by the County Agricultural Commissioner. Permits will not be issued for marijuana cultivation sites. (FAC § 14001, et seq.; 3 CCR § 6400.)
- Employers must protect their workers from exposure to pesticides. State law requires that employers follow the pesticide label and:
  - Provide required personal protective equipment;
  - Provide required training and access to pesticide labels and safety information; and
  - Properly store, handle, and dispose of pesticides.

  (*See* Compliance Assistance Booklet; 3 CCR § 6670, et seq.; 3 CCR § 6700, et seq.; < http://www.cdpr.ca.gov/docs/enforce/cmpliast/bkltmenu.htm >.)

RODENTICIDE USE

- Rodenticides that are designated as California Restricted Materials cannot be used; and those that are only designated as federally Restricted Use products can only be used by a certified commercial applicator. See Above.
- There are some rodenticides labeled for below ground applications that are not designated as California Restricted Materials or federally Restricted Use pesticides that can be used if consistent with the label.
- The following rodent repellants may be used in and around marijuana cultivation sites consistent with the label: Capiscum Oleoresin, Putrescent Whole Egg Solids, Garlic

Rodenticides:

- Rodenticides that are designated as California Restricted Materials cannot be used.
- below ground applications that are not designated as California Restricted …can be used if consistent with the label.
- The following rodent repellants may be used in and around marijuana cultivation sites consistent with the label: Capiscum Oleoresin, Putrescent Whole Egg Solids, Garlic

Resources

http://vpcrac.org/about/vertebrate-pest-handbook/

http://www2.ipm.ucanr.edu/WhatIsIPM/

http://www.groundsquirrelbmp.com/

http://wildlifecontroltraining.com/

Thank you!

What's a pest?

A destructive insect, disease, animal or plant that attacks/damages crops, food, livestock, etc.