

# THE CALIFORNIA WEST NILE VIRUS AND DEAD BIRD SURVEILLANCE PROGRAM

## A GUIDE FOR LOCAL AGENCIES

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## Overview

The West Nile virus (WNV) dead bird surveillance program (DBSP) is a key component of the [California Mosquito-borne Virus Surveillance and Response Plan](#).

### Why dead birds?

Birds play a central role in the WNV transmission cycle. If an infected mosquito feeds on a bird and transmits WNV, the infected bird can then serve as a reservoir of WNV to other mosquitoes. Many bird species are susceptible to WNV and die as a result of infection; for example, American Crows and California Scrub-jays have a high mortality rate once infected. A positive dead bird is often the first indication that WNV is present in an area.

### Partners

The DBSP is a collaborative effort.

Partner	Role
Local agency (mosquito and vector control, mosquito abatement, environmental health department, or other)	Picks up suitable dead birds and makes final species identification. Takes oral swabs for RNA preservation cards for WNV testing, or tests tissue samples for WNV via RT-qPCR
University of California, Davis	Tests dead bird samples for WNV via RT-qPCR
California Department of Public Health	Coordinates carcass report and pickup at call center; maintains <a href="http://www.westnile.ca.gov">www.westnile.ca.gov</a> website

Also critical to the program are California residents and animal control/wildlife care facilities that help to identify, report, and collect dead birds for testing.

### Call Center and Website

The WNV and dead bird call center (toll free number: 1-877-968-2473; 1-877-WNV-BIRD) at the Vector-Borne Disease Section, California Department of Public Health (CDPH) is open five days a week during the WNV season (approximately mid-April to mid-October). Hours are 8 am t 4:30 pm, M-F, with Sundays added during peak season. The public can also report dead birds online: [www.westnile.ca.gov](http://www.westnile.ca.gov). Online reports will receive an email response; many people will also be called if their dead bird is a potential candidate for WNV testing.

During the remainder of the year (late October to early April) WNV testing is limited, but some local agencies test birds year-round. Online dead bird reports are always encouraged, with an email and/or phone response provided for each report.

### **What species of birds can be tested?**

**All species of birds may be tested except chickens, doves, pigeons, and quail.**

The call center will screen out the above species because they are not known to die of WNV. (However, a few agencies opt to include doves, pigeons, and quail in their in-house testing.)

**Tree squirrels.** Although the call center records dead tree squirrel reports, tree squirrels are no longer tested for WNV as part of the surveillance program. Agencies can contract with the California Animal Health and Food Safety Lab (CAHFS) at UC Davis directly if they would like to send dead tree squirrels to the CAHFS lab for WNV testing. The cost is approximately \$25, plus shipping. For more information, call CAHFS at 530-752-8700.

### **How are dead birds tested?**

Agencies purchase the RNA preservation cards (please see the testing protocol, page 12. When a suitable dead bird is submitted by the call center, the agency picks it up, swabs the oropharyngeal cavity, and presses the swab onto an RNA preservation card. Once dry, the card can be mailed to the Davis Arbovirus and Research Training (DART) laboratory at UC Davis for free qRT-PCR testing. The samples on the cards are safe to send via regular mail.

Evaluation of the current testing methodology side-by-side with traditional tissue testing in 2012-2013 demonstrated that the RNA preservation card method accurately detects WNV in a variety of species of dead birds (e.g., corvids, raptors, songbirds, and even waterfowl). In parallel testing at DART, the cards were 100% accurate, but with slightly higher Ct values than the tissue/oral swab test results (Foss et al. 2016). CDPH and DART are confident this method delivers similar results to tissue testing, as long as the storage and sampling protocol is followed correctly.

In addition, local agencies who pass the annual WNV qRT-PCR proficiency panels (issued by DART) can test dead birds in-house.

### **Is there a permit for collecting dead birds?**

CDPH and the California Department of Fish and Wildlife (CDFW) maintain a memorandum of understanding or salvage permit, which allows our program to collect dead birds (as well as dead squirrels and lagomorphs) for WNV testing purposes. This permit is renewed every five years, and agencies are asked to keep a copy in each of the vehicles used for carcass pickup. An electronic copy of the permit will be emailed out at the beginning of each WNV season.

## Agency Guidelines

**Criteria Options.** In approximately February-March, determine your agency's dead bird species collection criteria for the upcoming season. See page 6 for an overview of options. In March, receive an email from CDPH about the upcoming season, and reply indicating your agency's criteria for the upcoming season. This is needed to program the database with the correct information for both call center staff and the residents who receive automatic email responses.

**Purchase supplies** as needed (page 12). Place a copy of the salvage permit in each vehicle used for carcass pickup.

**Inform** all internal staff of your agency's criteria. Staff who answer your main telephone line will especially need to be informed. During the season, CDPH call center staff will call your agency when there is a suitable carcass ready for pickup. Staff will then email and/or fax over the dead bird details (dead bird number, address, notes for finding the carcass, etc.).

**Bird identification.** Every effort is made to identify the bird to species, but the final verification takes place by the local agency. After verifying or correcting the species, update this information in CalSurv. A field guide such as Sibley Field Guide to Birds of Western North America is a helpful resource. You are also welcome to send pictures to [arbovirus@cdph.ca.gov](mailto:arbovirus@cdph.ca.gov) for bird identification assistance from the call center. Since coloration is important in identification, the best photos will be well lit and show all sides of the bird.

**Sampling birds and shipping cards.** Please refer to the *Testing dead birds using oral swab technique protocol* on page 12.

**Cancelling a dead bird (before or after pickup).** If a bird was submitted by the call center, but needs to be cancelled for some reason (i.e. ended up being dead too long, no one could pick up the bird, etc.), you can cancel the bird by telephoning the call center staff (510-412-4601) who will change the status of the bird to "cancelled by agency." You can also change the status in CalSurv.

**Notifying callers.** If a bird tests positive for WNV, inform the resident who reported the bird with a phone call. Some agencies prefer to be the notifier; other agencies prefer that CDPH call center notifies the caller. If your agency has this arrangement with CDPH, the call center will make the phone call to residents whose bird tested positive each Monday.

**Spreading the word.** With so many items in the news, many people will forget or not know to report dead birds. Encouraging the public to report dead birds helps to increase reports, which will increase the chances of testing carcasses. Social media posts, press releases, your website, and even traditional media such as radio and flyers can be effective.

**Reaching out to community partners.** The dead bird program relies on the collaboration of many people to report and help secure dead birds. A few targeted agencies in the community can become key partners. It might be worthwhile to reach

out at the beginning of the season and let these agencies know about the dead bird surveillance program. (Staff turnover makes this an annual necessity.) They can help spread the word as well as report the dead birds they encounter. The call center interacts most frequently with the following agencies:

- Wildlife Care agencies
- Animal Control
- Local Audubon Society
- County health department
- Police department

**Questions.** If at any time you have questions or want to make changes during the season, you can contact either the CDPH call center staff at 510-412-4601; [arbovirus@cdph.ca.gov](mailto:arbovirus@cdph.ca.gov); or the dead bird surveillance program coordinator (Leslie Foss) at 510-412-6255; [leslie.foss@cdph.ca.gov](mailto:leslie.foss@cdph.ca.gov).

## Dead Bird Criteria Options

Points to consider when choosing criteria for dead bird collection and testing are the variety of bird fauna in your area, historic report volumes, and available resources. In mountainous, desert, rural, or less populated areas, it is recommended to accept all species. Populated urban zones with corvid populations may allow for selectivity. Each area is unique. Below are the most common criteria.

Note: If testing via RNA preservations cards, all species can be tested. Successful samples have also been taken from older carcasses and from pressing one maggot onto the card.

Collection Criteria	Ideal for agencies that...
All species (including doves, pigeons, and quail) and conditions (including dead < or > 24h, baby birds, maggots, ants, trauma, partial carcass)	test dead birds in-house, are willing to take samples from all conditions of dead birds, and want to test all species with no exclusions
All species dead < or > 24h	would like to test all species*, and accept older carcasses to increase chance of testing more dead birds; areas with lower human population
All species dead < 24h	would like to test all species*; areas with lower human population
Corvids, raptors, and songbirds	would like to limit species to the most important WNV sentinels; areas with corvids and high human population
Corvids and raptors	have a history of corvids and raptors as their main WNV sentinels; high human population
Extras	
no shorebirds, seabirds, or waterfowl (includes herons, egrets, rails, gulls, ducks, geese, and similar)	would like to eliminate these less important sentinels (note that positives can occur, especially in heron/egret rookeries)
no wild turkeys	would like to eliminate turkeys due to size (note that positives can occur)

\*doves, pigeons, and quail are always excluded unless an agency specifies otherwise

## CDPH WNV Call Center Protocol

The CDPH Richmond campus call center fields calls and internet reports about dead birds, as well as answers questions about WNV risk information, current WNV activity, wildlife, and other issues.

Dead bird reports in your jurisdiction can be viewed in the CalSurv database (<https://gateway.vectorsurv.org/>). CDPH also maintains a sister database (the “Dead Bird Database”) which is connected to CalSurv. This is where call center staff screen and respond to reports. Any updates they make will also appear in CalSurv.

### CDPH WNV Call Center Protocol for Phone Calls:

1. Listen to the caller’s reason for calling, and if they have a dead bird to report, thank them for reporting and ask for the address where the bird was found.
2. Record zip code, street address, name, and phone number. After entering the caller’s zip code, staff can view on their screen the local agency responsible for that zip code and the agency’s accepted bird species and conditions.
3. **Determine species.** Ask the caller if they know what type of bird it is, or if they can describe it. It is helpful if they can email a photo to [arbovirus@cdph.ca.gov](mailto:arbovirus@cdph.ca.gov). Without a photo, staff will ask questions such as:
  - a. **Size.** i.e. “Is it smaller than the size of your hand?” Or, “Is it about the size of a robin?” Most people are familiar with robins which makes them a good reference point. Difficult species include hawks, where length (from head to end of tail) is important in ID.
  - b. **Color.** i.e. “Is it blue?” Or “Is it iridescent?” Iridescence is usually only found in starlings and pigeons. Stripes, patches of color, and bill color can also be helpful.
  - c. **Features.** i.e. “Is its head smaller than its body?” (to identify doves, pigeons, and quail), or “does it have a crest or tuft on its head?” (a few species may have one such as Steller’s Jays and Cedar Waxwings.)
  - d. **Location.** Sometimes the location is a key detail, such as marshes and lakes. Birds found in these areas are often waterfowl and shorebirds.
4. **If not species, then type of bird.** It may be impossible to determine the species as descriptions over the phone can be difficult, and many callers are not very familiar with birds. Staff will try to determine the broader category: corvid, songbird (many species fall into this category), woodpecker, hummingbird, waterfowl (ducks, geese), shorebird (egret, heron), dove, quail, or pigeon.
5. **Condition of the bird.** To determine if the carcass is fresh, staff will ask:
  - a. “When did you first find the bird?” (Example: If the bird first appeared on their lawn this morning, then it died recently.)
  - b. “Does it have any insects on it?” A few ants are fine, but ants covering the body indicate an old carcass. Many maggots also indicate it has been dead longer than 24 hours.
  - c. “Is there any odor coming from the bird?”

- d. “Does the bird look like it has been attacked or scavenged by predators?” (Birds that died from trauma are not suitable, both because the carcass is in poor condition, and cause of death is known to be a predator.)
  - e. “Are its eyes still visible, or are they dried and sunken?” If the eyes are dried and sunken, the bird has likely been dead longer than 24 hours.
6. **Disposing of the bird.** If the dead bird is not one of the species the agency is accepting, or its condition is not suitable, CDPH call center staff will relay this to the resident and explain safe disposal of the bird (using gloves or a shovel, scoop the bird into a plastic bag, tie, and put in an outdoor trash bin.) NOTE: a few agencies will accept dead birds in all types of conditions such as trauma, ants, maggots, and dried out. In those cases, staff will proceed with step #7.
  7. **Securing the bird.** If the dead bird is an accepted species in good condition, call center staff ask the resident if they can put the bird in a plastic bag as described in #6 (a box is also acceptable), and ask the resident to place it on their front porch for pickup. Other acceptable places to put the bird may be: hanging from a gate, on top of a table, or next to the garage. The bag should not be placed too close to the street where people/animals might take it. The resident does not need to be home. Other necessary details include any barriers to entry (gate code or dog on the property).
  8. **Submitting the bird.** Once staff have arranged for the bird to be secured at an address, they will “submit” the bird in the database, which will assign a dead bird number to the carcass. All carcasses designated for WNV testing must be given a dead bird number through the database/CalSurv (such as 20-100).
  9. **Calling the agency.** Lastly, staff call the agency to notify them of a dead bird for pickup, and fax and/or email the dead bird report to the agency.
  10. **Notation of reports.** Call center staff will initial and date reports in the “notes” section after working on the report. This indicates they have reviewed the report, i.e. checked to make sure the resident received the correct automatic email reply, spoke to the resident, left a voice message, or emailed the resident. They will change the “condition” of the bird to the most pertinent reason why the bird could not be picked up. For example: closed zip code, species not accepted, dead too long, in public area (and person cannot retrieve), disappeared/disposed of, etc. Or, if the bird was submitted, the condition will remain “dead less than 24 hours” or an appropriate similar condition.

**CDPH WNV Call Center Protocol for Internet Reports:**

Internet reports are handled in much the same way as phone calls, except staff have more information prior to speaking to the caller, and can often determine from the report whether or not the bird is suitable for testing. Residents often attach a photo of their bird to their internet reports which is helpful.



Internet reporters receive an automatic email response (there are eight different “autoreplies”). For example, if someone reports a species that is not being accepted for testing by their local agency, the email will indicate this, as well as provide disposal information. If the bird is suitable, the email informs them staff will be contacting them soon.

Regardless of which email they receive, all internet reporters will see their local vector control agency’s name, address, and phone number at the bottom of the email. (They will also see this information on the last screen of their internet report, after clicking “send report.”)

Staff may email the resident if a question was asked, or if they could not be reached by phone.

### **CDPH WNV Call Center Protocol for Various Situations:**

**Cutoff times:** Two o’clock is the cutoff time for same-day dead bird pickup submissions because most agencies close at 4:30 PM. After 2 PM, staff will arrange for suitable dead birds to be picked up the following day (if they will still be fresh enough). Some agencies request their cutoff time to be earlier. These special cutoff times are added to the agency “notes” section, which staff can view on the report.

**Weekends and holidays:** The call center is closed on Saturdays. During the busiest months of the season, usually one staff member will work on Sundays. This allows for birds found on Sunday to be submitted for pickup on Monday morning. The call center is closed on major holidays (Memorial Day, the 4<sup>th</sup> of July, and Labor Day are the major holidays during WNV season).

**Alive or sick birds.** Callers reporting sick birds will be asked to call back when the animal has died naturally or to bring the bird to a local wildlife care facility.

**Baby birds.** In the spring, many residents call to report dead or injured baby birds. Since baby birds have a high mortality rate (due to predation, falling out of nests), they are not generally accepted for testing (except for a few agencies). Injured baby birds can often be reunited with their parents if left alone. Staff may give the resident advice to help protect the baby bird, or recommend taking it to a local wildlife care agency.

**Window strikes.** Sometimes birds that flew into a window just need a quiet place (pets and people out of the area) to recover. If the bird died of the strike, it would usually not be a candidate for testing, since we know cause of death is trauma.

**Closed zip code.** Some local agencies are not collecting birds. For closed areas, a report is inputted into the database and the caller is instructed on safe disposal of the carcass.

**Frozen birds.** We do not ask callers to freeze dead birds; this raises health and safety issues. However, if they placed the bird in their freezer voluntarily, it is testable if it had been dead for <24 hours when frozen. The caller will be asked to remove the bird from the freezer right away (or in the morning if the pickup is the following day). Samples cannot be obtained from frozen birds and the local agency would prefer a nearly thawed bird at pickup time.

**Refrigerated birds.** As with freezing, the call center does not ask people to refrigerate dead birds. On a hot day, staff will ask the caller to put the bagged bird next to a bag of ice in a bucket to keep it cool. It is fine if a wildlife care agency refrigerates the dead bird.

**Euthanized birds.** Birds that have been euthanized by a wildlife care agency may be tested for WNV. Any symptoms the bird displayed before death is useful for the dead bird report.

**In public area.** Birds can only be collected when secured at an address. If the bird is in a public area (a park, parking lot, street, sidewalk, etc.), staff will ask the caller if they will collect the bird using gloves, shovel, or a plastic bag. The caller is asked to place the bagged bird on their front porch (or at their workplace) for pickup. Sometimes the bird cannot be secured (i.e., the person was just passing by). The call center does not submit these birds.

**In swimming pool.** A bird found in a pool can still be tested, if it died recently.

**Maggots.** One or two maggots may be fine if other characteristics of the dead bird indicate it died recently. The general rule used by staff: maggots covering more than 25% of the body indicate the bird has been dead too long. A few agencies, however, can obtain a sample from the maggots. A new technique with the RNA preservation cards can also be used: one maggot from the carcass can be squashed on an RNA preservation card. If your agency would like to do this, please let the call center know that you want to accept birds with maggots.

**Ants.** If a few ants are on the bird, that is fine. Ants often find the eyes first. As with maggots, if more than 25% of the body is covered by ants, it is probably too old.

**Run over.** Usually these birds are not testable, but a few agencies will accept birds that have been run over by a vehicle.

**On roof.** Dead birds in hard-to-reach places such as on a roof or in a tree need to be retrieved by the resident, as technicians from local agencies cannot do it for liability, safety, and time management reasons. If residents cannot retrieve the birds, we suggest they contact their local animal control, which may be willing to assist. Staff will change the condition of the bird to “cannot collect.”

**Birds at wildlife care/rescue, or animal control.** If the bird is at one of these agencies, staff will ask for the **address where the bird was found** for the report to accurately map the location where the bird likely died. The location of the facility (address for pickup) is typed into the notes section of the report.

**Large die-offs.** If the birds are an accepted species, one or more carcasses can be submitted for WNV testing. However, large die-offs of birds are usually waterfowl or seabirds (i.e. ducks, gulls, auklets), and the cause of death is usually a toxin or lack of food. Other die-offs may be caused by a poison (i.e. pigeons or European Starlings). Call center staff will report the birds to California Fish and Wildlife (CDFW) at 916-358-2790. A carcass in good condition may be sampled for WNV testing, but the likely cause of death is not WNV.

**Bird feeder deaths.** Diseases can spread at bird feeders, especially among finches and sparrows. If a bird dies near or on a bird feeder, staff will advise the person to take the feeder down and clean it with a 10% bleach solution. The dead bird(s) can still be submitted for testing if they meet all other criteria.

**Threatened or endangered species.** A list of protected avian species is included in the salvage permit. Although rare, we occasionally receive a report about a protected species, such as a Peregrine Falcon. Since misidentification is common, we ask for a picture of the bird to confirm species. The CDFW retains first rights to these carcasses: if your agency has or suspects to have found one, please notify the call center staff and they will inform CDFW. If CDFW can obtain the carcass, they will test for many pathogens including WNV and test results will be shared with CDPH and the local vector control agency.

**Chickens.** Backyard chickens are increasingly popular, and owners are often concerned when their chickens die. Since chickens do not die of WNV, they are not accepted for WNV testing. The California Department of Food and Agriculture (CDFA) is interested in chicken and other poultry deaths. We suggest these residents call the CDFA sick and dead poultry line (866-922-2473).

**Human cases.** A caller may ask how they can be tested for WNV; staff will advise them to contact their health care provider. Although we do not give medical advice, we can tell people how WNV is spread and the common symptoms of WNV. We refer callers to the CDC website or [www.westnile.ca.gov](http://www.westnile.ca.gov) for more information.

**Elderly or disabled residents.** Sometimes elderly residents cannot or do not want to secure the dead bird in a bag. Staff will make sure the bird can be found on the property easily, and ask the resident to put a box or bucket over the bird if possible. In the bird report, they will explain the situation, and write “please bring a bag.”

#### **References that may be of interest:**

Foss L, WK Reisen, Y Fang, V Kramer, and K Padgett. 2016. Evaluation of nucleic acid preservation cards for West Nile virus testing in dead birds. PLoS ONE 11(6): e0157555. Doi: 10.1371/journal.pone.0157555.

Foss L, and K Padgett. 2016. Public usage of the West Nile virus dead bird hotline and website in 2015. Proc. Mosq. Vector Control Assoc Calif. 84:37-42.

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### **UC Davis Laboratory Protocol**

The Davis Arbovirus and Research Training (DART) laboratory tests dead bird samples for WNV (in addition to mosquito pools). Upon receiving RNA preservation cards, DART staff will check the cards for dead bird numbers and the sender agency. This information is used to track the samples.

Perforated discs from the cards are pushed into tubes to be tested for RT-qPCR. Samples are run concurrent with mosquito pool samples.

DART tests dead bird samples once or twice a week, depending on volume of mosquito and bird samples. Staff enter results in CalSurv, prompting automatic notification emails to local agencies.

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## Testing dead birds for West Nile virus using oral swab technique

### RNA Preservation Cards

The California West Nile virus (WNV) dead bird surveillance program uses nucleic acid preservation cards (RNASound ReadyPunched™ cards, hereafter referred to as RNA preservation cards) for WNV testing of dead birds. Testing dead birds using RNA preservation cards is a proven reliable alternative procedure that does not require necropsy. Most bird species may be tested; however, doves, pigeons, quail, and chickens are not accepted for testing as they are not known to die of WNV. Local agencies collect oral swab samples from dead birds via RNA preservation cards and send them to the DART laboratory for free qRT-PCR testing.

### Methods

1. Avoid direct contact with the dead bird by using disposable gloves and/or handle the carcass only with plastic bags as described below.
2. **Note on storage via refrigeration and freezing:** It is recommended to refrigerate carcasses until ready for swabbing in lieu of maintaining at room temperature. RNA preservation cards must also be stored in the refrigerator until use. Freezing dead birds is only recommended if you cannot swab the bird for several days after collection (more than 3 days), as it will require many hours for the carcass to thaw before it can be swabbed.
3. Clean and disinfect biosafety cabinet or prepare for outdoor sampling, and gather needed supplies. Dead birds should be handled in a Class II biosafety cabinet within a laboratory. If it is not possible to work in a biosafety cabinet, work should be conducted outside while wearing an N95 respirator.

### Materials needed:

- Biosafety cabinet or N95 respirator masks
- Refrigerator to store RNA preservation cards
- **RNA preservation cards** (specifically, RNASound ReadyPunched™ cards). Order online at [http://www.fortiusbio.com/RNA\\_Sampling\\_Card.html](http://www.fortiusbio.com/RNA_Sampling_Card.html). Quantities of 25 (\$140) or 10 (\$60.20) are available. (Once cards arrive, store in the refrigerator and note the expiration date on the silver pouch. These cards are fine to use up to 18 months past the expiration date. Order as needed annually.)
- Individually-wrapped polyester swabs such as Fisher brand catalog no. 22-029-682.
- Disposable nitrile or latex gloves

- Lab coat
  - Small metal spatula
  - Permanent ink pen or pencil
  - Shipping envelopes (business size, FedEx, or other.)
4. **Sampling.** Partially unwrap the disposable swab. Open the bag containing the bird to expose the head. With gloved hands, pry open the beak (a metal spatula may help with this), and put swab into the mouth. Aggressively swab the mouth and oropharyngeal cavity (throat).
  5. Press and roll the swab onto the target area of the RNA preservation card (over the two perforated discs). The sample may be dry and may even be colored with some blood; this is fine. Make sure to label the card with the dead bird number assigned to the bird by the WNV call center or CalSurv.
  6. **Disposal.** Discard the swab into the bag containing the dead bird, and tie or seal the bag. Dead bird carcasses and used polyester swabs which are double-bagged can be discarded in the trash. If you sample birds at the place of collection, the resident may dispose of the carcass in an outdoor trash bin, or you may do it for them (residents usually appreciate the removal of the bird). Agencies conducting in-house testing must dispose of any WNV-positive carcasses as biohazardous waste (incinerate); WNV-negative birds may be discarded in the trash.
  7. Wipe the inside of cabinet and metal spatula used for opening the beak with a fresh solution of 10% bleach, followed by 70 to 100% ethanol or isopropyl alcohol and change gloves after each bird. Cavicide™ is a product which kills viruses without corroding stainless steel and may also be used.
  8. **Drying and storage.** Allow cards to dry in back of cabinet or in a cool place for 2 hours. Make sure the dead bird number corresponding to the dead bird is written on the front flap of each card. Seal RNA preservation cards back into their small individual bags. Once used, the cards do not need to be stored in the refrigerator but kept at room temperature. However, they should be tested within 10 days of sample taken.
  9. **Ship.** Place cards into an envelope with an inventory list (page 15), and ship to DART (address on next page).

**Shipping options:**

- a. Add to weekly mosquito pool shipment. Seal all cards with card inventory list in a Ziplock bag and place in mosquito box. The cold temperature of the mosquito boxes is fine for the cards, but cards should be protected from moisture.

- Or -

- b. Ship batches of cards via overnight delivery (FedEx, GLS). Ship on Monday for fastest turnaround times during the testing season.

- Or -

- c. Regular U.S. Postal Service mail is accepted; however, paying additional for tracking or shipping in a larger, more conspicuous envelope is recommended to help avoid lost packages.

- 10. **Change status in CalSurv Gateway.** To be notified when the cards have arrived at the lab, change the status of each dead bird in CalSurv (<http://www.gateway.calsurv.org>) to “submitted”. Upon receipt, DART will update the status of the card in CalSurv to “received.”
- 11. **Notify resident.** Once your agency receives test results, telephone the resident who reported the WNV-positive bird, to let them know the bird had WNV and deliver risk prevention information if needed. Or, if you have an agreement with CDPH that they will make the call, staff at the call center will inform residents whose birds tested positive each Monday.

**Ship cards using one of the addresses below:**

ATTN: Ying Fang  
University of California  
One Shields Avenue  
Vet Med: PMI Room 3336  
Vet Med 3A  
Davis, CA 95616

**For UPS shipments only:**

Ying Fang  
VM://PMI 3336  
Vet Med 3A  
1285 Veterinary Medicine Mall  
University of California, Davis  
Davis, CA 95616

Note for agencies conducting in-house testing by qRT-PCR of tissues:  
Once agencies pass the yearly proficiency panel, agencies may conduct in-house testing. Results may be entered directly into the CalSurv Gateway. **Note: all positive birds must be disposed of as biomedical waste (incineration).**

## RNA Preservation card inventory list

Use when shipping RNASound ReadyPunched™ cards to the UC Davis DART lab for WNV testing. (The lab requires documentation of the cards to ensure there is a correct matching bird number for each sample tested.)

Agency name: \_\_\_\_\_

Date of shipment: \_\_\_\_\_

Count	Dead bird number (begins with 20-)	District Packing Checklist	DART Receipt Checklist	Notes
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				