

Protocol for Censusing Yellow-billed Magpies (*Pica nuttalli*) at Communal Roosts

Introduction

It is generally accepted that Yellow-billed Magpie populations are declining since the arrival of the West Nile virus (WNV) in California in 2004. To better document and understand magpie population trends, censuses at communal roosts should be conducted throughout their range. Communal roosts are locations (usually trees or shrubs) where magpies sleep, often in large groups. Communal roosts are valuable locations for collecting information on magpie population trends for several reasons:

- 1) Generally, the largest, regular aggregations of magpies occur at communal roosts;
- 2) Magpies are faithful to communal roosts for many years;
- 3) Magpies gather at communal roosts at predictable times of day;
- 4) Because magpies often roost near sources of water, exposure to mosquitoes and, hence, WNV, may be relatively high at communal roosts.

Finding a Roost

Yellow-billed Magpies are a social and conspicuous species, often making their behavior easy to observe. However, finding roosts can be difficult without direct information. In some cases, flocks that are foraging (feeding) in the late afternoon may be followed to the roost (however, in urban areas this can be particularly difficult when traffic is heavy). Magpies typically form pre-roosting aggregations during the hour preceding sunset. Such aggregations gradually move closer to the roost as sunset nears. Before entering the roost for the evening, many individuals will perch in groups in the tops of the tallest trees surrounding the roost while others may be on the ground foraging or drinking. Magpies are never far from the roost at dusk.

If, while following magpies in the evening, the observer is unable to determine where a roost is located, the observer should return to the last place magpies were observed the following morning and listen/watch for magpie activity. This technique can be especially effective in finding a roost when groups of people spread out around the area the magpies were last observed the previous evening. When a roost is located for the first time, make note of its exact location and, if possible, the species or type of vegetation the roost is composed of.

On the first occasion a roost is visited in the morning, the observer should focus on determining the best vantage point from which to observe the roost (don't focus on counting individuals on this first morning visit). The observer should try different vantage points around the roost while magpies are actively departing the roost. Often the highest nearby elevation will provide a good view of the roost. When available, rooftops

can provide great vantage points in urban areas. The behavior of the birds during the roost arrival/departure may often dictate the best location from which to view them. **Once the best vantage point is chosen, the same vantage point should be used for each census unless future changes in the roost structure or surrounding habitat necessitate using a different vantage point.**

The Spatial Arrangement of Communal Roosts

Once a roost is found, other nearby roosts may be easy to locate. In Sacramento, magpie roosts are often loosely clustered. Such ‘Roost-Clusters’ usually consist of one ‘Main Roost’ that is used by a majority of the local birds and one to several ‘Satellite Roosts’ that are used by fewer individuals. Satellite Roosts are often located less than 200 meters from their respective Main Roost. In the evening, when observing magpies arriving at a roost that belongs to a Roost-Cluster, it is often quite apparent that other roosts are nearby due to movement of magpies between the various roosts. However, some Satellite Roosts are only used at very specific times of year and may not be immediately apparent.

In cases where a roost is determined to be part of a Roost-Cluster, it is often necessary to become familiar with the spatial arrangement and magpie-use of the roosts forming the Roost-Cluster. It is usually impossible to census all magpies that are using a Roost-Cluster. Where possible, censuses should focus on the Main Roost (the one used by a majority of the local magpies). If a suitable vantage point cannot be found for the Main Roost, choose a Satellite Roost that is easily observable. **In all cases, observers should take care to only count the individuals leaving one roost, whether the Main Roost or a Satellite Roost, and future counts should be conducted at the same roost.**

Censusing a Communal Roost

1. Communal roost censuses should ALWAYS be conducted during morning roost departures.

Magpies arriving at a communal roost in the evening generally behave very differently than magpies exiting a communal roost in the morning. During evening arrivals at the roost, the social activities of the group often make estimating their numbers difficult.

2. Be aware of the signs indicating departure from the roost will soon occur

Upon arriving at the roost in the morning, listen closely for soft hooting “poot” calls, often given very early in the morning. As time progresses towards the initiation of roost departure, observers will often hear typical magpie calls such as “maag” or “wank wank wank”. **Calls generally get louder and more frequent as the initiation of roost departure nears.**

3. Observers must arrive at the roost vantage point at 45 minutes before sunrise.

The exact time at which magpies depart the roost varies from season to season and in response to environmental stimuli (daylength, weather conditions, number of individuals using the roost, etc.). Magpies generally initiate roost departure well BEFORE sunrise. In virtually all cases, arriving at the roost vantage point 45 minutes prior to sunrise will ensure that the observer arrives at the roost before magpies initiate roost departure.

However, if the observer should arrive at the vantage point and finds that roost exodus has been initiated, then that particular census cannot be considered valid.

4. The observer(s) must observe the roost until at least 15 minutes after sunrise.

In some instances, magpies will not initiate roost departure until slightly after sunrise. If no magpies have left the roost by 15 minutes after sunrise AND no magpies have been heard within the roost during the observation period, the observer(s) may conclude that no magpies are using the roost.

5. Record the number of individuals leaving the roost PER MINUTE.

Recording magpie departure per minute is crucial – in cases when a roost is occupied by a large number of birds, the first few minutes of departure may involve hundreds of individuals. A Data Sheet for use in recording roost departure is included at the end of this document. It will be necessary to use a clock that has been accurately set to Pacific Standard Time. After gaining experience, observers will find it easier to estimate minute-blocks of time, lessening the need to glance at the clock. It is best to record time in the five-minute time columns on the data sheet when the observer(s) first arrive at the roost vantage point, thus avoiding the confusion of trying to fill in the time column as magpies are actively departing the roost. **Concentrate on counting magpies in groups of 10 or more, especially when large groups of magpies are departing the roost. Usually, the bulk of the roost-group will depart the roost within the first few minutes of the roost departure period.** However, a few individuals may remain in the roost 15 or more minutes after the bulk of the group has left.

6. Once no magpies have been observed departing the roost for 20 minutes and no magpies have been heard in the roost during this time, the census may be considered complete.

Observers are encouraged to observe the roost in pairs and simultaneously record roost-departure and compare recordings. Keep in mind that a roost census is only an **estimate** of the number of individuals using the roost.

7. Ideally, roosts should be censused once per week or once every other week, indefinitely.

Less frequent monitoring is still valuable but some details of the fluctuation in roost occupancy may be missed.

8. Roosts should be monitored year-round.

Be aware that roosts are often temporarily abandoned for periods of time ranging from a few weeks to two months or more. During this time the roost should be casually observed for the reoccurrence of magpies, upon which censuses should resume a weekly or bi-weekly rate. Times of year that magpies are known to roost in high numbers (at least in Sacramento) include October through early December, February through March and the month of June. If year-round monitoring is not possible, observers should focus on these times of year.

Observers are STRONGLY encouraged to use mosquito repellent and wear long sleeves and pants to avoid exposure to mosquitoes.

When censusing a roost, observers should always carry a data sheet, a watch, a pencil or pen and binoculars.

Submitting Data

Once data has been collected, it is preferred that observers email a copy of the data sheet to:

magpie-mail@magpiemonitor.org

Otherwise, send hardcopy data sheets to:

**Devine, Tarbell & Associates, Inc.
c/o Scott Crosbie
2720 Gateway Oaks Drive, Suite 300
Sacramento, CA 95833**

Data Sheet Terms

Time - Expressed in military time and Pacific Standard Time (ie. 0600).

Departing/Minute - The number of magpies departing the roost during the corresponding minute.

Total # Magpies Using Roost - add all numbers in # Departing/Minute column.

Roost Name - When observing the roost for the first time, name the roost using street names and addresses when possible, or use Latitude and Longitude data if it can be obtained. Use the same name on subsequent visits.

Latitude/Longitude - Latitude and longitude in dd°mm'ss" format and NAD83 datum.

Observer(s) - Full name of the observer(s).

Contact Information - Street address, City, Zip Code, Telephone Number, Email address.

Time of Sunrise - To determine your local sunrise time, observers should visit the US Naval Observatory website at <http://aa.usno.navy.mil/>. After clicking on "Data Services" then "Table of Sunrise/Sunset, Moonrise/Moonset, or Twilight Times for an Entire Year", one may enter the year, State name and City name to obtain sunrise data. Alternatively, observers may visit the NOAA Surface Radiation Research Branch at <http://www.srrb.noaa.gov/highlights/sunrise/sunrise.html> where specific Latitude and Longitude data may be used to obtain sunrise data for a given location. **Be aware that these websites will NOT account for daylight savings time. If you add an hour to your watch or clock during daylight savings time, you will need to arrive at the roost and hour earlier than the time depicted on your clock.**

Other Birds Occupying Roost - Other bird species observed roosting with magpies.

Predation Event - Any predation attempt/event where an animal attempts to, or successfully, kills a magpie. Hawks occasionally prey upon magpies during roost departure.

Other Notes - Any notes pertaining to the circumstances.