

Tree Care for Wildlife Best Management Practices in California



Tree Care for Birds and Wildlife

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Purpose

This document was written to provide guidance to the California tree care and landscape industry about how to minimize impacts to wildlife during the course of tree work and manage wildlife habitat. While many tree care workers and managers wish to act responsibly around wildlife, little information has been available about how work can best be accomplished while minimizing impacts to wildlife. In addition, Federal and California wildlife regulations are not widely known within the tree care industry, thereby putting uninformed workers at risk of significant fines and public criticism.

This guidance document is meant to be voluntary. These Best Management Practices (BMPs) are not meant to impose new regulations on the tree care industry but rather aim to help those in the industry follow current laws and regulations.

Introduction

The tree care industry is different from conventional forestry in that it focuses on the selection, planting, and care of trees of all ages located in city centers, suburban neighborhoods, rural areas and some relatively wild areas with human influences such as roads and utility lines. Tree care activities vary in their level of labor intensity, equipment, frequency, noise, and expense. Managing trees is critical to their success and can maximize their potential environmental benefits. At their most basic, tree care activities include planting, pruning, removal, plant health care, ground maintenance activities, utility clearing, planning, and management ([Appendix I - Tree Care Industry Overview](#), page 23).

One of the important values of trees in urban areas is providing habitat for wildlife. Because of habitat loss due to development, urban landscapes are more vital than ever to wildlife. Wildlife (including birds, mammals, reptiles and amphibians) rely on trees and landscapes for food and shelter as they feed, roost, and reproduce. In turn, wildlife control insects, provide food for other wildlife, pollinate plants, distribute seeds, and are good indicators of environmental health. When trees are managed to support wildlife, landscapes can be more diverse and ecologically rich. Knowledge of breeding, nesting, and foraging habits of wildlife can empower tree care workers to positively manage habitat and encourage the enjoyment of wildlife ([Appendix II - Wildlife in California](#) page 26).

The project team determined there is a gap in the resources available to aid the tree care industry in the management of work performed in proximity to wildlife. Unlike most Best Management Practices in the tree care industry, this project:

- is a grassroots project with no large supporting organization,
- has no ANSI A300 Standard on which to base the Best Management Practices,
- is intended for an audience wider than the tree care industry, and
- is focused only on California because of the state's unique environment and regulations.

Extensive expert knowledge of tree care and wildlife biology from the team's roster of professionals provided diverse backgrounds to apply to the writing of this document. The project team also reviewed the limited scientific literature on impacts from tree care practices on wildlife populations and habitats. The scientific literature that exists is primarily conducted in natural areas which may not pertain to most

tree care situations.

There are many federal and state laws and regulations about wildlife pertinent to the tree care and landscape industry in California. Local regulations and policies may also exist and should be researched for individual areas. These laws and regulations are broad and results based. They tend to focus on whether or not wildlife were disturbed, injured, or killed. The agencies provide little information about what type of activities may be in violation of the laws. A list and brief explanation of the relevant laws and regulations can be found in [Appendix III - Laws and Regulations](#) (Page 34). Of particular note are the Migratory Bird Treaty Act and California Fish and Game Codes 3503 and 3503.5 which apply to the majority of birds.

The section *Minimizing Direct Impacts to Wildlife* (Page X) outlines procedures to help keep tree care industry workers from violating these laws and regulations. Many factors go into whether tree care near nesting wildlife is lawful, including: wildlife biology, intensity and duration of work, and proximity of work to nests. These Best Management Practices are recommendations that can help minimize the chance of violating the law but cannot eliminate the possibility. Most importantly, nests with eggs or young should not be removed, moved or worked near. Similarly, these Best Management Practices are only recommendations and should not be viewed as regulations or the only way to minimize impacts to wildlife.

The tree care industry's impact on wildlife goes beyond disturbing nesting wildlife. Habitat structure is altered by pruning and planting trees. The 2017 update to the ANSI A300 Pruning Standard includes "Manage wildlife habitat" as a pruning objective. The section of these Best Management Practices titled [Managing Wildlife Habitat](#) (Page 14) introduces new and old ideas for tree care industry workers to think about while working in landscapes.

Lastly, it was necessary in writing these BMPs to create a hierarchy of various activities and mitigation strategies appropriate for professionals with different levels and types of training in both tree care and wildlife biology. The roles and titles used, like **Wildlife Trained Arborist** and **Wildlife Biologist**, are defined in the text and the [Glossary](#) (Page 18) but do not refer to specific certifications that existed at the time of writing. Rather, the project team hoped to provide recommendations on the type of training and expertise necessary to minimize impacts to wildlife in different situations and to set the stage for the development of certification programs. Educational resources and training information will be available at www.treecareforbirds.com.

Minimizing Impacts to Wildlife

This section provides guidance to help tree care workers organize their work to comply with California state and U.S. federal laws and regulations. The step-by-step process guides what level of training and expertise may be most appropriate for different situations. Tree care workers should plan projects appropriately. In the field, tree care workers should be aware of wildlife and respond to their presence by involving people with adequate training.

Some companies may choose to develop a programmatic approach to minimizing impacts to wildlife. For example, rather than evaluating BMP recommendations as they apply to each individual work site, a company program could assess their area as a whole for potential conflicts and develop a program specific to their activities and impacts. A company with a program in place may not need the aid of these BMPs, but for a company just starting to develop a program these BMPs may provide a starting point.

Providing training and materials for workers prior to work can aid in the ability to recognize and respond to situations with the potential to harm wildlife. Training materials, an **Awareness Training** video, and other resources can be found at www.treecareforbirds.com.

- Tree care worker with minimal training: **Awareness Training** can be provided by a **Wildlife Trained Arborist** at the project site during the daily job briefing. **Awareness Training** is a brief crew training provided by a **Wildlife Biologist** or **Wildlife Trained Arborist** that covers general information about looking for signs of nesting wildlife or may be specific to a location.
- A **Wildlife Trained Arborist** is a tree care worker with training and/or experience in: determining habitat value, conducting pre-work nesting inspections, identifying signs of nesting wildlife, determining if nests are active, responding to wildlife emergencies, and contacting Wildlife Biologists when needed.
- A **Wildlife Biologist** is a person with knowledge and experience in identifying wildlife species that may occur in an area, and is familiar with wildlife behavior, nesting requirements, tolerance to impacts, and suitable survey methods.

If the project is covered by a California Environmental Quality Assessment (CEQA) determination, the mitigations identified in the final decision must be followed. If the project is covered by US Fish and Wildlife Service or other agency consultation, the conditions of that consultation must be followed. If the project has permit requirements, the requirements must be followed. These BMPs do not attempt to replace those processes in any way.

This section is divided into two phases of work: Project Preparation and Fieldwork. Each phase of work has a narrative. Project Preparation is represented by Table 1 (Page 6), and Fieldwork has a flowchart (Figure 5, Page 10) to guide tree care in ways that minimize impacts to wildlife.

Project Preparation

The goals of the Project Preparation phase are to establish the breeding season and habitat value of a work site and use this information to select a Category for the Fieldwork phase (Table 1, Page 6). Adult mammals and birds will likely flee when tree care workers arrive to a work area so work can proceed. During nesting, however, eggs and young wildlife cannot move from nests. Because they are vulnerable and stationary during this time period, nesting wildlife are those most likely to be impacted by tree and

shrub care. To minimize impacts, it is critical to identify, avoid, and protect wildlife nests. Nesting wildlife can be found in any type of habitat at any time of year. However, certain types of habitats are more likely to contain nesting wildlife. Most wildlife nest during the spring and summer.

Tree care projects can be divided into three categories based on two criteria: the time of year of the work (breeding season or non-breeding season) and the habitat value of the work area. See [Appendix IV - Bird Group Breeding Information Table](#) (Page 38) for general breeding season periods for various groups of birds. It is important to note that breeding seasons vary by factors such as location and species, and that climate change will also likely impact the breeding season timing in the future. Different types of landscapes have different habitat values. Habitat value is defined by the likelihood of finding wildlife using an area throughout the year. [Appendix V - Pre-work Inspection Form](#) (Page 40) is a pre-work inspection form to help decide the habitat value. The habitat values listed in this document are: **riparian habitat** (Figure 1), **high value habitat** (Figure 2, Page 5), and **low value habitat** (Figure 3, Page 5).



*Figure 1. **Riparian habitat** is the interface between land and constant or intermittent rivers or streams and generally provide the highest value habitat for wildlife. Riparian areas can be identified by their distinctive soils and vegetation, particularly willows (*Salix spp.*), mulefat (*Baccharis salicifolia*), sycamore (*Platanus spp.*), and cottonwood (*Populus spp.*). This may include concrete channels when the associated riparian vegetation and soils are present. Illustrator - Brian French*



Figure 2. **High value habitat** generally has low human use, low impervious surfaces, high plant species diversity, high plant structural diversity, close to water bodies, many mature trees, many dead or dying trees, and abundant wildlife. Illustrator – Monica Edwards



Figure 3. **Low value habitat** generally has high human use, high impervious surfaces, low plant species diversity, far from water bodies, few mature trees, few dead and dying trees, and few/no wildlife present. Illustrator - Brian French

Conducting a desktop review of the biological resources potentially present at a project location can help identify the appropriate category choice prior to beginning tree care activities. Sources of information include USFWS Critical Habitat designations and Wetland Mapper, CNDDDB, public lands (USFS, BLM, State Parks, etc.), and local Audubon chapters. Should a desktop review reveal the project location is in or near USFWS designated critical habitat, sensitive species locations, or wetlands/riparian areas, the project activities may require more caution.

Tree care work can be broken into three categories based on the value of the habitat and whether or not the work is scheduled during the breeding season (Table 1). The level of expertise required for these projects may be dictated by other factors. Many construction projects, permit requirements, and CEQA documentation will require **Wildlife Biologists** to be involved in the project. In those cases, a **Wildlife Biologist** should be contacted rather than using the below categories.

Table 1. Determining Category

	Low value habitat	High value habitat	Riparian habitat
Non-breeding season	Category 1	Category 2	Category 3
Breeding season	Category 2	Category 3	Category 3

Category 1 is **low value habitat** during the non-breeding season where nesting wildlife are least likely to be encountered. A pre-work inspection by a tree care worker with **Awareness Training** is recommended. This inspection should be completed before equipment has been turned on at the site, preferably within a week of the start date as many birds can build nests quickly.

Category 2 covers two situations. The first is **low value habitat** during the breeding season where nesting wildlife are more likely to be encountered. The second is **high value habitat** during the non-breeding season where sensitive habitats are more likely to be encountered. Sensitive habitats are habitats which are home to special status species or are themselves rare. A pre-work inspection by a **Wildlife Trained Arborist** is recommended.

Category 3 covers **high value habitat** during the breeding season or **riparian habitat** at any time of the year, nesting wildlife and sensitive habitats are more likely to be encountered. It is recommended a **Wildlife Biologist** be contacted for direction. However, companies who have taken a programmatic approach to protecting wildlife may be able to use a well-trained arborist to minimize impacts in these locations. Ideally the **Wildlife Biologist** provides advice on how the project can proceed. The biologist will collect information about the job, timing, and location to provide recommendations. They may be able to approve the work as planned, but more likely will need to visit the site and may recommend timing or methodological changes to the project. For projects in riparian areas, permits from regulatory agencies may be required for tree and vegetation pruning and removal ([Appendix III](#), Page 34).

Because wildlife can nest year round in any type of habitat, the Category level assessed at the time of planning may change during the fieldwork. Encountering signs of wildlife during fieldwork may require further expertise to handle the situation.

After scheduling the work with assistance from someone with the appropriate level of training based on

the Category, the final step of project preparation is to gather contact information for a **Wildlife Biologist** and local wildlife rehabilitator. Contact information for both of these resources will be important if a wildlife emergency or situation that needs expertise arises during fieldwork. A wildlife emergency is a situation where wildlife are injured, orphaned, or in danger or where nests are abandoned or disturbed.



Figure 4. A tree care worker conducting a pre-work inspection is looking for signs of wildlife including wildlife breeding behavior such as carrying sticks or food, acting agitated, distress calls, as well as concentrations of bird droppings, nests that may be active, eggs, young, or wildlife reliant on nest. See [Appendix V](#) (Page 40) for a sample pre-work inspection form. Illustrator – Monica Edwards

Fieldwork

After following the Project Preparation phase (Page 3) the appropriate Category of BMP determines how to proceed in the Fieldwork phase. For a **Category 1** job, a person with **Awareness Training** should perform a pre-work inspection. For a **Category 2** job, a **Wildlife Trained Arborist** should perform a pre-work inspection. For a **Category 3** job, a **Wildlife Biologist** is recommended to advise workers when and how to safely work in the area. For any job, contact information for a **Wildlife Biologist** and wildlife rehabilitator should be on-hand in the field. Figure 5 (Page 10) is a graphical depiction of this text.

Category 1

- **Low value habitat** during the non-breeding season,
- Nesting wildlife are unlikely to be encountered, and
- **Awareness Training** is recommended.

A pre-work inspection performed by someone with **Awareness Training** is recommended. This inspection can occur prior to starting work, or in the days before the work is scheduled, but not more than a week before the work is planned to begin. The pre-work inspection can be part of the site walk to discuss the work for the day, safety precautions, etc. but is best done at a quiet time when wildlife activity can be observed. Wildlife being present on a site does not mean that they will be negatively impacted by the work. It is important to look for nests that may be active and signs of wildlife. Signs of wildlife include: wildlife breeding behavior such as carrying sticks or food, acting agitated, distress calls, as well as observing concentrations of bird droppings, nests that may be active, eggs, young, or wildlife reliant on nests. If any of these signs of wildlife are observed during the site walk or during the work, a **Wildlife Trained Arborist** or a **Wildlife Biologist** should be contacted.

If there are no signs of nesting wildlife during the pre-work inspection, the work can proceed as normal. While working, be aware of wildlife, cavities, and nests.

Category 2

- **Low value habitat** during the breeding season, or
- **High value habitat** during the non-breeding season where
- Nesting wildlife are more likely to be encountered, and
- A pre-work inspection by a **Wildlife Trained Arborist** is recommended.

A pre-work inspection by a **Wildlife Trained Arborist** should be completed before the work is started. This inspection can occur the morning of the work or in the days before the work is scheduled but not more than a week before the work is planned to begin.

If no active nests are found that may be impacted by the tree work, the crew can proceed with the work. If active nests are found that may be impacted by the tree work, the best option is for the **Wildlife Trained Arborist** to delay the work until the young have fledged from the nest and work can safely proceed. Most **Wildlife Trained Arborists** will not be able to identify the species of wildlife and predict when the nest is likely to become inactive, but [Appendix IV](#) (Page 38) provides some typical time frames. In some cases, the **Wildlife Trained Arborist** may be able to suggest that work starts on a portion of the site, but that some areas are left until after the young have left the nest.

When a nest is discovered during the pre-work inspection or during work, a **Wildlife Trained Arborist** should perform an evaluation to determine whether the nest is active. If it cannot be determined whether the nest is active or whether the nest is a raptor nest (typically a platform nest or cavity nest), a **Wildlife Biologist** should make this determination. Raptors may reuse their nests and should not be removed without consulting a **Wildlife Biologist**. If necessary due to tree removal, inactive non-raptor nests can be destroyed provided no possession of the nest occurs. U.S. Fish and Wildlife Service details guidance for nest destruction in their [2003 Migratory Bird Permit Memorandum](#).

Category 3

- **Riparian habitat** anytime,
- **High value habitat** during the breeding season,
- Nesting and/or sensitive wildlife are likely to be encountered, and
- A pre-work inspection by a **Wildlife Biologist** is recommended.

For **high value habitat** during the breeding season or when working in or adjacent to **riparian habitats**, there is a higher chance of disturbing nesting wildlife or impacting special status species or their habitat. The direction provided by the **Wildlife Biologist** should be followed. This may mean work may proceed as planned similar to **Category 2**, but more likely the **Wildlife Biologist** will recommend an inspection and periodic monitoring until the work is complete.

If no active nests are found that may be impacted by the tree work, the **Wildlife Biologist** will instruct the crew to proceed with work while maintaining awareness of any wildlife in the area. If active nests are found that may be impacted by the tree work, the best option is for the **Wildlife Biologist** to delay the work until the young have fledged from the nest and work can safely proceed. In some cases the **Wildlife Biologist** may be able to suggest alternative methods to use near the nest ([Considerations for Work Performed Near Active Nests](#), Page 11) or suggest that work starts on a portion of the site, but that some areas are left until after the young have left the nest.

Emergencies

Wildlife emergencies occasionally occur during tree work. While the first priority is to try to avoid these emergencies, the second priority is to respond appropriately. If wildlife are injured or young wildlife and eggs are abandoned by their parents as a result of the tree work, a local wildlife rehabilitator should be contacted. Explain the situation to these experts in wildlife emergencies. The wildlife rehabilitator likely can provide guidance on how to proceed. In some situations, they may advise doing nothing and allowing the parents to return and care for the wildlife. In other situations, they may advise bringing the injured wildlife immediately to a care facility. To continue working after a wildlife emergency, a **Wildlife Biologist** should be contacted.

If no wildlife emergencies occur and no signs of nesting wildlife are observed, continue working while being aware of wildlife, cavities and nests. If at any time the crew feels uncomfortable or unsure of how to work in the area, a **Wildlife Trained Arborist** or a **Wildlife Biologist** should be contacted.

In the case of a human health and safety emergency, a **Wildlife Biologist** can help coordinate permission to remove an active nest with the US Fish and Wildlife Service and the CA Department of Fish and Wildlife. Human health and safety emergencies pose immediate risk to human health and/or safety and require action to alleviate imminent danger circumstances. These agencies can grant permission for removal of an active nest when deemed appropriate. If a tree with an active nest needs to be removed for human health and safety, a Tree Risk Assessment Qualified (TRAQ) arborist should perform a Level 2 inspection and show that tree risk exceeds risk tolerance of the property owner and seek USFWS and CDFW approval. In a time-sensitive situation, action may need to be taken before permission can be received, but this should only be done in the most extreme situations.

Project Preparation

	Low value habitat	High value habitat	Riparian habitat
Non-breeding season	Category 1	Category 2	Category 3
Breeding season	Category 2	Category 3	Category 3

Fieldwork

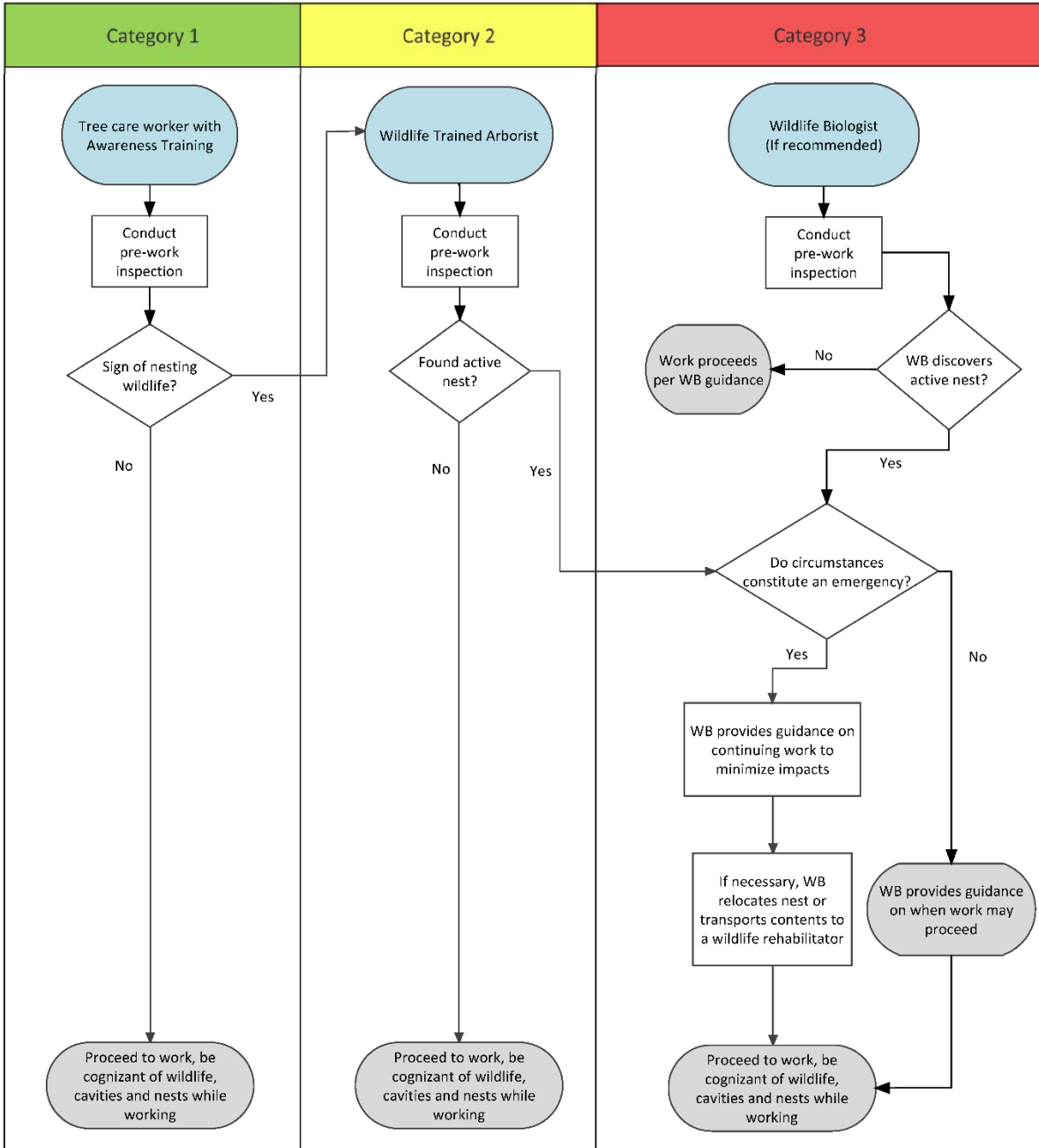


Figure 5: Project Preparation and Fieldwork phase decisions flowchart

Considerations for Work Performed Near Active Nests

When an active nest is discovered in a work area, it is best to delay work until the nest becomes inactive. In the absence of direction from a **Wildlife Biologist**, setting larger, conservative buffers may help reduce the likelihood of impacts. However, there are circumstances when it may be possible to continue work in the vicinity of an active nest without resulting in the abandonment of a nest. In particular, when circumstances are such that imminent danger exists that may result in an emergency or there is a public safety concern, it may be necessary to complete a minimal amount of work until the nest becomes inactive.

Key considerations for work near active nests include:

- the duration of the work to be completed,
- the tools used,
- the species involved,
- distance of the work to the active nest,
- the status of the nest,
- location specifics (e.g. urban vs. rural), and
- environmental conditions (temperature and wind).

It may be necessary to communicate with a **Wildlife Biologist** to determine the appropriate methods for work to continue. Typically, a no activity buffer should be established around the nest. A nest buffer is an area in which no work should occur in order to prevent the abandonment of the nest by the adults. For example, if an active nest is discovered in a tree near a project, a cylindrical or circular area radiating out from the nest should be established in which no work activities may occur large enough that the adult birds continuing normal activities of tending to the nest (Figure 6, Page 12). [Appendix IV](#) (Page 38) recommends buffers for different types of birds depending on the habitat value of the work area. These buffers should be large for most situations, **Wildlife Biologists** may be able to recommend smaller buffers depending on specific situations.

Work Duration and Temperature

An active nest is less likely to fail if the work duration nearby is kept to a minimum. Adults kept away from an active nest during moderate weather conditions for 30 minutes or less are unlikely to abandon the nest or have mortality to the eggs or young occur. However, if work duration is several hours or if weather conditions are extreme, the adults are likely to abandon their nest and/or mortality may result due to starvation, predation, or the eggs or hatchlings being too hot or cold. Bird embryos are more sensitive to overheating than to cold.

Tools

Often disturbance level can be minimized by tool selection. Hand tools may be recommended over gasoline powered tools to reduce noise. It should be taken into consideration that if hand tools significantly increase the duration of work at a location, the benefit from reduction of noise may be canceled out by the longer duration of work.

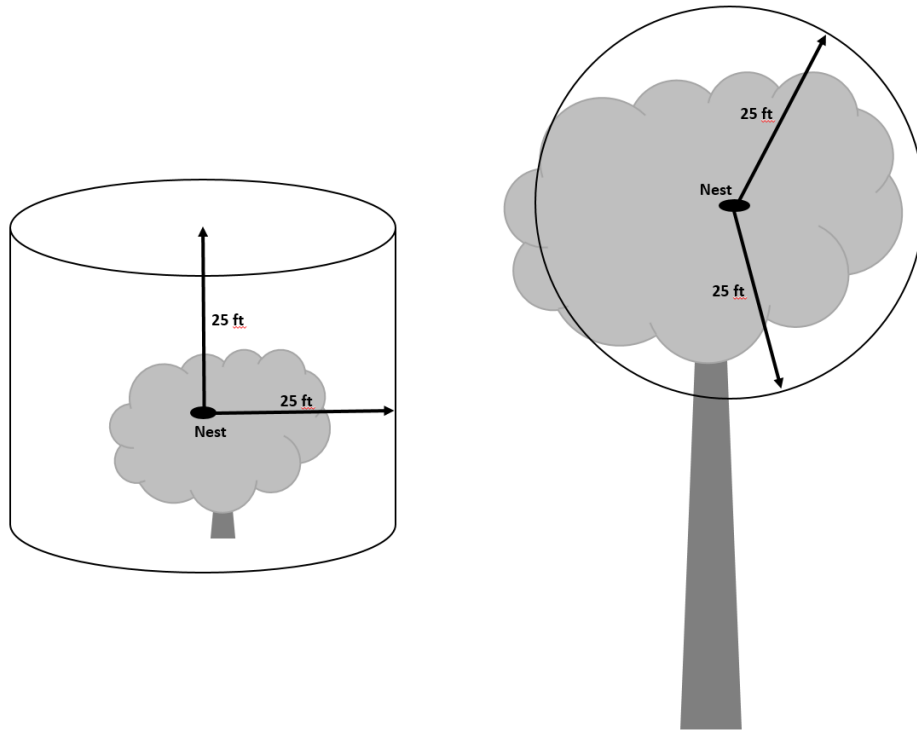


Figure 6: Three dimensional no activity buffer around a nest

Species, Species Behavior, and Distance Considerations

Buffers for active nests should consider species-specific tolerances for disturbance, if known. Typically, larger buffers are used for large bird species and for species that are not tolerant of disturbance. Smaller buffers are generally used for smaller avian species and also species that have a high tolerance for disturbance, such as those that are commonly found nesting close to development.

Some species differ in tolerance based on location and therefore the appropriate buffer may vary. A blue-gray gnatcatcher (*Polioptila caerulea*), for example, nesting in a thicket or understory is less likely to be disturbed than one nesting in a more exposed location in a shrub or small tree even though both nests are the same distance from the activity. Likewise, a red-tailed hawk (*Buteo jamaicensis*) that has acclimated to human activities is less likely to be disturbed at its nest than one that is not accustomed to human activity.

For ground-based activities, vertical separation of the nest from the construction area may be considered when selecting the appropriate buffer. Some species build their nests very high in trees and structures. For example, a nest 50 feet off the ground is less likely to be affected by ground work occurring directly below than a nest 10 feet off the ground. Nests close to the ground may be better suited to a cylinder shaped no work buffer area while spherical no work buffer areas may be suitable for nests farther from the ground (Figure 6).

The observed behavior of an individual bird during the nest search process and consequent nest monitoring will help determine the appropriate buffer distance. For example, an incubating adult that appears more skittish and is readily disturbed could receive a larger buffer than an incubating adult that sits tight and appears more acclimated to disturbance.

Nest Status

Generally, nesting birds are most susceptible to failure early in the nesting cycle when fewer resources have been invested towards the nest. Therefore, it is more important to reduce disturbances during egg laying rather than later in the nesting cycle, which could result in the determination of a larger buffer being necessary early on, then reducing its size later in the nesting season.

When a nest is close to fledging, if disturbance occurs young may be more likely to leave the nest prematurely, unable to adequately fly, and therefore more susceptible to predation or injury. Similar to early in the nesting cycle, a larger buffer may be necessary until the young have fledged.

Environmental Conditions

Extreme weather events may produce conditions that would increase the likelihood of nest failure. Combined with the stress of nearby activity, a nest might fail that would otherwise succeed. On unseasonably hot, cold, or windy days, buffers may need to be increased.

Summary

The appropriate buffer (area surrounding the nest in which no activity may occur) for each nest often should be determined in consultation with a **Wildlife Biologist**. The **Wildlife Biologist** can use information from the above categories in combination to judge the buffer size needed to avoid or reduce the likelihood of the abandonment of an active nest. When long work duration is combined with hot weather and the nest is in the early incubation stage, larger buffers will be needed when compared to work that will take only 30 minutes, requires only hand tools, occurs during cool weather, and has a nest of older chicks. Taking into account the variety of factors when establishing buffers minimizes work activity impacts to nesting birds.

Managing Wildlife Habitat

When tree care crews work in landscapes, they change the structure and availability of potential habitats for wildlife. Many factors go into tree care decisions such as: plant health, branch structure, clearance requirements, aesthetics, risk, and climber safety. Many within the tree care industry are interested in including managing wildlife habitat into their tree care decisions.

The laws protecting wildlife apply to habitat management. Any time that a crew is working near, or may encounter, nesting or sensitive wildlife, they should be following the recommendations for [Minimizing Impacts to Wildlife](#) (Page 3). This section is not intended to provide mitigation for removing active nests or sensitive habitat, but to provide guidance for those managing wildlife habitat.

Managing wildlife habitat includes more than improving habitat. In certain situations, land managers may be looking to decrease the habitat value of their landscapes. Possible reasons include minimizing human wildlife conflicts due to planned construction, excessive feces or noise in use areas, wildlife damaging infrastructure, etc. While this section focuses on improving habitat, the opposite approach may be more appropriate in areas of human-wildlife conflicts. However, the benefits of trees should be considered.

Hundreds of different species of wildlife live in California landscapes. Many of these species have different nesting, dietary, and behavioral needs. It is not possible to guide the management of landscapes to increase or decrease the habitat values for all species. However, research, experience, and common sense can guide tree care workers in managing wildlife habitat. Two approaches can be used separately or together to accomplish habitat goals: a species-specific approach and a diversity approach.

Species Specific

Land managers may be interested in increasing the numbers of a particular species or type of wildlife. This could be for practical purposes (e.g. increased raptors to reduce rodent populations) or for ecological reasons (e.g. acorn woodpeckers are underrepresented in the area). Research into the life cycle of that species and what is likely restricting its numbers in this area can be conducted. Based on that research, the landscape can be managed in a particular way to potentially increase the numbers of the desired species. For example, Nuttall's woodpeckers typically excavate their nests in trees with heart rot. Rather than remove trees that are declining in health (and selecting those that are not a safety risk), tree care workers may be able to recommend management for tree risk via such means as height reduction and limb removal or reduction, and recommend monitoring their stability for future woodpecker use.

In order to help determine the requirements and management options for specific species, contact a **Wildlife Biologist** or your local Audubon chapter.

Diversity Approach

In general, single-species habitat management limits the potential benefits to other wildlife. An ideal goal is to encourage landscape managers to consider establishing natural conditions that support a broad variety of wildlife. Larger and more diverse habitats with minimal human disturbance are likely to benefit a greater number of species.

Plant Management

Generally, expanding landscapes through tree, shrub and ground cover planting will create more habitat for wildlife. Proper pruning, plant health care, planning, irrigation, pest and disease management, and managing risk will be important to keep trees and shrubs from declining. Decades of research and experience have gone into growing and maintaining landscapes and many of these topics are covered in International Society of Arboriculture Best Management Practices. Some practices in the tree care industry that are particularly important to wildlife include:

- Plant young trees and provide young tree care programs: irrigation, support, structural pruning, etc.
- For healthy trees, follow pruning Best Management Practices in which branches are removed only to meet particular objectives. Whenever possible, use a Natural Pruning System and follow the standard that “pruning operations should remove no more living material than what is necessary to achieve specified objectives” (ANSI A300 Pruning Standards). Prune trees only when necessary; trees should be on an inspection cycle not a pruning cycle.
- Use an Integrated Pest Management approach to plant health care. Limit broad spectrum pesticides which kill non-target insects.
- Retain mature trees whenever possible.

Diversity of habitats

The hundreds of species of wildlife that visit and live in urban landscapes have many different habitat requirements. Each community is different and should offer different habitats within its community and different habitats from neighboring communities. This focus on diversity will also drive resiliency, ensuring that landscapes survive into the future. Some metrics of natural forest structures can be used to manage and improve diversity in landscapes: diversity of species, ages, structures, and distribution.

- Increase tree species diversity. A common recommendation for a city in the tree care industry is to have at least 30-20-10 diversity. No more than 30% of a city’s trees should be of any one family [such as *Fagaceae* which include oaks (*Quercus*), beeches (*Fagus*), and other genera]. No more than 20% of a city’s trees should be of any one genus [such as oaks (*Quercus*)]. No more than 10% of a city’s trees should be of any one species [such as coast live oak (*Quercus agrifolia*)]. These targets may be too high and could be even lower. Regardless of current diversity, when planning tree planting, look to increase species diversity.
- Increase tree age diversity. Diverse landscapes have young trees and mature trees. Young trees are planted each year and mature trees are managed and protected to extend their lifespan.
- Increase dead, dying, and declining trees. Many species of wildlife rely on dead and dying trees or on large dead limbs of live trees for nesting in cavities inside of trees. When risk can be adequately managed, consider retaining defects traditionally removed during tree care. Dead, dying, and declining trees are also important for insects and wildlife that feed on insects. These benefits should be balanced with pest species outbreaks and fire risk.
- Increase groundcover and shrub cover. Landscapes contain shrubs and groundcovers important for wildlife. Habitats of lawns with trees are probably over-represented throughout California. A more diverse groundcover palette accompanied with increased shrub and small tree layers are likely to increase habitat value. The shrub layer is especially important for escape cover, allowing

wildlife to hide from predators and seek shelter from the elements. Ideally a mix of wood chips, ground covers, and bare earth can be used in the landscape.

- Increase native species when it is appropriate and where doing so increases diversity. The small number of California native trees currently available in the landscape trade and their low suitability to many urban situations makes it difficult to meet tree diversity targets, including the 30-20-10 guideline, using only native trees. In many communities, native trees can be added to the landscape while still increasing overall species diversity. A wider variety of native bushes and ground covers are available and are underused in many California landscapes.
- Increase spatial diversity. The above factors will be more beneficial if distributed unevenly throughout an area. For example, a new species should be planted throughout a city, not just in one area. But an overly organized pattern is also not ideal because some species require pockets of a particular habitat type.

Retaining dead, dying and decaying trees, and branches

One area that the tree care industry has a high potential to increase habitat in is in dead, dying, and decaying trees and branches. Many wildlife species are reliant on trees or parts of trees that are routinely removed with no thought about the habitat that they provide. Wildlife that nest exclusively in dead, dying, and decaying trees and branches would benefit greatly from greater awareness of their habitat requirements and effort in preserving these types of trees. Local Audubon Chapters and the Cavity Conservation Initiative may be able to help with specific needs and recommendations for a particular area or project.

Priority must be given to human safety when managing dead, dying, and decaying trees and branches; however, when risk does not exceed tolerance, many of these important habitats can be retained. The Tree Risk Assessment Best Management Practices lists cavity openings and nesting holes as positive indicators of decay or internal voids. Trees with cavity nests are given a higher likelihood of failure and recommended for removal more often than trees without cavity nests. Decayed trees and branches are considered less structurally stable because their capacity to withstand force diminishes according to the size and location of decay. However, no scientific studies have conclusively demonstrated the loss of strength from these cavities. Not all dead, dying, and decayed trees can or should be retained, but extending the life of a dead or dying tree a few years could be beneficial to wildlife.

Trees and branches for which risk exceeds risk tolerance do not always need to be removed, other mitigation methods can be employed. Pruning techniques that are not commonly used on healthy trees can be employed on unhealthy or hazard trees in order to preserve the tree while mitigating for risk. For example, Figure 7 shows a branch with a cavity growing over a house. If risk outweighs risk tolerance, a reduction cut is unlikely to adequately mitigate the risk, and a removal cut will remove the potential nesting cavity. A heading cut could adequately mitigate risk and preserve habitat in these cases, though heading cuts are generally not recommended because of the physiological effect on the tree. This branch would likely need to be completely removed to mitigate risk if not using a heading cut, and the branch is already decayed, so future decay from the heading cut is less of a concern.

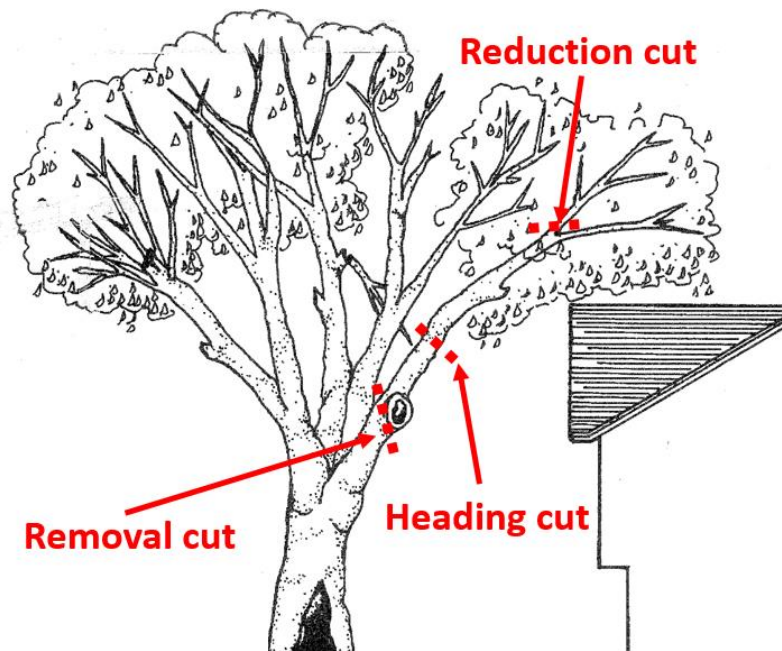


Figure 7. Different types of cuts may be appropriate to accomplish different pruning objectives. In this situation a heading cut may be able to preserve a potential cavity nest site and mitigate risk.

Some mature, declining trees can be severely pruned to reduce risk while leaving some available habitat. Even a tall stump may provide important habitat to cavity nesting wildlife in areas where decayed wood is not abundant. Retrenchment is a natural progression that many trees go through later in life, and retrenchment pruning is practiced more often in the United Kingdom to extend the life of declining mature trees.

Nest boxes may be one way to mitigate loss of cavities from dead, dying, and decaying tree and branch removal. When nest boxes are provided, they can be quickly occupied and sometimes lead to an immediate rise in breeding density. Cavity nesting bird populations are not solely limited by the availability of cavities. When considering creating habitat for these species, the availability of suitable food and types of predators in the habitat need to be considered. Dead, dying, and decayed trees and branches are complex ecosystems and simply attaching a nest box to a young tree cannot replace the lost value of those ecosystems. If installing nest boxes, the correct type, height, protection, and maintenance need to be considered. Local Audubon groups may be able to provide important information regarding these requirements ([Additional Resources](#), Page 21).

Once on the ground, tree parts continue to be used by wildlife and are important features of landscapes. If sections of trunks and branches, brush piles, or toppled trees can be incorporated into the landscape aesthetically and with an acceptable level of risk, wildlife may benefit.

Forestry research has led to more invasive ways of increasing habitat value such as girdling trees to kill them in areas where dead trees are not common, cutting the tops off of trees to create snags, and using chainsaws to cut artificial cavities into trees to increase the habitat value for secondary cavity nesters. Some of these techniques are being experimented with by tree care workers and may become more prevalent as awareness of wildlife increases.

Glossary

Awareness Training - crew training provided by a **Wildlife Biologist** or **Wildlife Trained Arborist** that covers general information about looking for signs of nesting wildlife or may be specific to a location.

Awareness training typically takes no more than 15 minutes. A video is available at www.treecareforbirds.com.

Breeding season - the time of year when most wildlife breed, nest, and care for offspring that cannot care for themselves. Across the different habitats of California, most wildlife breed between February 1st and August 31st, in most years. However, this varies by region and species. In some years variable weather patterns or abundance of food may cause early or late breeding.

Buffers - areas established around an active nest in which no work is allowed to occur to prevent abandonment or destruction.

Category 1 - For a **low value habitat** during the non-breeding season, no trained personnel are required.

Category 2 - For a **low value habitat** during the breeding season or a **high value habitat** during the non-breeding season, pre-work inspections by a **Wildlife Trained Arborist** are recommended.

Category 3 - For a **high value habitat** during the breeding season or **riparian habitat** areas at any time of the year, the project should follow recommendations from a **Wildlife Biologist**.

Human health and safety emergency - immediate risk posed to human health and/or safety. Requires action to alleviate imminent danger circumstances.

Habitat value - the likelihood of finding wildlife using an area throughout the year.

Riparian habitat - areas are the interface between land and constant or intermittent rivers or streams and generally provide the highest value habitat for wildlife. Riparian areas can be identified by their distinctive soils and vegetation, particularly willows (*Salix spp.*), mulefat (*Baccharis salicifolia*), sycamore (*Platanus spp.*), and cottonwood (*Populus spp.*). This may include concrete channels when the associated riparian vegetation and soils are present.

High value habitat - generally areas with low human use, low impervious surfaces, high plant species diversity, high plant structural diversity, close to water bodies, many mature trees, many dead or dying trees, and with abundant wildlife.

Low value habitat - generally areas with high human use, high impervious surfaces, low plant species diversity, far from water bodies, few mature trees, few dead and dying trees, and few/no wildlife present.

Nest - a structure or place made or chosen by wildlife for laying of eggs or sheltering its young.

Active - eggs or young present

Inactive - no eggs or young present

Abandoned - eggs or young present, but adults are no longer returning to tend the nest

Non-breeding season - the time of year when most wildlife are not breeding, nesting, or caring for

offspring that cannot care for themselves. Across the different habitats of California, most wildlife are not breeding between September 1st and January 31st, in most years. However, this varies by region and species. In some years variable weather patterns or abundance of food may cause early or late breeding.

Raptor - birds of prey such as owls, hawks, eagles, vultures, and falcons which are in the orders *Strigiformes*, *Accipitriformes*, and *Falconiformes*.

Signs of nesting wildlife - wildlife breeding behavior such as carrying sticks of food, acting agitated, distress calls, as well as observing concentrations of bird droppings, nests that may be active, eggs, young, or wildlife reliant on nest.

Sensitive habitat - habitat that is home to special status species and/or the habitat itself may be rare and could be easily disturbed or degraded by human activities and developments.

Tree - a woody perennial, usually having one dominant vertical trunk and a height greater than 15 ft.

Tree Care Worker - a term that can describe any professional working with trees including but not limited to arborists, tree climbers, trimmers, ground workers, consultants, managers, etc.

Wildlife Trained Arborist - a tree care worker with training and/or experience in: determining habitat value, conducting pre-work nesting surveys, identifying signs of nesting wildlife, determining if nests are active, responding to wildlife emergencies, and contacting **Wildlife Biologists** when needed.

Wildlife Biologist - a person with knowledge and experience in identifying wildlife species that may occur in an area and is familiar with wildlife behavior, nesting requirements, tolerance to impacts and suitable survey methods.

Wildlife rehabilitator - an individual or organization with training, experience, and (if required) applicable permit(s) allowing them to care for injured or abandoned wildlife.

Wildlife emergency - a situation where wildlife are injured, orphaned, or in danger or where nests are abandoned or disturbed.

Wildlife - undomesticated living animals especially birds, mammals, amphibians, and lizards.

Native species - species that is present by a natural process with no human intervention.

Non-native species - species that has been brought to a new geographic region beyond its normal range.

Invasive species - species exhibiting a strong ability to colonize an area and harm other species.

Special status - species of wildlife that have one or more designations from authorities. The US Fish and Wildlife Service and California Department of Fish and Wildlife each have their own list of endangered, threatened, and candidate (Federal) or species of special concern (California). If there is potential to encounter special status species, contact the agency responsible for the species or a Wildlife Biologist familiar with the species for further guidance. For more information see the CDFW [Special Animal List](#).

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Newton, I. 1994. The role of nest sites in limiting the number of hole-nesting birds: A review. Biological Conservation 70(3):265-276.

Smiley, E. T., N. Matheny, and S. Lilly. 2011. Best Management Practices: Tree Risk Assessment. International Society of Arboriculture. 81 p.

Tree Care Industry Association. 2017. ANSI A300 (Part 1)

Additional Resources

Birds of North America, Cornell Lab of Ornithology
<https://birdsna.org/Species-Account/bna/home>

City of Portland Environmental Services. 2016. Avoiding Impacts on Nesting Birds: Best Management Practices for Vegetation and Construction Projects. 44 p.
<https://www.portlandoregon.gov/bes/index.cfm?a=322164>

California Agricultural Extension Offices
https://ucanr.edu/County_Offices/

California Audubon Chapters
<http://ca.audubon.org/about/chapters>

California Department of Pesticide Regulation
<http://calpip.cdpr.ca.gov/county.cfm>

California Forest Practice
http://calfire.ca.gov/resource_mgt/resource_mgt_forestpractice

California List of California Wildlife Rehabilitators
<https://www.wildlife.ca.gov/Conservation/Laboratories/Wildlife-Investigations/Rehab/Facilities>

California Natural Diversity Database (CNDDB)
<https://www.wildlife.ca.gov/Data/CNDDB>

California Snakes
<https://www.wildlife.ca.gov/News/Snake>

California Endangered Species Act Lists
<https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals>

California Fully Protected Species
http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html

California Herps
www.californiaherps.com

California Special Animal List
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406>

California Wildlife Habitat Relationships
<https://www.wildlife.ca.gov/Data/CWHR>

Cavity Conservation Initiative
www.cavityconservation.com

Conserving Waterways - Preventing Impacts from Human Activity
<http://www.rcrcd.org/uploads/files/ConservingWaterways.pdf>

Living with Wild Reptiles and Amphibians
<http://www.californiaherps.com/info/livingwithherps.html>

NestWatch - All About Birdhouses
<http://nestwatch.org/learn/all-about-birdhouses/>

U.S. Fish and Wildlife Critical Habitat Online Mapper
<https://ecos.fws.gov/ecp/report/table/critical-habitat.html>

USFWS Wetland Mapper
<https://www.fws.gov/wetlands/data/mapper.HTML>

Appendix I - Tree Care Industry Overview

This section is compiled from excerpts from personal communications with Dr. Jim Clark, updated from *Arboriculture: Integrated Management of Landscape Trees Shrubs and Vines* by Harris, Matheny and Clark, 2004.

The tree care industry generally practices arboriculture that is *concerned with the selection, planting, and care of trees of all ages*. The tree care industry is different from conventional forestry in that it focuses on trees in city centers, suburban neighborhoods, rural areas, and some relatively wild areas with human influences such as roads and utility lines.

A tree is defined as a 'woody perennial usually having one dominant trunk and a mature height of greater than 5 meters (16 feet)' (International Society of Arboriculture, 2015)... Definitions serve to distinguish trees from shrubs which are normally multi-stemmed and shorter in height. For practical purposes, arborists consider palms trees, even though such plants are not strictly woody.

Many professional organizations exist for the tree care industry; however, the largest organization is the International Society of Arboriculture (ISA). The ISA *represents more than 24,000 arborists in 47 countries with 37 chapters, 8 associate organizations and four professional affiliations*. California is in the Western Chapter that includes Nevada, Arizona, and Hawaii. The International Society of Arboriculture offers training and testing to become a Certified Arborist. It also offers other types of training and tests to become a Certified Tree Worker Specialist, Tree Risk Assessment Qualified, Certified Arborist Utility Specialist, and others. The tree care industry is a combination of people with and without these certifications and affiliations.

The International Society of Arboriculture describes arboriculture as a broad field with several areas of specialization:

Municipal arborists *(also known as municipal foresters and urban foresters) are involved in the management of publicly owned trees, particularly in cities, towns, and other public locations. They are commonly employed by public agencies either directly or on a contract basis.*

Commercial arborists *operate businesses that provide tree care activities such as pruning, fertilization, health care, planting, and tree removal on a fee basis. Clients include public agencies, private firms and individuals.*

Utility arborists *are involved in the management of trees along utility rights-of-way. Their primary management goal is the maintenance of safe and uninterrupted supply of power. To that end, utility arborists are involved in assessing the need for and scheduling tree selection, pruning, applying tree growth regulators, and tree removal. They may be employed by either the utility itself or contractors who provide vegetation management services.*

Arboricultural consultants *provide technical expertise including problem diagnosis, management programs, and tree appraisal rather than performing service work. Although most consulting arborists operate on a commercial basis, employees of institutions such as the U.S. Department of Agriculture (USDA) Cooperative Extension and state urban forestry programs may also provide consulting expertise.*

The industry has a series of standards of work performance. The American National Standards Institute (ANSI) produces several voluntary standards for arboriculture including those for Tree Care Operations Safety (Z133.1), Standard Practices Pruning (A300), and Nursery Stock (Z60.1).

The ANSI Standard Practices (A300) cover the topics:

- pruning,
- soil management,
- supplemental support systems,
- lightning protection systems,
- planting and transplanting,
- integrated vegetation management,
- root management, and
- tree risk management.

The ISA Best Management Practices currently cover the topics:

- tree support systems,
- tree planting,
- integrated vegetation management,
- tree risk assessment,
- tree pruning,
- lightning protection,
- root management,
- soil management,
- tree and shrub fertilization,
- tree inventories,
- utility pruning of trees, and
- integrated pest management

and are available for purchase from their website (www.isa-arbor.com).

Tree care activities vary in their level of labor intensity, equipment, frequency, noise, and expense. Managing trees is critical to their survival, success, and maximizing the potential of their environmental benefits within the landscape. At their most basic, tree care activities include:

- **Planting** - After species have been selected, trees are planted. Irrigation and stabilization are often added after planting.
- **Pruning** - Using a variety of tools, tree care workers selectively remove branches to meet a variety of objectives outlined in the ANSI Standards. Pruning is most important and effective when trees are young but often continues on a regular basis throughout the lifespan of a tree.
- **Removal** - Tree care workers cut down trees as requested by tree managers, often for tree health, public safety, and clearance needs.
- **Plant health care** - Treatment of disease and deficiencies often occurs for specially selected trees or stands and is often cost prohibitive at large scales. There are a variety of products used, including contact chemical sprays, injected systemic treatments, fertilizer application, etc.
- **Ground maintenance activities** - Many tree care activities occur on the ground and do not

require access to the tree canopy. These activities take place periodically, especially after planting, and include mulching, watering, removing or placing stakes, inspections, etc.

- **Utility clearing** - Utility lines must be cleared for safety, reliability, and fire risk. Tree removal, pruning, and herbicide use are the most common methods of controlling vegetation in the utility right-of-way.
- **Planning and management** - The tree care industry is involved in planning and managing landscapes, but politicians and city staff make many higher level decisions about trees.

Appendix II - Wildlife in California

Wildlife (including birds, mammals, reptiles, and amphibians) rely on trees and landscapes for food and shelter as they feed, nest, and reproduce. In turn, wildlife control insects, provide food for other wildlife, pollinate plants, distribute seeds, and are good indicators of environmental health. This section discusses wildlife that can be found in the course of tree work that arborists should be aware of.

There are over 700 terrestrial vertebrate species in California (<https://www.wildlife.ca.gov/Data/CWHR>). Of these, over half are birds and one quarter are mammals (Figure 8). California and Federal laws are focused more on birds than the other groups. Because birds are more diverse and more protected than other types of species, these BMPs discuss birds more than other wildlife.

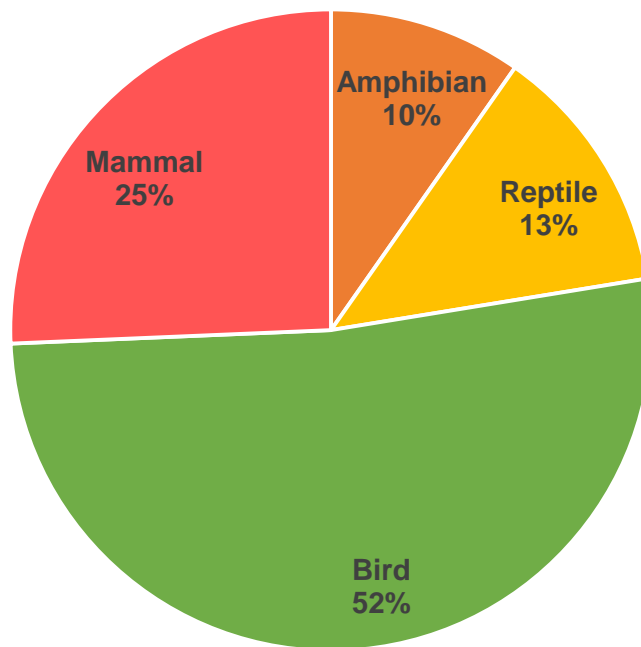


Figure 8. Percentage of wildlife groups by California Department of Fish and Wildlife

Adult mammals and birds will likely flee a work area so work can proceed. During nesting, however, eggs and young wildlife cannot move from nests. Because they are vulnerable and stationary during this time period, nesting wildlife are those most likely to be impacted by tree and shrub care. To minimize impacts, it is critical to identify, avoid, and protect wildlife nests.

It is important to keep in mind where the nests in a tree may be found (Figure 9, Page 27). While a nest may be found almost anywhere, different birds prefer to nest in particular locations. Nests may be in trees (including palm trees), shrubs, vines, woodpiles, dead trees, decayed sections of live trees, man-made structures, or burrows in the ground. Nests can also be placed on the ground surface. Tree care workers need to be aware of the variety of types and locations of nests.

Birds

Hundreds of bird species live in California. Bird species have varied behaviors and life cycles that affect how they interact with the environment. Birds feed on nectar, seeds, fruits, insects (in bark, in the air, on the ground), and other wildlife. To breed successfully, birds must find food, a water source, and a nesting location. When protecting their nests, birds may fly or swoop at apparent threats, make repeated warning calls, or stay put and attempt to camouflage their nests.

Raptors are a subset of birds including hawks, eagles, owls, and falcons that have distinct life cycles and biology. They are typically larger than other birds and are predators and are often referred to as birds of prey. Raptors are also subject to specific protected status ([Appendix III](#), Page 34), and generally have nests protected by regulation even when inactive.

Mammals

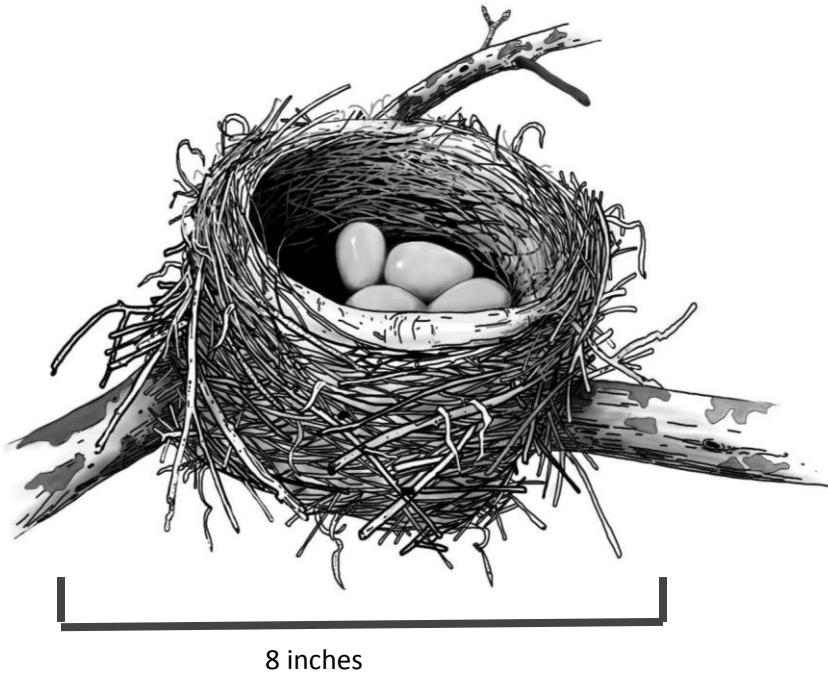
All bats (order *Chiroptera*) and woodrats (*Neotoma* spp.) are protected. Woodrats build large stick nests in tree canopies and at the base of trees. Several species of woodrats have special status (wildlife descriptors, Page 33) and have specific protections. Bats are nocturnal mammals that may use trees as temporary, daytime, and/or long term roosts. They do not construct nests but find shelter in cavities, loose bark, and cracks. Bats are inactive in the day and rarely seen, except at dusk when they emerge from roosts and feed on insects. Many species of bats are in decline.

Some small mammals are considered nuisance species. The black rat (*Rattus rattus*), eastern gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), and Virginia opossum (*Didelphis virginianus*), which are common in urban areas, are not protected in California. Rats are commonly found nesting in palm trees. Many consider opossums, mice, squirrels, and other rodents a nuisance. Contact your local agricultural extension ([Additional Resources](#), Page 21) for information on the best way to deal with nuisance species in your area.

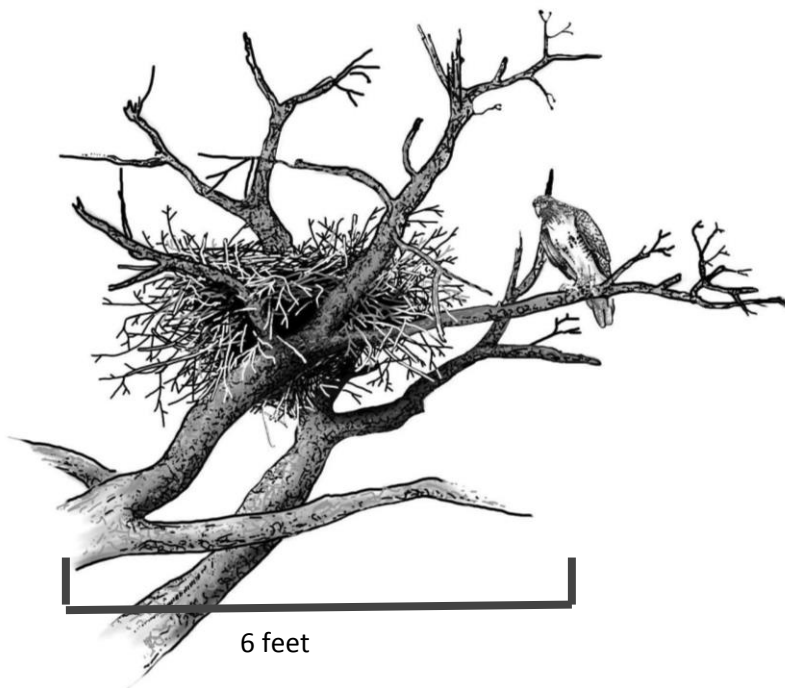
Reptiles

Shelter and cover are critical to the life cycles of reptiles and amphibians. They are exothermic or “cold blooded” and regulate their body temperatures by moving in and out of the sun. On trees, they can be found basking in the sun and living in cavities. Many live in holes in the ground; however, they are usually not found in turf covered areas. Areas with downed wood, bark, or large pieces of decaying wood are ideal sites for reptiles as they serve as both shelter and food source. Lizards and snakes can help control pests like insects and rodents. All native reptiles and amphibians are also protected in California.

Rattlesnakes are the most common venomous snakes native to California. They are rarely found in trees (though occasionally found in tree cavities) but can be found on the ground or at the base of trees and shrubs. In general, they will only strike when provoked. Arborists should look for snakes when performing pre-work inspections and should not approach them if found. Refer to <https://www.wildlife.ca.gov/News/Snake> for more information.



Cup nests are common among small songbirds like robins, finches, and hummingbirds. Whatever their size, cup nests always have a deep depression. They tend to be sturdy, founded on supportive coarse woody twigs, sometimes bound with mud, and are lined inside with softer vegetation or feathers. Illustrator - Brian French



Platform nests are most often made by large, heavy birds like raptors, doves, and others. Upper canopies and tree tops are ideal for these large nests. Nest materials are primarily woody. These structures, which take considerable time and effort to construct, can last several seasons. Illustrator - Brian French



Hanging/pendulous nests hang from palm fronds or tree branches and are made by species like bushtits and orioles. These nests are supported by slings of strong but flexible material.
 Illustrator - Brian French



Excavated cavity nests are among the most difficult to detect and to determine whether vacant or occupied. Their entrances are characteristically round, carefully chiseled, and generally no more than 2-3 inches in diameter and can occur almost anywhere on the trunk or branches. Though initially made by woodpeckers, birds like Western bluebirds, house wrens, owls, and other wildlife use these nests as well. Cavity nesters are especially relevant to the tree care industry because most cavity nesters are wholly reliant on trees for their nesting success and because these cavities indicate potentially weak internal tree structure. Nest boxes are replications of cavity nests.
 Illustrator - Brian French



2 feet

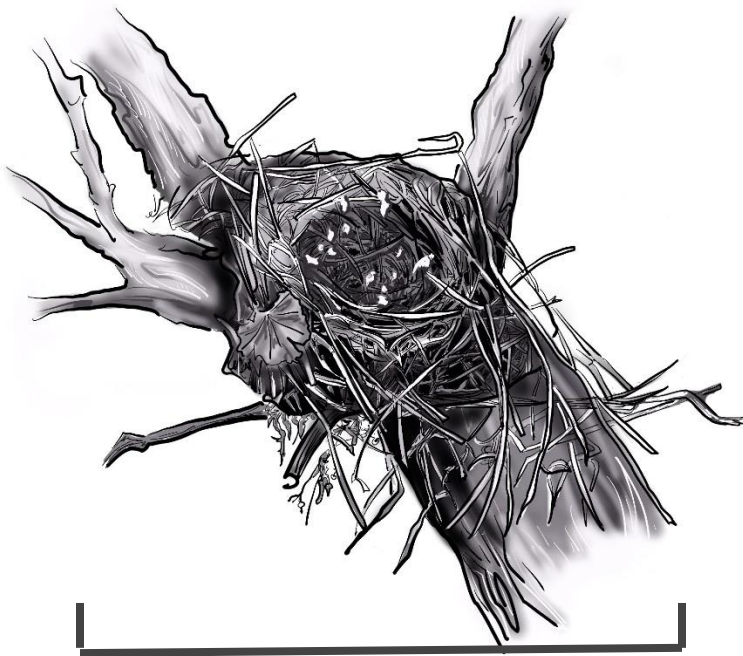
Natural cavity nests have openings that are highly irregular in shape and size. Occupancy increases during the nesting season, but some cavity nesters use them as roosts all year. Often these cavities are formed from branch failures decaying in living or dead trees. Mammals also use these cavities during the nesting season.

Illustrator – Brian French

Scrape nests are slight depressions on the ground or on ledges that have been slightly cleared to create a nest. They are made by birds such as killdeer, shorebirds, peregrine falcons, and a few owls. Illustrator - Brian French



4 inches



8 inches

Inactive non-raptor nests have no eggs or young that are reliant on the nest. These nests can generally be destroyed if required to accomplish tree work objectives.

Illustrator – Monica Edwards



8 inches

Tree squirrels build large leafy nests typically found on larger branches of trees or at crotches where two or more branches meet. Tree squirrels typically build multiple nests in a season and may rotate nests while raising their young.

Illustrator – Monica Edwards

Insects

Insects lack broad legal protection in California. Several species of insects have special status and are protected. For instance, the Valley Elderberry Longhorn Beetle is protected by the Federal Endangered Species Act as a threatened species. The California Department of Pesticide Regulation maintains a database on species status species and sensitivities to pesticides ([Additional Resources](#), Page 21)

Insects are an important part of the food web. High insect diversity can act as a buffer to limit insect pests. Insect populations provide the base of the food web for many species of wildlife and are important pollinators for trees and other plants. Pest species are the vast minority of insects and should be managed when populations exceed thresholds, but healthy insect populations contribute to landscape health.

Wildland Areas

When working in locations such as wildlife preserves, state parks, National Forest lands, or other open spaces where impact on special status species may be more likely, it may be necessary to gather further information, either by contacting agencies directly, or through performing a desktop review. Prior to performing the work, check to see if any special status species have been recently seen or are known to rely on the area. The desktop review can be done using resources publicly available online such as the California Natural Diversity Database (CNDDDB) (<https://www.wildlife.ca.gov/Data/CNDDDB>) and U.S. Fish and Wildlife Critical Habitat online mapper (<https://ecos.fws.gov/ecp/report/table/critical-habitat.html>). If the desktop review finds sensitive areas a **Wildlife Biologist** should be contacted.

Wildlife Descriptors

Below are some important terms regarding wildlife in California:

Native species - species that is present by a natural process with no human intervention.

Non-native species - species that has been brought to a new geographic region beyond its normal range.

Invasive species - species exhibiting a strong ability to colonize an area and harm other species.

Special status - species of wildlife that have one or more designations from authorities. The US Fish and Wildlife Service and California Department of Fish and Wildlife each have their own list of endangered, threatened, and candidate (Federal) or species of special concern (California). If there is potential to encounter special status species, contact the agency responsible for the species or a Wildlife Biologist familiar with the species for further guidance. For more information see the CDFW [Special Animal List](#).

Wildlife Impacts

Tree and shrub care can disturb wildlife. These activities may include injuring or killing wildlife and removing a nest with eggs or young wildlife within. However, some activities may not cause direct harm. Pruning branches near a nest with eggs or chicks in it may cause the parents to abandon the nest or the eggs or chicks to become more exposed to the elements or predators. The goal of this document is to help tree care workers to avoid these types of impacts to wildlife. Effective planting and maintenance of trees has the opportunity to both maintain existing and create new habitat to enhance wildlife.

Appendix III - Laws and Regulations

Below is a list of laws and regulations pertaining to wildlife that are relevant to the tree care and landscape industry. The specific language from these laws is provided in quotations for reference. Language not in quotations is explanatory and paraphrased.

Wildlife

Federal Requirements

The primary Federal laws protecting birds as well as other wildlife include:

Migratory Bird Treaty Act (MBTA)

- Protects most species of birds in North America along with their parts (e.g. feathers), eggs, young, and nests.
- Upland game bird species are not protected by MBTA, but rather are regulated by states.
- “The MBTA provides that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply.” Take is defined in regulations as: ‘pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.’”

Endangered Species Act (ESA)

- Protects species listed as threatened or endangered by U.S. Fish and Wildlife Service. Take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct”. In addition to protecting species, the Endangered Species Act also protects the habitat a species depends on.

Bald and Golden Eagle Protection Act (BGEPA)

- Protects bald and golden eagles. Take is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb”. Unlike MBTA, BGEPA also protects eagles from disturbance.
- Eagle nests are protected year-round, regardless of status, and require a permit to remove or destroy.

State of California Requirements

The primary Fish and Game Code (FGC) sections protecting birds as well as other wildlife include:

Sections 2050-2115.5 - California Endangered Species Act (CESA)

- Protects species listed as threatened or endangered by the California Department of Fish and Wildlife.

Section 3503 - All Birds

- Protects all birds and protects nests from needless destruction.
- “It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.”

Section 3503.5 - Raptors

- Protects birds of prey or raptors, and their eggs and nests. Current taxonomy places these species in three orders rather than the two stated in the Code: *Accipitriformes*, *Falconiformes*, and *Strigiformes*. These include owls, eagles, falcons, hawks, and vultures.
- “It is unlawful to take, possess, or destroy any birds in the orders *Falconiformes* or *Strigiformes* (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.”

Section 3505

- “It is unlawful to take, sell, or purchase any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird.”

Section 3511 - Fully Protected Birds

- This section provides a list of bird species protected from take and possession for which there are no permits allowed except for scientific purposes.
- “The following are fully protected birds:
 - (1) American peregrine falcon (*Falco peregrinus anatum*).
 - (2) Brown pelican.
 - (3) California black rail (*Laterallus jamaicensis coturniculus*).
 - (4) California clapper rail (*Rallus longirostris obsoletus*).
 - (5) California condor (*Gymnogyps californianus*).
 - (6) California least tern (*Sterna albifrons browni*).
 - (7) Golden eagle.
 - (8) Greater sandhill crane (*Grus canadensis tabida*).
 - (9) Light-footed clapper rail (*Rallus longirostris levipes*).
 - (10) Southern bald eagle (*Haliaeetus leucocephalus leucocephalus*).
 - (11) Trumpeter swan (*Cygnus buccinator*).
 - (12) White-tailed kite (*Elanus leucurus*).
 - (13) Yuma clapper rail (*Rallus longirostris yumanensis*). “

Section 3513 - References MBTA

- Migratory nongame bird as designated in the MBTA, or any part of such migratory nongame bird, except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Section 3801 – Exceptions

- House sparrows and European starlings are not protected by section 3503.

Section 86 - Definition of Take

- To hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

Environmental Protection

California Environmental Quality Act (CEQA)

It should be uncommon for routine tree care activities to require going through the CEQA process. However, tree care work that is part of a “project” as defined under CEQA would be required to undergo CEQA review and follow any mitigation measures resulting from the environmental document. In such

circumstances, the CEQA environmental document supersedes the guidance provided here.

“The term project refers to the whole of an action that has the potential, directly or ultimately, to result in a physical change to the environment (CEQA Guidelines Section 15378). This includes all phases of a project that are reasonably foreseeable, and all related projects that are directly linked to the project.” (UC CEQA Handbook 2002).

Riparian Habitat

California Fish and Game Code Section 1602

(a) “An entity may not substantially divert or obstruct the natural flow of, or *substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake*, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless all of the following occur:...”

Electric Utility

State of California

Public Resource Code, Section 4292: Power Line Hazard Reduction

- Poles and towers of electrical transmission or distribution lines in wildland areas must be at least 10 feet clear of any flammable vegetation.

Public Resource Code, Section 4293: Line Clearance Guidelines

- Electrical lines in wildland areas must be clear of vegetation at a distance depending on voltage. “Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard.”

General Order 95, Rule 35: Tree Pruning

- “Where overhead conductors traverse trees and vegetation, safety and reliability of service demand that certain vegetation management activities be performed in order to establish necessary and reasonable clearances the minimum clearances set forth in Table 1, Cases 13 and 14, measured between line conductors and vegetation under normal conditions, shall be maintained.”
- Summary of Table 1 (above) - For Supply Conductors and Supply Cables (750 - 22,500 Volts), the radial clearance of bare line conductors from tree branches or foliage must be 18 inches. The radial clearance of bare line conductors from vegetation in Extreme and Very High Fire Threat Zones in Southern California must be 48 inches.

Federal

North American Electric Reliability Council (NERC) Standard FAC-003-4: Transmission Vegetation Management Standard

- “To maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation-related outages that could lead to Cascading.”
- Provides minimum required clearances from vegetation based on voltage and altitude.

Tree Care Ordinances

Tree care is often regulated by local ordinances and policies as well as private organizations (HOA's, tree boards, etc.). These regulations may cover tree species, tree planting spacing and distances from curbs and other infrastructure, pruning and other maintenance practices, tree removal, landscape provisions in community plans and development permits, compliance enforcement, and establishment of an advisory board.

Appendix IV - Bird Group Breeding Information Table

Bird Group	Typical Breeding Season	Incubation (Eggs)	Chicks	Buffer LHV (Radius in feet) ¹	Buffer HHV/R ²
Waders (e.g. herons, egrets)	January through August	19-27 days	21-81 days	200	300
Eagles	January through July	35-46 days	10-11 weeks	Bald 660 feet Golden 0.5-1 mile	Bald 660 feet Golden 0.5-1 mile
Birds of Prey (e.g. hawks, vultures, falcons)	February through August	25-36 days	4-7 weeks	300	500
Doves and Pigeons (mourning doves and band-tailed pigeons)	February through November	14-20 days	13-30 days	100	300
Owls Burrowing owl ³	January through July February through June	26-35 days	28-60 days	300	500
Hummingbirds	December through July	13-18 days	20-23 days	100	300
Woodpeckers Acorn woodpecker ³	April through August March through October	11-13 days	~30 days	100	300
Many songbirds (e.g. finches, kingbirds, mockingbirds)	February through August	11-17 days	9-25 days	100	300

¹ Low Habitat Value area

² High Habitat Value or Riparian area

³ Burrowing owls and acorn woodpeckers have different breeding seasons than most species in their order

Bird Group	Typical Breeding Season	Incubation (Eggs)	Chicks	Buffer LHV (Radius in feet) ¹	Buffer HHV/R ²
Corvids (e.g. crows, ravens, jays)	February through August	15-21 days	18 days Jays 35 days Crows 5-6 weeks Ravens	100	300

Sources:

Birds of North America, Cornell Lab of Ornithology: <https://birdsna.org/Species-Account/bna/home>
 Southern California Edison Nesting Bird Management Plans

The buffer ranges provided in this table are meant as starting points. Refer to [Considerations for Work Performed Near Active Nests](#) for further guidance on determining the appropriate distance work may be conducted from an active nest. It is important to seek the aid of a **Wildlife Biologist** when attempting to work near active nests, especially when work may cause the nest to fail. **Wildlife Biologists** may recommend different buffers based on individual situations, and programmatic approaches may use different sized buffers or a totally different system for minimizing impacts to wildlife.

Riparian habitat - the interface between land and constant or intermittent rivers or streams and generally provide the highest value habitat for wildlife. Riparian areas can be identified by their distinctive soils and vegetation, particularly willows (*Salix spp.*), mulefat (*Baccharis salicifolia*), sycamore (*Platanus spp.*), and cottonwood (*Populus spp.*). This may include concrete channels when the associated riparian vegetation and soils are present.

High value habitat - generally has low human use, low impervious surfaces, high plant species diversity, high plant structural diversity, close to water bodies, many mature trees, many dead or dying trees, and with abundant wildlife.

Low value habitat - generally has high human use, high impervious surfaces, low plant species diversity, far from water bodies, few mature trees, few dead and dying trees, and few/no wildlife present.

Appendix V - Pre-work Inspection Form

Inspector: _____ Certification Level: _____ Date: _____
Time: _____ Weather conditions: _____
Description of work: _____ When is work: _____
Wildlife Biologist: _____ Wildlife Rehabilitator: _____

Habitat Value

Low

- High human use
- High impervious surfaces
- Low plant species diversity
- Low plant structural diversity
- Far from water bodies
- Few mature, dead and dying trees
- Few/no wildlife present

High

- Low human use
- Low impervious surfaces
- High plant species diversity
- High plant structural diversity
- Close to water bodies
- Many mature, dead and dying trees
- Abundant wildlife present

Riparian

- Within or adjacent to water bodies
- Within or adjacent to dry water channels
- Riparian vegetation present

Breeding Season

- Breeding Season (Feb. 1 – Aug. 31)
- Non-breeding Season (Sep. 1 – Jan. 31)

Category

Category 1 Category 2 Category 3
Recommended level of training: _____

Inspection

- Scan the sky, trees, ground, shrubs, and branches.
- Check trunk or branch cavities and holes in the ground.
- Listen for wildlife sounds.
- Look for wildlife flying or running away.

Signs of nesting wildlife

- Nests that may have eggs or young
- Concentrations of white colored droppings
- Wildlife exhibiting breeding behavior
- Wildlife carrying nesting materials
- Repeated wildlife visits to area

Nest found

- Location _____
- Species _____
- Type _____
- Buffer distance _____

Health and human emergency

Risks _____
Actions _____

Wildlife emergency

Situation _____
Contacted _____
Advice given _____
Actions _____

Active nest? (Y / N)

- Nest contains eggs or young wildlife