

**Best Management Practices:
Minimize Impacts of Development on Adjoining Wildlife Areas**

The NC Wildlife Resources Commission (NCWRC) recommends that sensitive wildlife habitats, such as Natural Heritage Natural Areas, be buffered from development by encouraging adjacent lands to remain in a rural land use. However, when development is going to occur on adjacent lands, we recommend clustering the buildings around existing infrastructure, and minimize clearing of the site to retain the maximum amount of buffer between developed land uses and natural areas. For more information on appropriate siting of development, see the [Preferred Development Design Guide](#). Developments can also incorporate some best management practices into its construction, design, and use to minimize its impact on wildlife habitats and wildlife passage. The following recommendations are a compilation of best management practices for minimizing impacts in developments.

I. Minimize human conflict with wildlife.

- A. Do not feed wildlife. Do not intentionally leave out human food, dog food, or any other food for the purpose of feeding wildlife.
 - 1. Discourage the use of bird feeders. If used: clean and disinfect them to prevent the spread of diseases between birds, provide fresh food, clean up loose seeds that attract rodents and squirrels.
- B. Limit human access to natural areas to officially approved trailheads
 - 1. Co-locate new trails within existing right-of-ways.
- C. Limit access of wildlife to trash
 - 1. Use secure garbage containers with tight-fitting lids; garbage cans can be secured with bungee straps, ratchet straps, or latches.
 - 2. Throw out garbage – particularly food waste -- on the morning of pick up, not the night before
- D. Use traps instead of rodenticides to control rodent populations – these poisons can be transferred up the food chain to carnivores and scavengers.
- E. Construct bat and bird boxes to provide roosting and nesting habitat.
- F. Provide materials (booklets, programs, etc.) or a signage program that educates occupants and visitors on wildlife and how to reduce impacts to wildlife habitats. NCWRC can provide assistance in development of these materials.

II. Minimize lighting impacts

- A. Plant dense native evergreen shrubs and trees around parking lots to block headlights shining into natural areas
- B. Choose lighting fixtures that are low mounted with baffles that direct light downward and away from natural areas

- C. Lights outside and within buildings should only be on when needed. Use motion-sensors to turn lights off when not needed and/or set lights to an automatic timer to turn off
- D. Light should be no brighter than necessary for the application. Minimize blue light emissions (CCT should be < 3,000 K). Aim for no more than 1.25 lumens per square foot of hardscape.

More information on minimizing light pollution can be found here:

http://arlington.granicus.com/MetaViewer.php?view_id=44&event_id=1171&meta_id=166632 and <https://www.darksky.org/light-pollution/light-pollution-solutions/>

III. Minimize noise impacts and other disturbances related to human presence

- A. Build solid walls/noise baffles between areas of high noise impacts, such as trash bins and loading docks, and the natural areas
- B. Consider constructing parking lots on the sides of buildings located opposite the natural areas
- C. Restore the native forest around the development to reduce the impacts of noise, lighting, and other disturbances to wildlife
- D. Schedule timing and control of initial construction operations and subsequent operation and maintenance to minimize disruption of biological community structure and function. In general, avoid forest clearing in spring and summer, when young wildlife cannot disperse.
 - 1. Avoid clearing the proposed project during the migratory bird nesting season, roughly March to August, or conduct surveys for active nests prior to construction to avoid wounding or killing migratory birds.
 - 2. Due to the decline in bat populations, avoid tree clearing activities during the maternity roosting season for bats (May 15 – August 15).

IV. Minimize runoff and use of landscaping chemicals. NCWRC encourages stormwater management strategies that maintain post-development stormwater runoff conditions as close to pre-development conditions as possible. Low Impact Development (LID) techniques that preserve natural site features as a first step in site planning are encouraged.

- A. Utilize engineered LID techniques in cases where natural features cannot be protected sufficiently, examples include: pervious pavement, grass swales, rain gardens, bioretention cells.
 - 1. Grassed swales should be used in place of curb and gutter for new developments, except in areas with >5% slope.

2. Check dams, level spreaders, and other associated best management practices should be used to minimize the effect of stormwater runoff entering the riparian buffer areas.
 3. In areas where slopes exceed 5%, stormwater collected in piped conveyance systems should be directed away from surface waters and best management practices shall be employed at both the intake and the outlet areas.
 4. Conduct periodic monitoring of (engineered) mitigation features to assure continuous operation.
More information on LID techniques can be found here:
http://www.onsiteconsortium.org/npsdeal/NC_LID_Guidebook.pdf
<https://www.epa.gov/nps/urban-runoff-low-impact-development>
- B. Use the following preferred methods of sediment and erosion control:
1. Sediment and erosion control measures should be installed prior to any land-disturbing activity.
 2. The use of biodegradable and wildlife-friendly sediment and erosion control devices is strongly recommended. Silt fencing, fiber rolls and/or other products should have loose-weave netting that is made of natural fiber materials with movable joints between the vertical and horizontal twines.
 3. Silt fencing that has been reinforced with plastic or metal mesh should be avoided as it impedes the movement of terrestrial wildlife species.
 4. Regularly inspect erosion control measures throughout duration of use.
- C. Control water pollution through best management practices. Do not direct any runoff into corridor and stream.
- D. Do not place any engineered stormwater controls, such as bio-retention ponds, in natural areas.
- E. Regrade disturbed areas to contours that provide optimal aquatic and terrestrial wildlife habitat value or approximate original contours.
- F. Plant appropriate native shrubs and trees and other beneficial vegetation to speed recovery and provide pollinator habitat.
- G. Avoid use of herbicides, except to control invasive species.
1. Manage non-native, invasive species by pretreating the project site prior to construction, preventing spread during construction, and control non-native, invasive species throughout the monitoring period.
- H. If pesticides or chemicals will be used for site maintenance, stormwater runoff from the site should be funneled to bio-retention areas prior to discharge to streams or wetlands.

- V. Restore appropriate native vegetation – particularly forest cover – in all areas surrounding development.** NCWRC can provide guidance on appropriate species.
- A. Protect as much of a contiguous native canopy and understory as possible during construction to provide diverse, multi-age forest structure.
 - B. Plant a wide variety of native plants (select species that provide food, cover, and nesting habitat) that are appropriate for the site.
 - C. Avoid fescue-based mixtures because fescue is invasive and provides little benefit to wildlife.
 - D. Control invasive species that often gain a foothold on lands disturbed by grading and clearing
- More information on native and invasive species can be found here:
<http://nc-ipc.weebly.com/nc-invasive-plants.html>
https://ncwildflower.org/native_plants/why_natives

VI. Minimize bird collision with building windows

- A. Use frosted or fritted glass facades, UV glass, art treatment of glass, netting, and screens, especially in the bird collision zone (from ground level up to 60'). See examples at:
http://default.sfplanning.org/publications_reports/bird_safe_bldgs/Standards%20for%20Bird%20Safe%20Buildings%20-%202011-30-11.pdf
- B. Plant trees either directly adjacent to windows to slow birds down on approach to window, or place them far enough away so that there is no reflection of vegetation in window