



Nature Vancouver

A Strategy for Management of Invasive¹ Plants to Ensure No-net-loss of Wildlife Habitat for Birds and Other Wildlife

During the past 200 years, many species of plants and animals have been introduced in the Lower Mainland. Some of these plants have been here so long that they have become part of local ecosystems and provide valuable habitats for wildlife².

However, a number of these non-native or introduced species may grow rapidly and come to dominate the native vegetation at particular sites, and so reduce the habitat niches for native plants and wildlife. Some examples of these species are knapweed (*Centaurea spp.*), Japanese knotweed (*Polygonum cusidatum*), purple loosestrife (*Lythrum salicaria*), Scotch broom (*Cytisus scoparius*), spurge laurel (*Daphne laureola*) and English ivy (*Hedera helix*). In such areas, careful vegetation management is usually required to ensure that when non-natives are removed, there is no-net-loss of ecosystem function and species diversity with regard to native plants, animals and other wildlife.

The objective of this “strategy” is to minimize, as much as possible, the impact of non-native plant removal on birds and other wildlife. Many wildlife populations, including birds and insects, are experiencing serious declines. We can no longer displace creatures from an existing habitat and assume that they will return years later when restored vegetation has matured. The strategy is intended to provide guidelines for the leaders of groups engaged in restoration and vegetation management. Organizations such as Pacific Spirit Park Society, Stanley Park Ecology Society and Lighthouse Park Preservation Society are already following similar guidelines and can be contacted for further ideas.

The term “no-net-loss”, as used here, means that restoration methods should be aimed at limiting habitat loss (hence loss of wildlife) *during* the restoration process. “No-net-loss” is the goal, and should be considered at all stages of the project.

The strategy is intended to be flexible because plans for control of non-native plants should be site specific: i.e., not all parts of the following strategy will apply in every case. We anticipate that project leaders will adapt the guidelines to suit the condition of a particular site and

¹ **Definition:** An invasive plant (native or non-native) is one that is encroaching into (i.e., invading) an area where it is not wanted for at least one of several possible reasons:

- the invading plant is replacing existing plants and modifying the existing ecosystem by reducing biodiversity; (“biodiversity” refers to the numbers of bird and other wildlife species, as well as plants);
- the area in question supports (or is being managed for, or restored to) an ecosystem that does not include this invading plant;
- the invading plant has some adverse characteristics that will damage components of the existing ecosystem.

Thus whether or not a species is “invasive” will depend on specific site characteristics, existing habitat, how the site is being managed, and for what species the site is being managed.

² The term “wildlife” refers to mammals, birds, insects, amphibians, and all other living creatures.

restoration objectives. Large and complex areas, such as major parks, will likely require a more formal inventory and management plan than smaller sites, such as roadsides and the edges of trails, although a preliminary inventory of as many plant and wildlife species as possible is still an important first step. No synthetic pesticides should be used.

Birds and other wildlife may appear to be the focus of the strategy, rather than plants. This is because we find that while much has been written about the management of native and non-native plants, very little attention has been paid to the effects of restoration on local wildlife. But we do not intend to convey the impression that birds are more important than plants. The strategy should be used to protect the native plants already on the site, especially those that are rare, as well as other components of the extant ecosystem.

Occasionally there may be an exceptional project where part of the strategy is inappropriate to the proposed restoration. For example, re-creation of a valuable and unusual habitat that has been destroyed by human interference, e.g., Camosum Bog, may require changes (e.g., removal of native trees) to part of an area with an existing, well-functioning ecosystem. Such a drastic departure can be justified because the resulting, quite different plant and animal community will greatly enhance the biodiversity of the local area.

All naturalists and persons engaged in habitat management in British Columbia should be aware that birds, especially when nesting, are protected by legislation. The British Columbia Wildlife Act makes it an offence to harm birds, their eggs, and their nests during the nesting season. The federal Migratory Birds Convention Act provides further protection to migratory birds (i.e., almost all our local birds), their nests and eggs.

Nature Vancouver, (Vancouver Natural History Society), founded in 1918, has long been dedicated to the wise use and conservation of natural resources, the protection of endangered species and ecosystems, and the encouragement of biodiversity. It is concerned that the spread of non-native plant species be controlled, but that control efforts do not damage native plants, birds, animals, insects and other wildlife. Nature Vancouver will work with agencies, organizations and groups involved with management of non-native plants and habitat restoration to provide information on wildlife considerations and offer suggestions for ways to minimize impacts while maintaining or restoring biodiversity and ecosystem functions.

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1. Project Definition

- **Define** the area (or areas) of interest and the need for species management at the site.
- **Using existing information and local experience**, estimate likelihood of success given available effort, time and funding. (For example, it may be better to put effort into 3 smaller areas where likelihood of success is relatively high, rather than one large area that will require a great deal of time and effort and chances of long-term success are relatively low).
- **Finalize** selection of area.

2. Site Inventory and Ecosystem Assessment

- **Conduct** a thorough inventory of all plants and wildlife species (birds, mammals, and others as feasible), ideally covering all seasons of the year³.
- **Search** for naturalists' and other surveys of the site (Christmas Bird Counts, Breeding Bird Surveys, vegetation maps, etc)⁴.
- **Review relevant literature** on non-native and potentially invasive plant species, and native but rare plant species (examples of successful management, etc.).
- **Assess** the role of all potentially invasive species in the ecosystem with respect to birds, other wildlife and native plants (e.g., seasonal provision of shelter, food, nesting sites for birds and small mammals, nectar for beneficial insects; deterrence of other invasive plants).

3. Management Plan

- **Define the specific objectives** of the exercise, incorporating what was learned about the area in the Site Inventory, and including time windows for various kinds of site management
- **Decide** which plants (species and locations) should be removed or controlled, and to what extent; which species should be planted and where; define the end product and measurable goals, taking account of the following principles:
 - *Priority should be given to maintaining or increasing existing populations of native birds and other wildlife while maintaining native plants, especially those that are rare;*
 - *Precautionary principle: if there is uncertainty about the possible results of an activity or treatment, including potentially serious damage to an ecosystem or any of its components, then do not proceed with this action. (In other words, if you can't predict the results of an action with a fair degree of reliability, then don't do it.) Alternatively, first apply the treatment to only a small test area.*
- **Follow best management practices, including:**
 - *There should be no significant loss of habitat for present populations of birds and other wildlife, and no significant loss of native plants.*

³ ⁴ Experienced naturalists from Nature Vancouver or other societies (birding, botanical etc.) or volunteer professional can be invited to provide technical assistance with inventories and additional sources of information.

- *Plant removal and replanting should be done judiciously; knowledgeable persons (staff or volunteers) should do site-specific assessments and work with very small groups (preferably “one-on-one”⁵) of untrained volunteers.*
- *Within the area of interest, no more than a small percentage of a utilized habitat should be disturbed or made dysfunctional at any one time. If dealing with a small area, no individual disturbed area should be greater than a few square metres. Aim for restoration and re-growth of restored areas before other nearby areas are disturbed.*
- *Plan for control rather than removal of clumps of invasive plants that are functioning well as habitat for native birds and other wildlife.*
- *Timing: avoid disturbance of potential bird nesting habitat during the nesting season from March to August⁶. Plant control activities can continue in areas carefully defined so as to exclude potential nesting habitat or feeding areas⁷.*
- *Timing: avoid removal of critical food plants, such as blackberries, during or before the time periods when they are required by local wildlife.*
- *As much as possible, use gentler and more subtle methods (rather than widespread cutting) for removal of invasives, such as planting trees that will gradually shade out unwanted plants; biological controls; covering small areas of ground with black plastic or cloth; (the most suitable method will vary with the species of the unwanted plants). No synthetic pesticides should be used.*
- *To maintain habitat, plants removed should be replaced immediately with specimens that are as large and dense as possible (e.g., shrubs > 1 m tall); replace blackberry with berry-producing species favoured by the local birds.*
- *When selecting replacement plants, consider the potential effects of climate change, such as warmer and drier summers.*
- *Plan to reduce conditions that enable predation; i.e., maintain dense thickets; maintain thick “hedgerows” between public pathways and edges of streams and ponds; install plantings to discourage development of informal trails; in general, aim to reduce rather than increase fragmentation of habitat.*

4. Implementation and Monitoring

- Carry out the work as defined in the Management Plan.
- At the same time, monitoring should be ongoing to make sure work is adhering to the plan and principles.

⁵ Working one-on-one is being applied successfully by the Stanley Park Ecology Society.

⁶ Many birds resident in the Lower Mainland lay eggs in March, including some that nest on or very close to the ground. Even birds that don't lay eggs until April are courting and nest-building in March. Many birds have more than one brood and their young are still fledging well into August. Song Sparrows parasitized by Brown-headed Cowbirds (a common occurrence) raise young successfully mostly at the beginning and end of the breeding season when cowbirds are less active. The March to August breeding season is based on the species accounts in *The Birds of B.C., Vols. 1,2,3,4*, by R.W. Campbell, N.K. Dawe, I. McT. Cowan, J.M. Cooper, G.W. Kaiser, M.C.E. McNail and G.E. John Smith, The Royal B.C. Museum and the U.B.C. Press, 1990, 1997.

⁷ Invasive plants that are above ground only during the growing season can be controlled by several techniques, e.g., removal when shoots first appear (Feb. on the coast); marking sites with poles and removing roots in Fall; removal of seed heads. Many non-native annuals grow alongside trails and pathways where they can be dealt with during the breeding season.

- Employ adaptive management: if any objective is not being achieved, review and modify the Management Plan.

5. Maintenance and Evaluation

- **Follow-up care** of new plantings is essential (e.g., irrigation, pruning, staking, and continued removal of new shoots of unwanted plants).
- **Monitoring** will be necessary, ideally for several years, to evaluate the effectiveness of restoration and to show no-net-loss.
- **Record keeping** through written records, photos etc. should be maintained at all stages of the process, including plans, monitoring results, data regarding plantings and plant removals, evaluations, etc. This could contribute to a guide to: *Naturalists' Best Practices for Plant Management to Ensure No-net-loss of Wildlife Habitat*.

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