Appendix B: Biophysical Assessment

Beachcomber Regional Park
Management Plan 2017-2027

Regional District of Nanaimo

Beachcomber Regional Park
Biophysical Assessment

Prepared For
Regional District of Nanaimo

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Down to Earth Biology

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1 INTRODUCTION

EDI Environmental Dynamics Inc. (EDI) was retained by Regional District of Nanaimo to conduct a biophysical assessment of Beachcomber Regional Park (the Park). The biophysical assessment has been designed to characterize the primary environmental components of the Park, including plant communities, sensitive ecosystems, plant and bird species and wildlife features and sign.

2 PARK SETTING

The Park is located within the regional district of Nanaimo and is situated at the north end of Beachcomber Peninsula that juts into Northwest Bay. The Park is a small one hectare area that extends from sea level up to approximately thirty meter elevation and is surrounded on three sides by water. The park map, along with notable features, is presented in Appendix A.

3 METHODS

A background information review was completed prior to conducting the on-site field survey. Four field surveys were completed by EDI between October 18, 2016 and July 3, 2017.

3.1 BACKGROUND INFORMATION REVIEW

Background information was gathered for fish, wildlife and vegetation, including invasive species, using data available through several online databases and literature review. Through the use of these databases, preliminary lists were developed for ecosystem types, known species occurrence records, and potential for species at risk. The databases that were queried included:

- CDC iMap: Mapped Known Locations of Species and Ecological Communities at Risk (http://maps.gov.bc.ca/ess/sv/cdc/)
- Ministry of Environment BC Species and Ecosystem Explorer (http://a100.gov.bc.ca/pub/eswp/)
- EcoCat (Provincial Ecological Reports Catalogue) (http://www.env.gov.bc.ca/ecocat/)
- Wildlife Tree Stewardship Atlas (http://wildlifetree.ca/atlas.html)
- Ministry of Environment Habitat Wizard (http://www.env.gov.bc.ca/habwiz/)
- Important Bird Areas in Canada (http://www.ibacanada.ca/)

3.2 FIELD ASSESSMENT

The field assessments focused on identifying terrestrial values associated with the Park with the goal of better understanding existing resources and ultimately leading to informed management decisions.

Four field assessments were completed as follows:

- October 18, 2016. Vegetation inventories and ecosystem classification according to the Biogeoclimatic Ecosystem Classification (BEC) system (Green and Klinka 1994), resident bird survey.
- May 19, 2017. Vegetation survey for early flowering plants.
- June 9, 2017. Breeding bird survey.
- July 3, 2017. Vegetation survey for later flowering plants.

Evidence of wildlife utilization observed was recorded during all surveys including direct observations, vocalizations, tracks, game trails, scat, browsed vegetation, bones, feathers and nests. Utilization was deduced from an analysis of habitat features, observations and evidence of utilization. Habitat types were assessed with a focus on determining suitability for species at risk potentially occurring on site.

4 RESULTS

4.1 GENERAL DESCRIPTION

This small one hectare park forested park is surrounded by water on three sides and crossed by several trails. It is within the Coastal Douglas Fir moist maritime (CDFmm) biogeoclimatic zone (BGC). The CDFmm is limited to lower elevations (below approximately 150 m elevation) along the southeast coast of Vancouver Island, the Gulf Islands and a narrow strip along the Sunshine Coast. Forests are dominated by Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*) and western redcedar (*Thuja plicata*). In undisturbed sites, the understory is dominated by salal (*Gaultheria shallon*), dull Oregon-grape (*Mahonia nervosa*) ocean-spray (*Holodiscus discolor*) and Oregon beaked moss (*Kindbergia oregana*). Garry oak (*Quercus garryana*), arbutus (*Arbutus menziesii*) and several species of the lily family occur on drier sites (Green and Klinka 1994)

4.2 BACKGROUND INFORMATION REVIEW

4.2.1 KNOWN AND HISTORIC OCCURRENCES

Known locations of all plant, fish and wildlife species and ecological communities at risk were examined using the *CDC iMap* application to determine if there are any records of listed species in the project area. This online mapping tool reports the known occurrence of provincial Red- and Blue- listed species and ecological communities. The search included all listed wildlife, vascular and non-vascular plants, fish,

invertebrates and ecological communities. The *CDC iMap* showed no rare element occurrences overlapping the project area.

Habitat Wizard was also used to identify any known locations of invasive species within or adjacent to the project area. Several areas with invasive species were shown to overlap the project area; however Scotch broom (*Cytisus scoparius*) was noted along the outside edge of the property.

The Park is located in the Little Qualicum Estuary to Nanoose Bay Important Bird Area (IBA). This IBA hosts globally significant numbers of Brant (*Brant bernicla*) on spring migration. A number of the species associated with this IBA are only seasonally present using the area as a stopover site during spring and fall migration and overwintering birds are abundant (IBA 2016).

4.2.2 POTENTIAL FOR OCCURRENCE

A search of the *BC Species and Ecosystem Explorer* for rare plant and wildlife species indicated the potential for a number of species to occur in this general area, although the search parameters were broad in scope, to ensure that no potential species were omitted. Rare plant species were defined to include vascular and non-vascular plant species while rare wildlife species were defined to include vertebrate and invertebrate species. Rare species included those listed on Schedule 1 of the federal *Species at Risk Act* (SARA) as amended and species on the BC Ministry of Environment's provincial Red or Blue lists. The search parameters used to obtain these results were for species occurring in the Nanaimo Regional District within the CDF BGC zone. This list was further refined based on site-specific factors, including habitat types known to occur within the project area and species current known ranges. A search of the *BC Species and Ecosystem Explorer* was also conducted for rare ecological communities that could potentially occur in the project area within the CDFmm. This list was also refined based on site-specific factors.

The background review identified thirty three vascular and non-vascular moss/lichen species at risk that have the potential to occur within the project area (Table 1).

Table 1. Plant species at risk with potential for occurrence within the regional park

Common Name	Scientific Name	COSEWIC*	SARA	BC List
slimleaf onion	*Allium amplectens*			Blue
Olympic onion	*Allium crenulatum*			Blue
Geyer's onion	*Allium geyeri* var. *tenerum*			Blue
chaffweed	*Anagallis minima*			Blue
rigid apple moss	*Bartramia stricta*	E (Nov 2009)	1-E (Jun 2003)	Red
densetuft hairsedge	*Bulbostylis capillaris*			Red
green-sheathed sedge	*Carex feta*			Blue
foothill sedge	*Carex tumulicola*	E (Mar 2008)	1-E (Feb 2010)	Red
coastal wood fern	*Dryopteris arguta*	SC (Nov 2001)	1-SC (Jun 2003)	Blue

Common Name	Scientific Name	COSEWIC*	SARA	BC List
banded cord-moss	*Entosthodon fascicularis*	SC (May 2015)	1-SC (Aug 2006)	Blue
dense spike-primrose	*Epilobium densiflorum*	E (May 2005)	1-E (Aug 2006)	Red
common bluecup	*Githopsis specularioides*			Red
heterocodon	*Heterocodon rariflorum*			Blue
bog bird's-foot lotus	*Hosackia pinnata*	E (May 2004)	1-E (Jul 2005)	Red
Nuttall's quillwort	*Isoetes nuttallii*			Blue
seaside juniper	*Juniperus maritima*			Blue
Macoun's meadow-foam	*Limnanthes macounii*	T (Nov 2004)	1-T (Aug 2006)	Red
white adder's-mouth orchid	*Malaxis brachypoda*			Blue
white meconella	*Meconella oregana*	E (May 2005)	1-E (Aug 2006)	Red
coast microseris	*Microseris bigelovii*	E (Apr 2006)	1-E (Dec 2007)	Red
Macoun's groundsel	*Packera macounii*			Blue
water-plantain buttercup	*Ranunculus alismifolius* var. *alismifolius*	E (Apr 2009)	1-E (Jun 2003)	Red
snow bramble	*Rubus nivalis*			Blue
California-tea	*Rupertia physodes*			Blue
white-top aster	*Sericocarpus rigidus*	SC (Apr 2009)	1-SC (Jun 2003)	Red
twisted oak moss	*Syntrichia laevipila*	SC (Nov 2014)	1-SC (Jul 2005)	Blue
poison oak	*Toxicodendron diversilobum*			Blue
Macrae's clover	*Trifolium dichotomum*			Red
graceful arrow-grass	*Triglochin concinna*			Blue
Lindley's microseris	*Uropappus lindleyi*	E (Mar 2008)	1-E (Feb 2010)	Red
Howell's violet	*Viola howellii*			Red
yellow montane violet	*Viola praemorsa* ssp. *praemorsa*	E (Nov 2007)	1-E (Jun 2003)	Red
Muhlenberg's centaury	*Zeltnera muehlenbergii*	E (Mar 2008)	1-E (Feb 2010)	Red

* COSEWIC/SARA Codes: SC: Special Concern; T: Threatened; NAR: Not at Risk; E: Endangered; DD: Data Deficient.

The background review identified a total of 16 at risk wildlife species that have the potential to occur within the Park (Table 2).

Table 2. Wildlife species at risk with potential for occurrence within the regional park

Common Name	Scientific Name	COSEWIC*	SARA*	BC List
Western Toad	*Anaxyrus boreas*	SC (Nov 2012)	1-SC (Jan 2005)	Blue
Great Blue Heron, *fannini* subspecies	*Ardea herodias fannini*	SC (Mar 2008)	1-SC (Feb 2010)	Blue

Common Name	Scientific Name	COSEWIC*	SARA*	BC List
Olive-sided Flycatcher	*Contopus cooperi*	T (Nov 2007)	1-T (Feb 2010)	Blue
Barn Swallow	*Hirundo rustica*	T (May 2011)		Blue
Western Screech-Owl, *kennicottii* subspecies	*Megascops kennicottii kennicotti*	T (May 2012)	1-SC (Jan 2005)	Blue
Band-tailed Pigeon	*Patagioenas fasciata*	SC (Nov 2008)	1-SC (Feb 2011)	Blue
Purple Martin	*Progne subis*	E (Apr 2006)		Blue
Western Thorn	*Carychium occidentale*			Blue
Western Pine Elfin, *sheltonensis* subspecies	*Callophrys eryphon sheltonensis*			Blue
Moss' Elfin, *mossii* subspecies	*Callophrys mossii mossii*			Blue
Common Wood-nymph, *incana* subspecies	*Cercyonis pegala incana*			Red
Common Ringlet, *insulana* subspecies	*Coenonympha tullia insulana*			Red
Propertius Duskywing	*Erynnis propertius*			Red
Townsend's Big-eared Bat	*Corynorhinus townsendii*			Blue
Keen's Myotis	*Myotis keenii*	DD (Nov 2003)	3 (Mar 2005)	Blue

* COSEWIC/SARA Codes: SC: Special Concern; T: Threatened; NAR: Not at Risk; E: Endangered; DD: Data Deficient.

The background review identified a total of 13 at-risk ecological communities that have the potential to occur within the park area (Table 3). It should be noted that an occurrence of the site series (i.e., the ecological conditions that allow for the potential development of a listed ecological community) does not necessarily indicate an occurrence of that ecological community. An ecological community is typically recognized at the climax state with the presence of all representative species.

Table 3. Ecological communities at risk with potential for occurrence within the Park

Common Name	Scientific Name	BC List	BGC Unit	Ecosystem Group
grand fir / dull Oregon-grape	*Abies grandis* / *Mahonia nervosa*	Red	CDFmm/04	Terrestrial - Forest: Coniferous - mesic
arbutus / hairy manzanita	*Arbutus menziesii* / *Arctostaphylos columbiana*	Red	CDFmm/00	Terrestrial - Forest: Broadleaf - dry
northern wormwood - red fescue / grey rock-moss	*Artemisia campestris - Festuca rubra* / *Racomitrium canescens*	Red	CDFmm	Terrestrial - Beach: Beach Beachland (Bb)
large-headed sedge Herbaceous Vegetation	*Carex macrocephala* Herbaceous Vegetation	Red	CDFmm/00	Terrestrial - Beach: Beach Beachland (Bb)
Roemer's fescue - junegrass	*Festuca roemeri - Koeleria macrantha*	Red	CDFmm/00	Terrestrial - Grassland: Grassland (Gg)
dune wildrye - beach pea	*Leymus mollis* ssp. *mollis - Lathyrus japonicus*	Red	CDFmm	Terrestrial - Beach: Beach Beachland (Bb)
Douglas-fir - arbutus	*Pseudotsuga menziesii - Arbutus menziesii*	Red	CDFmm/02	Terrestrial - Forest: Coniferous - dry

Common Name	Scientific Name	BC List	BGC Unit	Ecosystem Group
Douglas-fir / dull Oregon-grape	*Pseudotsuga menziesii* / *Mahonia nervosa*	Red	CDFmm/01	Terrestrial - Forest: Coniferous - mesic
Douglas-fir / Alaska oniongrass	*Pseudotsuga menziesii* / *Melica subulata*	Red	CDFmm/03	Terrestrial - Forest: Coniferous - dry
Garry oak / oceanspray	*Quercus garryana* / *Holodiscus discolor*	Red	CDFmm/00	Terrestrial - Forest: Broadleaf - dry
Garry oak / California brome	*Quercus garryana* / *Bromus carinatus*	Red	CDFmm/00	Terrestrial - Forest: Broadleaf - dry
Wallace's selaginella / reindeer lichens	*Selaginella wallacei* / *Cladina spp.*	Blue	CDFmm	Terrestrial - Grassland: Grassland (Gg);Terrestrial - Rock: Rock Outcrop (Ro)

4.3 FIELD RESULTS

The field surveys included verification of ecological communities, assessment of current wildlife values, wildlife use, and plant species.

4.3.1 VEGETATION AND ECOLOGICAL COMMUNITIES

The Park consists of predominantly mature forest with a few older veteran trees. The dominant ecosystem site series was 01 with pockets of the dryer site series 03 and small pocket of the wetter 04 (Photos 1 – 3). These site series are associated with provincially-listed ecological communities, as are most site series in the CDF, but do not meet the criteria for listed ecological communities since they are not in a climax state. These ecological communities may develop on site if it is managed to achieve that goal through mitigating anthropogenic effects and minimizing the presence of invasive species.

The site is generally sloping with a westerly aspect and a number of distinct benches with the lowest bench being the wettest site. The vegetation was varied throughout the Park with Douglas fir (*Pseudotsuga menziesii*) dominant throughout with arbutus (*Arbutus menziesii*) and Garry oak (*Quercus garryana*) in pockets along the fringes and a few bigleaf maple (*Acer macrophyllum*) and grand fir (*Abies grandis*) on the lower slope moist pocket. The shrub understory was dominated by salal (*Gaultheria shallon*), dull Oregon grape (*Mahonia nervosa*) and some baldhip rose (*Rosa gymnocarpa*), ocean spray (*Holodiscus discolor*), western trumpet honeysuckle (*Lonicera ciliosa*) and common snowberry (*Symphoricarpos albus*). Several sparsely vegetated moss-covered bluffs occur and moderately steep edges of benches are rocky. The herb layer is generally sparse but likely except in the spring and summer when it is dominated by large-leaved avens (*Geum macrophyllum*) and various grass species such as orchard grass (*Dactylis glomerata*) and hedgehog dogtail (*Cynosurus echinatus*).

A total of 48 plant species were observed during field visits (Table 4). There were no SARA Schedule 1, Provincially- or COSEWIC-listed plant species identified during the survey however, not all plant taxa were. It is likely that more thorough vegetation surveys beyond the scope of this project would identify more species.

Table 4. Plant species observed during field visits

Common Name	Scientific Name
Arbutus	*Arbutus menziessii*
Arrow-grass species	*Triglochin sp.*
Bigleaf maple	*Acer macrophyllum*
Canada thistle	*Cirsium arvense*
Common dandelion	*Taraxacum officionale*
Common orache	*Atriplex patula*
Common snowberry	*Symphoricarpos albus*
Dicranum moss	*Dicranum fuscescens*
Douglas fir	*Psuedotsuga menziessii*
Dull Oregon grape	*Mahonia nervosa*
English ivy	*Hedera helix*
Field chickweed	*Cerastium arvense*
Garry oak	*Quercus garryana*
Grand fir	*Abies grandis*
Hairy cat's ear	*Hypochaeris radicata*
Hawkweed spp.	*Hieracium spp.*
Hedgehog dogtail	*Cynosurus echinatus*
Himalayan blackberry	*Rubus armeniacus*
Hypogymnium lichen	*Hypogymnium sp.*
Large-leaved avens	*Geum macrophyllum*
Leafy spurge	*Daphne*
Miner's lettuce	*Claytonia perfoliata*
Mountain sweet cicely	*Osmorhiza chilensis.*
Nootka rose	*Rosa nutkana*
Oceanspray	*Holodiscus discolor*
Orchard grass	*Dactylis glomerata*
Oregon beaked moss	*Kindbergia oregana*
Oxeye daisy	*Leucanthemum vulgare*
Pacific crab apple	*Malus fusca*
Perrenial sow-thistle	*Sonchus arvensis*
Prickly sow-thistle	*Sonchus asper*
Racomitrium moss	*Racomitrium canescens*
Red huckleberry	*Vaccinium parvifolium*
Salal	*Gaultheria shallon*
Sanicle sp.	*Sanicula sp.*
Saskatoon	*Amalanchier alnifolia*
Scotch broom	*Cytisus scoparius*
Self heal	*Prunella vulgaris*
Silverweed cinquefoil	*Argentina anserina*

Small-flowered blue-eyed Mary	*Collinsa parviflora*
Sweet-scented bedstraw	*Galium triflorum*
Trailing blackberry	*Rubus ursinus*
Wall lettuce	*Lactula muralis*
Western buttercup	*Ranunculus occidentalis*
Western dock	*Rumex occidentalis*
Western hemlock	*Tsuga heterophylla*
Western trumpet	*Lonicera ciliosa*
Yarrow	*Achillea millefolium*

Invasive plants, including Scotch broom (*Cystisus scoparius*), spurge laurel (*Daphne laureola*), hawkweed spp. (*Hieracium spp.*), Himalayan blackberry (*Rubus armeniacus*), thistle spp. (*Cirsium spp.*) and English ivy (*Hedera helis*) were in several locations throughout the park. Adjacent private property to the south of the park could be contributing to influx of invasive species. No noxious weeds, listed and managed under the *BC Weed Control Act* (1996) were observed.

4.3.2 WILDLIFE

Wildlife observed during the field visit included the twenty-nine bird species identified in Table 5 and two mammal species. The bird species identified include both resident birds that overwinter within the park and surrounding area and neotropical migrants that are seasonally present and use the Park to breed.

Table 5. Bird species observed during field visits

Common Name	Scientific Name	Total Count
American Robin	*Turdus migratorius*	12
Anna's Hummingbird	*Calypte anna*	2
Bald Eagle	*Haliaeetus leucocephalus*	4
Belted Kingfisher	*Megaceryle alcyon*	2
Bewick's Wren	*Thryomanes bewickii*	2
Bonaparte's Gull	*Chroicocephalus philadelphia*	11
Bufflehead	*Bucephala albeola*	1
Bushtit	*Psaltriparus minimus*	4
California Quail	*Callipepla californica*	1
Chestnut-backed Chickadee	*Poecile rufescens*	5
Common Loon	*Gavia immer*	5
Common Murre	*Uria aalge*	1
Cooper's Hawk	*Accipiter cooperii*	1
Double-crested Cormorant	*Phalacrocorax auritus*	6
Eurasian Collared-Dove	*Streptopelia decaocto*	4
European Starling	*Sturnus vulgaris*	25
Glaucous-winged Gull	*Larus glaucescens*	2

Great Blue Heron	*Ardea herodias*	1
gull sp.	*Larinae sp.*	35
Harlequin Duck	*Histrionicus histrionicus*	9
Horned Grebe	*Podiceps auritus*	1
House Finch	*Haemorhous mexicanus*	11
House Wren	*Troglodytes aedon*	2
Mew Gull	*Larus canus*	6
Northern Flicker	*Colaptes auratus*	5
Northwestern Crow	*Corvus caurinus*	4
Orange-crowned Warbler	*Oreothlypis celata*	3
Pacific Loon	*Gavia pacifica*	64
Pacific Wren	*Troglodytes pacificus*	1
Pacific-slope Flycatcher	*Empidonax difficilis*	5
Pelagic Cormorant	*Phalacrocorax pelagicus*	2
Red-breasted Merganser	*Mergus serrator*	4
Red-breasted Nuthatch	*Sitta canadensis*	2
Red-necked Grebe	*Podiceps grisegena*	1
Ruby-crowned Kinglet	*Regulus calendula*	2
Song Sparrow	*Melospiza melodia*	4
Spotted Towhee	*Pipilo maculatus*	13
Surf Scoter	*Melanitta perspicillata*	123
Warbling Vireo	*Vireo gilvus*	1
White-crowned Sparrow	*Zonotrichia leucophrys*	6

A noteable sighting of 17 American white pelicans (*Pelecanus erythrorhynchos*) was made during the June 9, 2017 survey. This is considered an uncommon sighting for this region since American white pelicans nest in interior lakes such as Stum Lake near Alexis Creek in the Chilcotin and are not often sighted on the coast. They were observed from the park but were foraging adjacent to Rathtrevor Provincial Park. They are not reported in Table 5 since their presence did not occur within or adjacent to the park.

Waterfowl such as cormorants, mergansers, grebes and scoters are unlikely to use the park for nesting. Some, such as scoters, are only present in inland waters during winter and early spring and spend the remainder of the year in offshore or exposed coast habitat while others such as mergansers and loons breed inland in freshwater lakes or rivers.

Trees in the park were checked for nests with a particular focus on raptor nests. A single raptors nest, and several tree cavities were noted in the park. Several snags and trees with evidence of cavities occurred with evidence of tree topping. An occupied northern flicked nest was observed on May 19, 2017 (Photo 4)

A Bald Eagle nest was observed in the north beach location in a Douglas fir tree (Figure 1, Photo 5). The nest was observed to be occupied by at least one Bald Eagle nestling during the June and July surveys. This nest has been documented in the WiTS database under the IDs BAEA-105-049 and BAEA-105-133. The last activity recorded in the database is from 2008 although it is likely it has not been updated for this

location. The nest provides an attraction to park users who were present at the park on July 3, 2017 observing the occupied nest (Photo 6).

Red Squirrel (*Tamiasciurus hesdonicus*) are abundant at the Park with four being seen and evidence of use throughout. Pellets of black-tailed deer were also present (*Odocoileus hemionus columbianus*).

The terrestrial habitat within the project area is likely used by some amphibian species for migration and foraging; however, no habitat of particular importance to amphibians was observed within the park.

5 MANAGEMENT RECOMMENDATIONS

No species at risk, including Provincially red- or blue-listed, SARA Schedule 1 or COSEWIC-listed species were confirmed during biophysical assessments. Absence of these species cannot be confirmed with the current level of survey intensity; however, no particular species at risk were identified that would merit species-specific management recommendations.

The occurrence of invasive plants species within the park presents the most likely form of disruption of ecosystems within the park and perhaps the best opportunity to effect change and provide further degradation. Of particular importance are populations of Himalayan blackberry and spurge laurel (Photo 7). While these species can be removed relatively easily, control requires ongoing vigilance to prevent recolonization. Other exotic species such as hedgehog dogtail and orchard grass would be very difficult to control due to their widespread distribution and small size.

Mechanical removal is recommended as the most effective means of controlling invasive species. Hand-pulling, hand tools or power tools such as pruning saws or weed-eaters can all be used for mechanical control. Removal of all rooting material is difficult but will help to reduce re-colonization. Smaller individuals may be pulled out by hand but larger rooting systems may require digging to remove. If mechanical removal is not practicable, herbicide application directly to the remaining root crown can often be effective. Applying herbicide to an incision on the root crown (i.e., "hacking and squirting") is recommended to minimize the use of herbicides and prevent spread to native species. Control can be completed at any time of year but is most effective during the flowering season and should be completed prior to plants producing fruit. Based on the quantity of invasive species observed in the Park, initial removal is estimated at roughly two days for a parks crew or contractor. Plant material should be removed from site rather than mulched and left in place. Planting with native species following removal will help to reduce re-growth of the invasive species. Annual monitoring in the spring is recommended to identify and control further growth where necessary.

Ongoing monitoring of the eagle nest tree provides an opportunity to prevent disturbance. While no direct actions are recommended, activities on adjacent private land have some potential to disturb the nest. Typical residential construction is unlikely to have an effect; the most likely scenario for nest disruption would be blasting associated with any construction in the area.

6 FURTHER STUDIES

The results of this study provide some fundamental components of the biophysical assessment including ecosystem types, the occurrence of some species and wildlife signs. Due to the limited nature of the field surveys, not all species could be identified or documented. Further studies are likely to identify additional species that occur within the park.

7 REFERENCES

Green, R.N. and K. Klinka. 1994. A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region. Province of British Columbia, Research Branch, Ministry of Forests, Victoria, BC.

Important Bird Areas (IBA). 2016. Available at: http://www.ibacanada.ca/site.jsp?siteID=BC056 Accessed: October, 2016.

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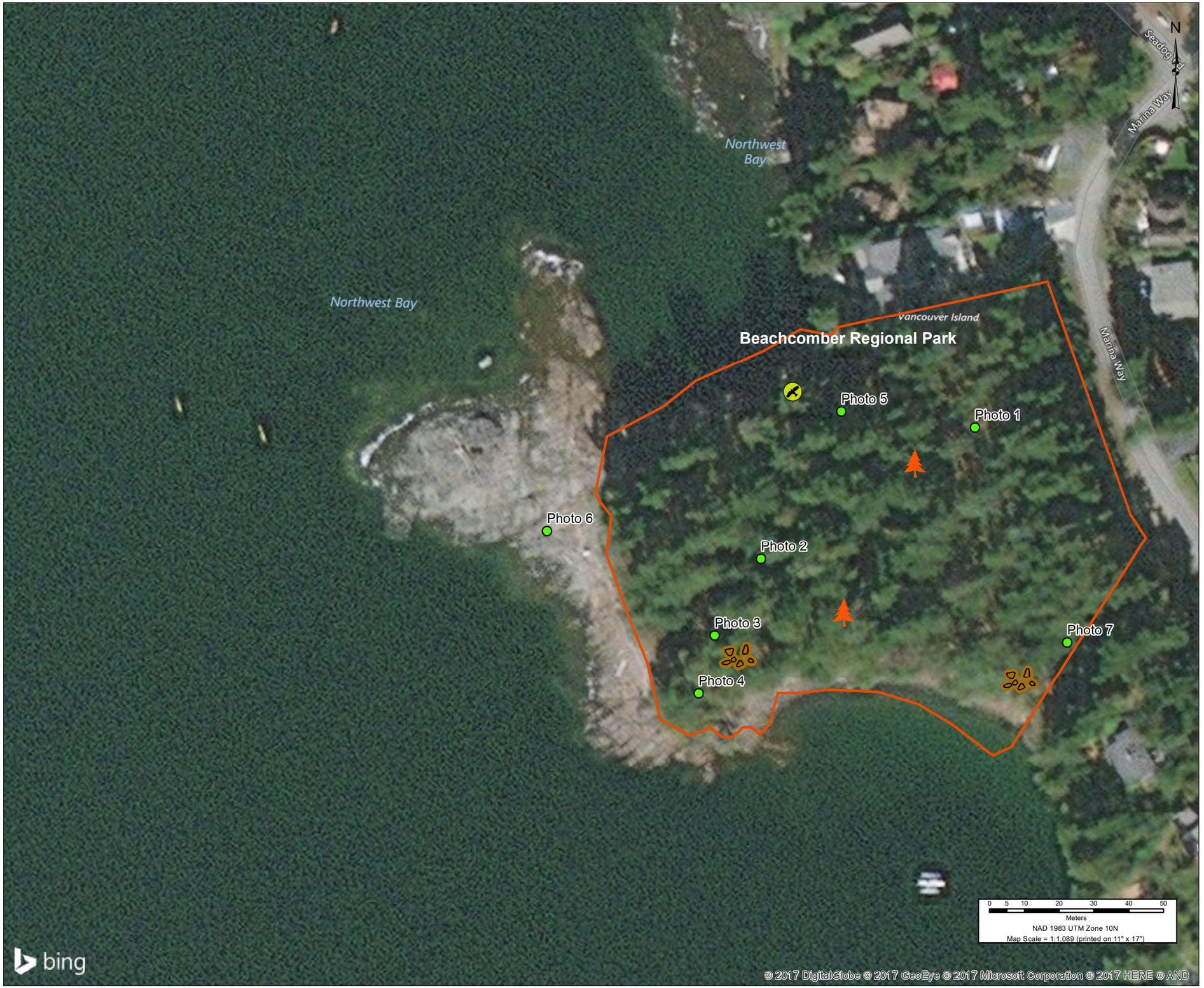
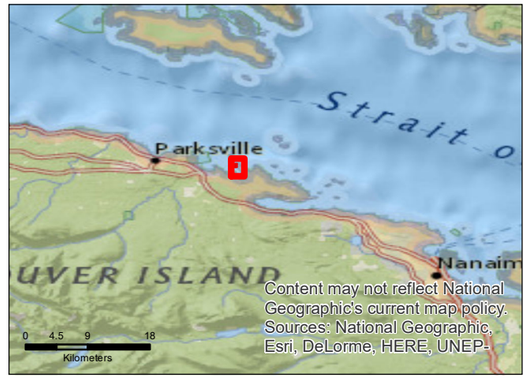
APPENDIX A. PARK MAP



Nanaimo Regional District
Beachcomber Regional Park

GENERAL LOCATION AND SURVEY



LEGEND

- Photo Locations
- Bald Eagle Nest
- Bluff
- Wildlife Tree
- Park Boundary(approximate)

Data Sources: Governmat of Alberta, National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI,NRCAN, GEBCO, NOAA,
Disclaimer: Contains information licensed under the Open Government License - Alberta, Canada. Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

Drawn: P. Jost	Checked: A. Smith
Date: 7/14/2017	EDI Project Number: 16N0357

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APPENDIX B. PHOTOGRAPHS

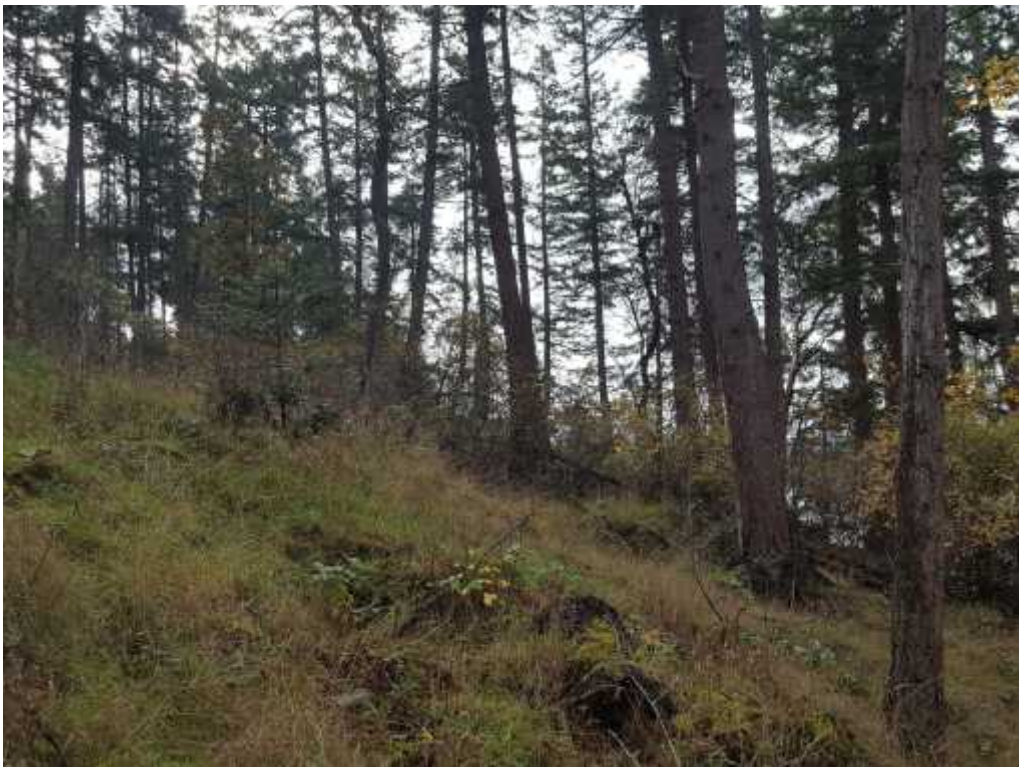

Photo 1. Overview of forested area with open subcanopy and grassy herb layer

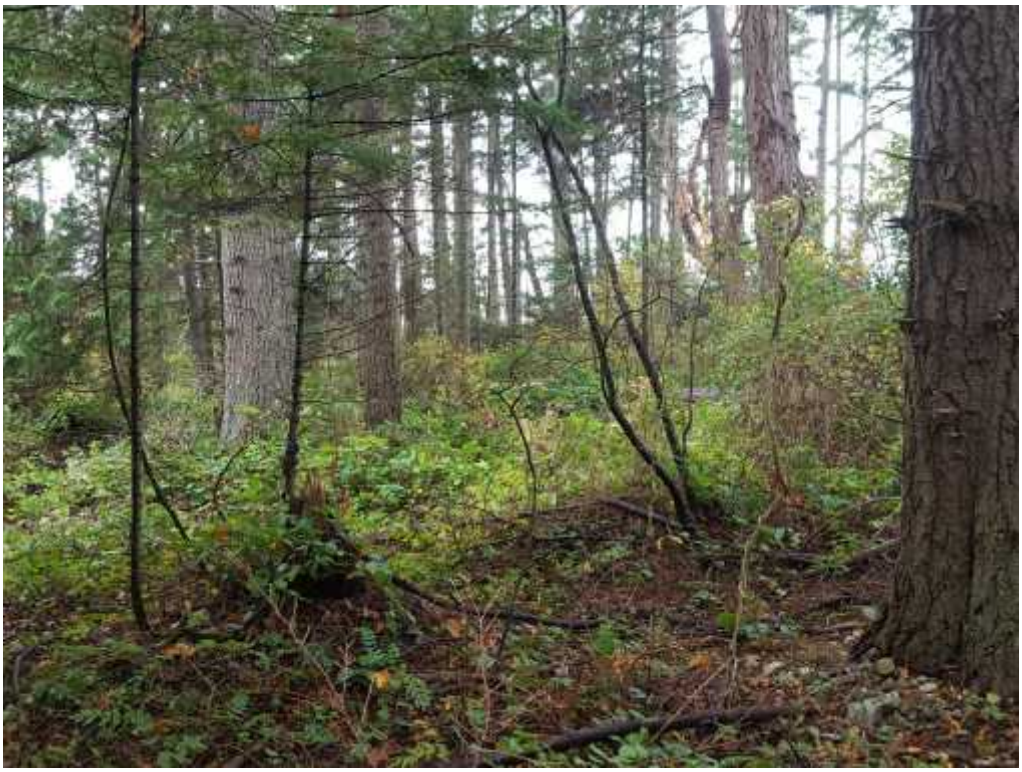

Photo 2. Wetter area with abundant shrub and herb layer

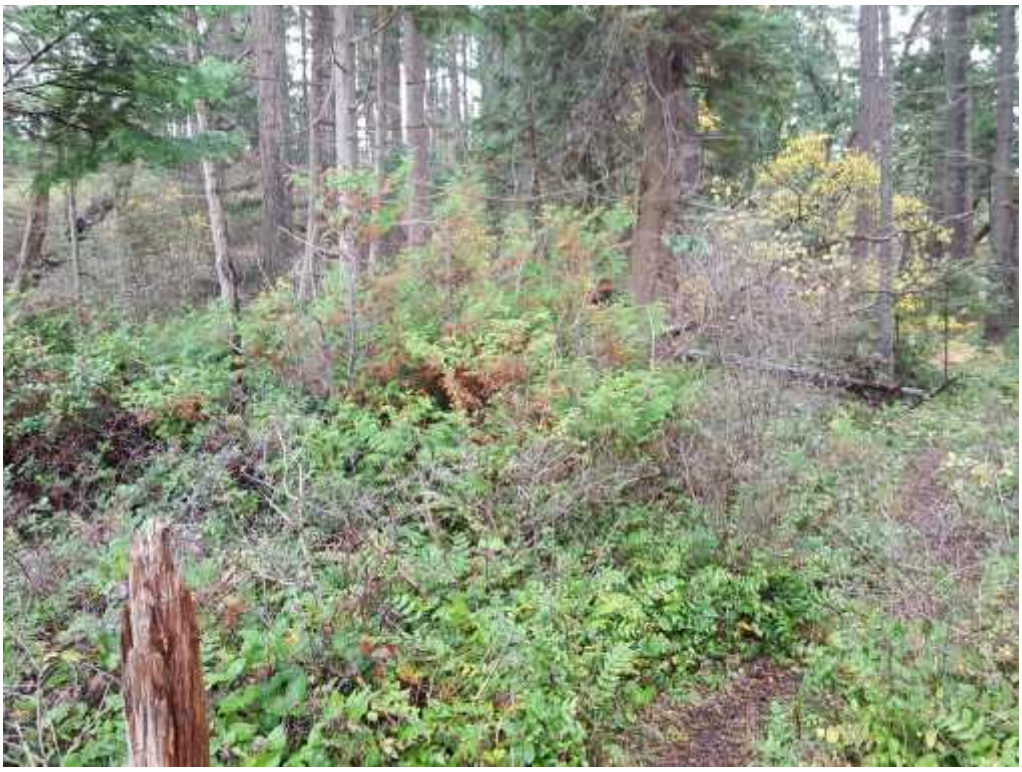

Photo 3. Drier component of site with salal and dull Oregon grape

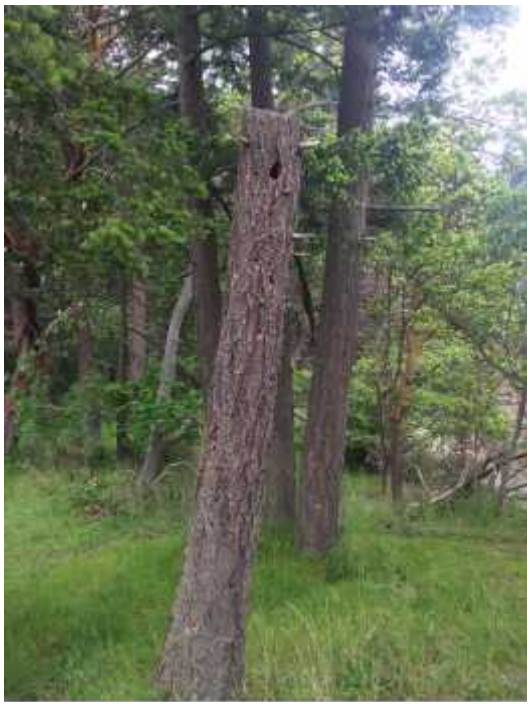

Photo 4. Occupied northern flicker nest observed on May 19, 2017

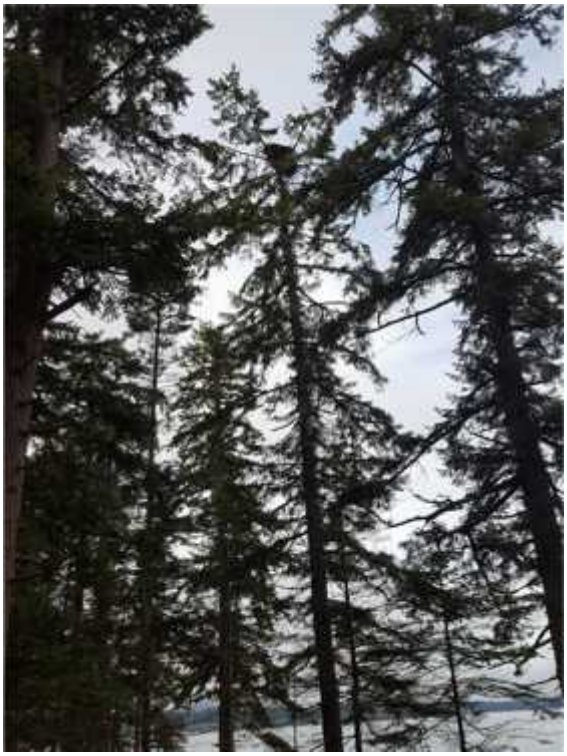

Photo 5. Bald eagle nest as observed on October 18, 2016.

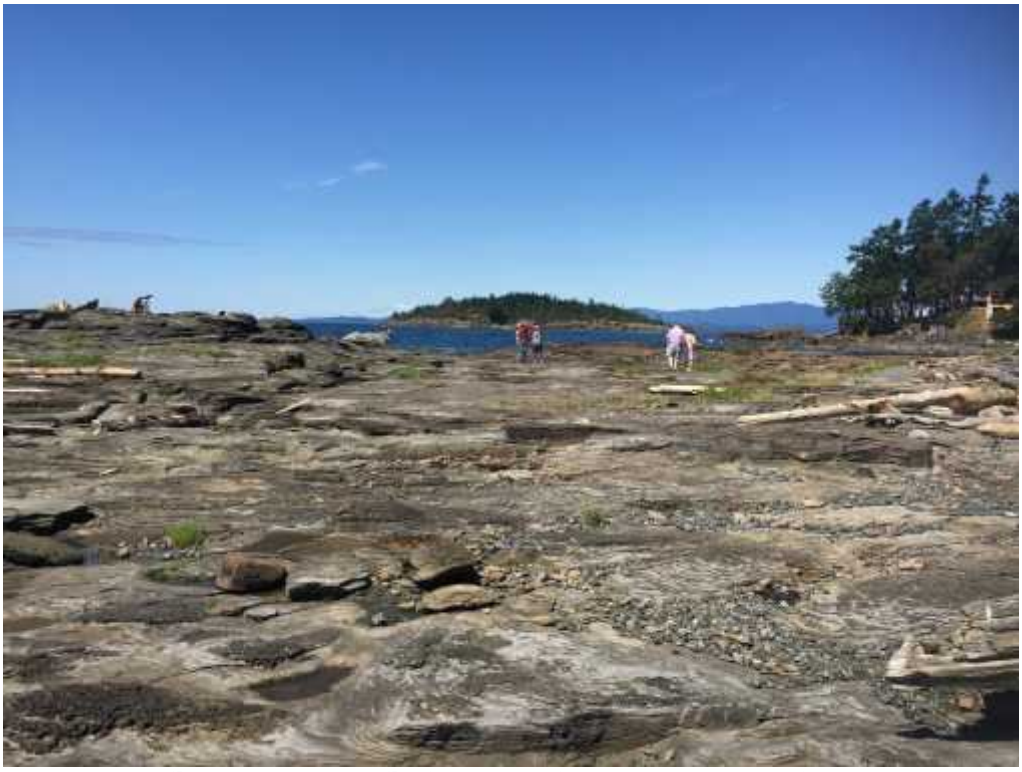

Photo 6. Park users observing occupied bald eagle nest on July 3, 2017

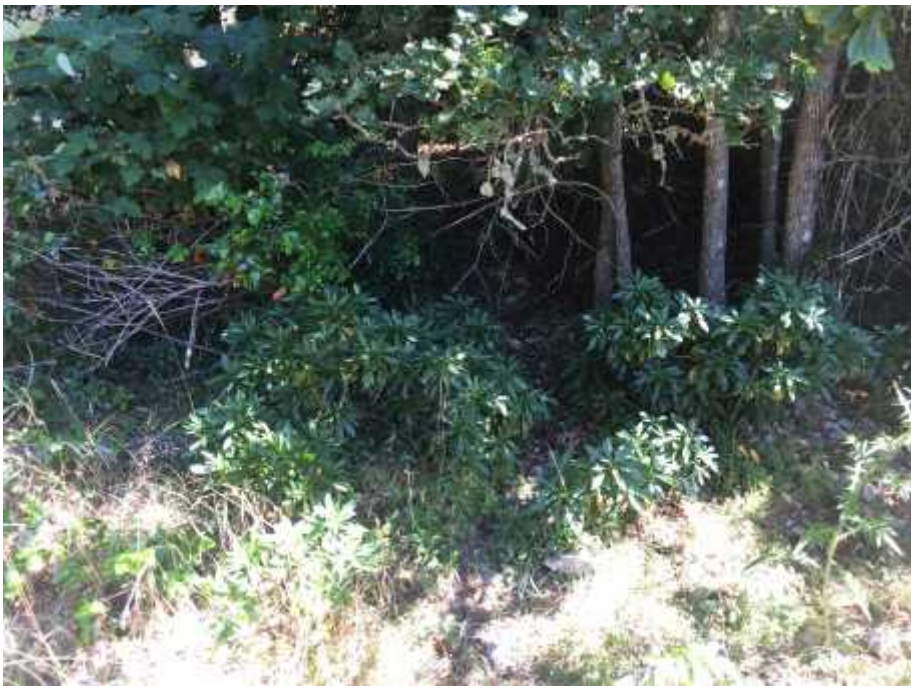

Photo 7. Invasive species, including Himilayan blackberry (top left), leafy spurge (centre) and Canada thistle (lower right).