



Working Report 2010-68

# Game Statistics for the Island of Olkiluoto in 2009–2010

Marko Nieminen

October 2010

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or pending completion.

The conclusions and viewpoints presented in the report  
are those of author(s) and do not necessarily  
coincide with those of Posiva.

## **ABSTRACT**

The game statistics for the island of Olkiluoto were updated in the spring 2010, and compared with earlier studies. Population size estimates are based on interviews of local hunters, and on other material available. No Elk nor Deer inventories were made in the winter 2009–2010.

The Elk population is still slightly decreasing. The White-tailed Deer population was made smaller by hunting. The changes in the Roe Deer population are not known accurately, but population size varies somewhat from year to year.

The number of hunted small predators approximately doubled in the latest hunting season. Altogether 17 waterfowl were hunted in 2009 (none in the previous year).

The populations of Mountain Hare and Red Squirrel are abundant. The Brown Hare population is still small, even though there was one brood in Olkiluoto in 2009.

**Keywords:** Game statistics, hunting, Olkiluoto.

## **OLKILUODON RIISTATILASTOT METSÄSTYSKAUDELTA 2009–2010**

### **TIIVISTELMÄ**

Olkiluodon saaren riistaeläimistön saalistiedot päivitettiin keväällä 2010. Riistaeläinten populaatiokoot arvioitiin metsästäjiltä saatujen saalistietojen ja saatavilla olevan muun tiedon perusteella. Nyt saatua aineistoa metsästyskaudelta 2009–2010 verrattiin aiempiin saarelta tehtyihin riistaeläintilastoihin. Talvella 2009–2010 ei tehty hirvieläinten laskentoja, joten kantojen suuruudet ovat arvioita.

Alueen suurista riistaeläimistä hirvikanta on edelleen hivenen laskussa. Valkohäntäkauriin (ent. valkohäntäpeura) kanta pienennettiin metsästyksellä. Metsäkauriskannan muutoksista ei ole tarkkaa tietoa, mutta kannan koko vaihtelee jonkin verran vuosittain.

Pienriistan metsästys on lisääntynyt huomattavasti. Pienpetoja metsästettiin noin kaksinkertainen määrä edelliseen metsästyskauteen verrattuna. Lisäksi 17 vesilintua raportoitiin ammutuiksi vuonna 2009, kun vuonna 2008 ei ammuttu yhtään.

Metsäjäniksen ja oravan kannat ovat edelleen runsaita. Rusakkokanta on puolestaan yhä pieni, vaikkakin Olkiluodossa oli myös yksi rusakkopoikue vuonna 2009.

**Avainsanat:** Metsästys, Olkiluoto, riistatilasto.

## TABLE OF CONTENTS

ABSTRACT

TIIVISTELMÄ

1	INTRODUCTION AND STUDY AREA.....	2
2	MATERIAL AND METHODS .....	3
3	GAME ANIMALS IN OLKILUOTO .....	4
3.1	Mammals.....	4
3.1.1	Elk ( <i>Alces alces</i> ) .....	4
3.1.2	White-tailed Deer ( <i>Odocoileus virginianus</i> ).....	5
3.1.3	Roe Deer ( <i>Capreolus capreolus</i> ) .....	6
3.1.4	Red Fox ( <i>Vulpes vulpes</i> ).....	8
3.1.5	Raccoon Dog ( <i>Nyctereutes procyonoides</i> ) .....	8
3.1.6	European Badger ( <i>Meles meles</i> ) .....	9
3.1.7	American Mink ( <i>Neovison vison</i> ) .....	10
3.1.8	Pine Marten ( <i>Martes martes</i> ) .....	10
3.1.9	Mountain Hare ( <i>Lepus timidus</i> ).....	11
3.1.10	Brown Hare ( <i>Lepus europaeus</i> ).....	11
3.1.11	Muskrat ( <i>Ondatra zibethicus</i> ).....	12
3.1.12	Red Squirrel ( <i>Sciurus vulgaris</i> ) .....	12
3.2	Birds .....	12
3.2.1	Mallard ( <i>Anas platyrhynchos</i> ) .....	12
3.2.2	Teal ( <i>Anas crecca</i> ).....	13
3.2.3	Hazel Grouse ( <i>Bonasa bonasia</i> ).....	13
3.2.4	Black Grouse ( <i>Tetrao tetrix</i> ).....	14
3.2.5	Woodcock ( <i>Scolopax rusticola</i> ) .....	14
3.2.6	Hooded Crow ( <i>Corvus corone</i> ) .....	14
3.2.7	Other species.....	15
4	DISCUSSION .....	16
	REFERENCES .....	17
	APPENDIX 1. NOMENCLATURE OF THE SPECIES.....	19
	APPENDIX 2. AVERAGE WEIGHTS OF THE SPECIES.....	20

## **1 INTRODUCTION AND STUDY AREA**

The island of Olkiluoto (ca. 12 km<sup>2</sup>) is situated off the Finnish coast in the Bothnian Sea. The coast is characterised by shallow bays surrounded by small islands and skerries. The soil of this relatively flat island consists mainly of gravel, sand and fine-textured till. There are also some sedge and sphagnum peat soils, and exposed bedrock. The landscape at Olkiluoto is characterised by forests: pine, spruce, mixed coniferous, mixed deciduous/coniferous forests and deciduous forests. There are some small mires and near shore also meadows and shore scrubs. The whole local hydrogeochemical and biological system is affected by the postglacial land up-lift (6 mm/y) typical to the Finnish western coast.

There are two nuclear power plant units situated in Olkiluoto and a third one is under construction. Olkiluoto has also been selected as a location for final repository of spent nuclear fuel, and currently a test repository cave is under construction. These projects have taken over a large land area on the island and led to rather heavy traffic.

This report was ordered by Posiva Oy and completed by Faunatica Oy.

## 2 MATERIAL AND METHODS

The first estimate of game populations in Olkiluoto, based on interviews of local hunters and available statistical material, was composed in 2002 (Kaapu 2003). Next interviews were carried out in winter 2003-2004 (Ranta et al. 2005), updated by new interviews in January and March 2006 (Oja & Oja 2006) and in March 2007 (Oja & Oja 2007). The most recent interviews were conducted in March 2008 and April 2009 (Jussila & Nieminen 2008, 2009).

To update the game estimates again, new interviews were carried out in April 2010. This report is based on interviews of Antti Kallio from the local hunting group (Olkiluodon metsästysseura ry) and their annual action report (Kallio 2010). All data consist of actual numbers of killed animals during the hunting season. However, no inventories of the remaining stock were made during this hunting season, so those numbers are educated guesses presented by the local hunters. Mean population densities were calculated from those statistics. Hunting statistics from the surrounding area have been used to evaluate these numbers (Impola & Laaja 2010a, b). They were presented by Jari Toivonen, who is the chairman of the society of game preservation in SW Satakunta (Lounais-Satakunnan riistanhoitoyhdistys).

Information on home range sizes is usually based on a combination of data from several sources, in which case references are not specified in section 3. A list of scientific names of species included in the report is in Appendix 1 with common names in English and Finnish. The average weights of game species are shown in Appendix 2. The literature used to construct species descriptions and Appendix 2 is listed in section 5 (References).

### 3 GAME ANIMALS IN OLKILUOTO

#### 3.1 Mammals

##### 3.1.1 Elk (*Alces alces*)

**Habitat use:** Elk typically inhabits boreal coniferous and mixed deciduous forests, and prefers continuously forested areas and relatively young forests. In spring and early summer elks are often seen on more open habitats such as mires. In the summer months they mainly inhabit areas with young deciduous trees around woodland glades and clearings, in the autumn they gather together in mature forests, in early winter along forest streams and rivers, and in the wintertime they prefer pine seedlings and young birch but also mature forests with lighter snow cover. Their home range is 5-10 km<sup>2</sup> on average.

**Main food source(s):** Elk consumes a variety of vegetation: leaves, needles, twigs and buds of trees (birch, aspen, willow, rowan) and shrubs (blueberry, lingonberry, heather), sprouts of cereals, grains and also some aquatic and terrestrial herbaceous plants. In winter it feeds on twigs and buds of trees and shrubs, bark and buds of pine and aspen, pine needles, juniper and lichens. Elk rarely feeds on spruce. Elks eat daily up to 50 kg in summertime and 10-20 kg in winter.

**Densities:** Density after hunting in winter 2009-2010 was ca. 2.5 inds./1000 ha in Olkiluoto. In Satakunta the mean density was ca. 2.8 inds./1000 ha and in SW Satakunta 3.1 inds./1000 ha after the hunt in winter 2009-2010.

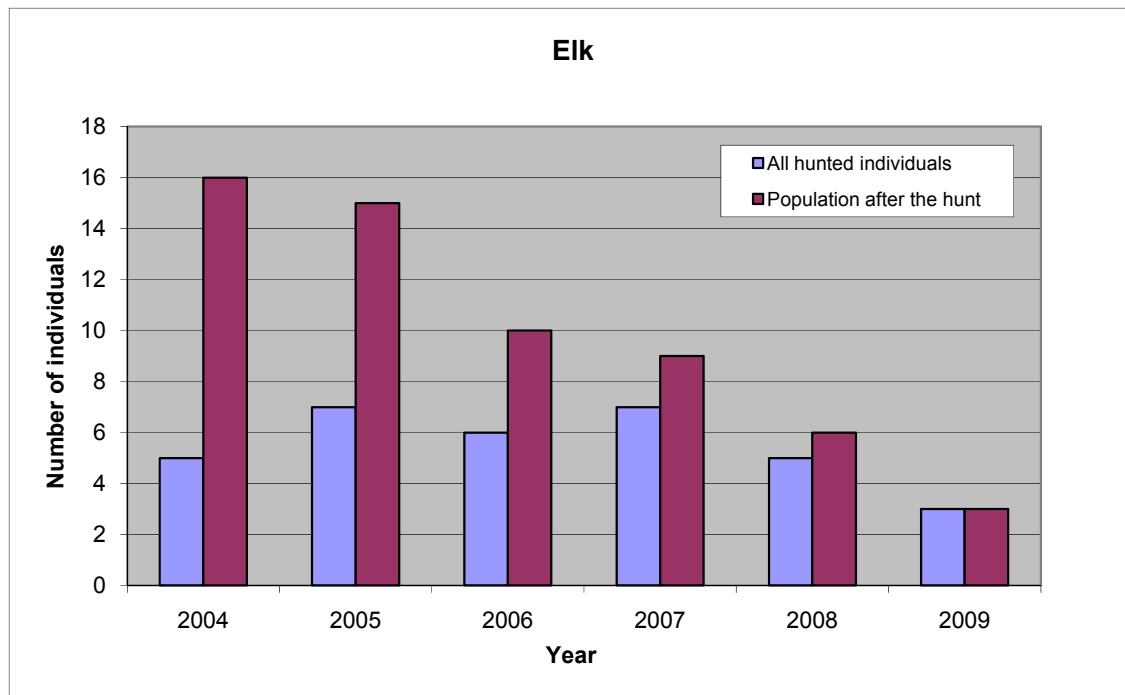
**Hunting period:** 26.9. – 31.12.2009.

**Hunting in 2009:** One adult Elk and two fawns were brought down in Olkiluoto (Table 1) (Kallio 2010). The estimated size of the Elk population after the hunting season is three individuals (Fig. 1). Disturbance by workers at Olkiluoto has increased in the field and apparently this has decreased the Elk population. It is possible that some Elks have moved to mainland from Olkiluoto. Likewise, there is some migration between Olkiluoto and the surrounding archipelago.

*Table 1. Numbers of hunted Elks and estimated population size after hunting in different years.*

Elk	2004	2005	2006	2007	2008	2009
Hunted adults	3	2		3	1	1
Hunted fawns	2	5		4	4	2
All hunted individuals	5	7	6	7	5	3
Population after the hunt	16	15	10	9	6	3





**Figure 1.** Numbers of hunted Elks (all individuals) and estimated population sizes in different years.

### 3.1.2 White-tailed Deer (*Odocoileus virginianus*)

**Habitat use:** White-tailed Deer is a generalist and can use a wide variety of habitats. Mostly it is a forest animal depending on relatively small openings and edges. In the mornings and in the evenings White-tailed Deer can be seen grazing on the fields. Their home range is typically 10-100 ha.

**Main food source(s):** White-tailed Deer eats a variety of vegetation: grasses, herbaceous plants, leaves, needles, young shoots, acorns, mushrooms, sprouts of cereals, grains, root vegetables (sugar-beet), fruits and other cultivated plants. In winter, it feeds on shrubs (blueberry, lingonberry, heather), twigs, buds and bark of trees (aspen, willow, rowan) and also juniper, pine needles and lichens. It can also eat some fern and mosses, but consumes spruce rarely.

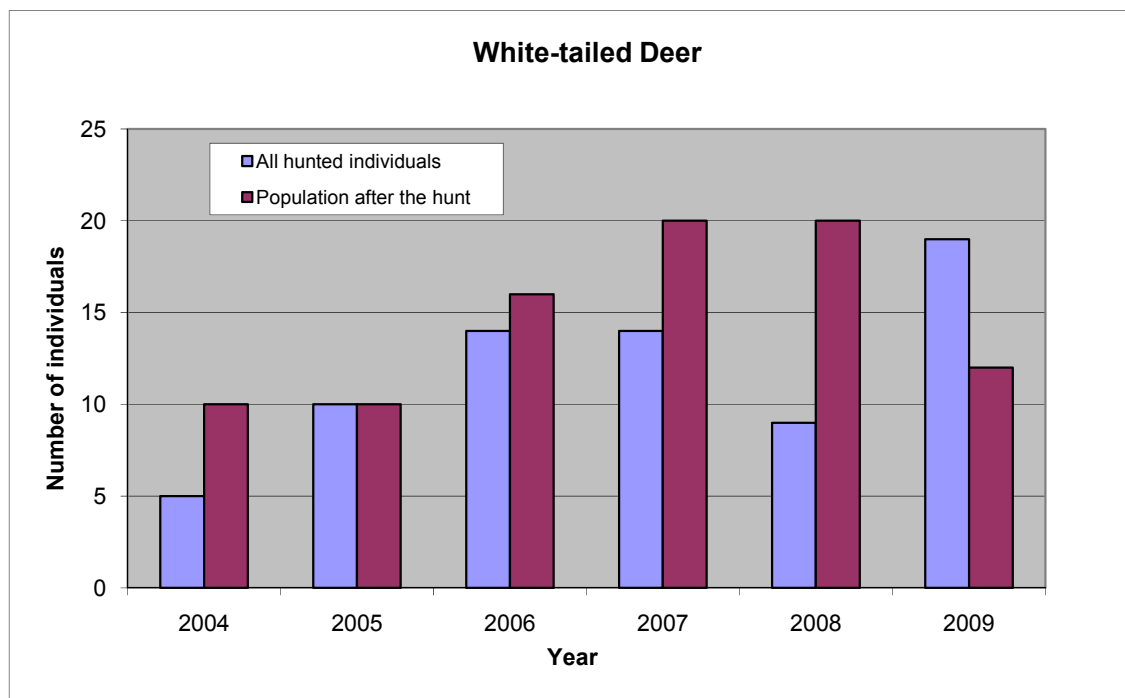
**Densities:** Density after hunting in winter 2009-2010 was ca. 10 inds./1000 ha in Olkiluoto. In both Satakunta and SW Satakunta the mean density was ca. 5.2 inds./1000 ha after the hunt in 2009-2010.

**Hunting period:** 26.9.2009 – 31.1.2010.

**Hunting in 2009-2010:** Altogether 19 White-tailed Deer were brought down in 2009-2010 (Table 2) (Kallio 2010). The estimated size of the White-tailed Deer population was 12 individuals after the hunting season of 2009-2010 (Fig. 2). The exact number of remaining stock is difficult to determine because all individuals cannot be observed in wintertime.

**Table 2.** Numbers of hunted White-tailed Deer and estimated population size after hunting in different hunting seasons.

White-tailed Deer	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Hunted adults					3	7
Hunted fawns					6	12
All hunted individuals	5	10	14	14	9	19
Population after the hunt	10	10	16	20	20	12



**Figure 2.** Numbers of hunted White-tailed Deers and estimated population sizes in different hunting seasons (year indicates the start of the season).

### 3.1.3 Roe Deer (*Capreolus capreolus*)

**Habitat use:** Roe Deer lives mostly in woods, although it ventures regularly out to the grasslands, fields and sparse forests. Their home range in summertime is 50-100 ha on average.

**Main food source(s):** Roe Deer feeds mainly on grasses, herbaceous plants, leaves, young shoots, berries, mushrooms, sprouts of cereals and grains. It particularly likes very young, tender grass with a high content of moisture, i.e. grass that has been watered by rain the

previous day. In winter Roe Deer feeds on shrubs and lichens, twigs, buds and bark of trees and also some juniper and pine needles.

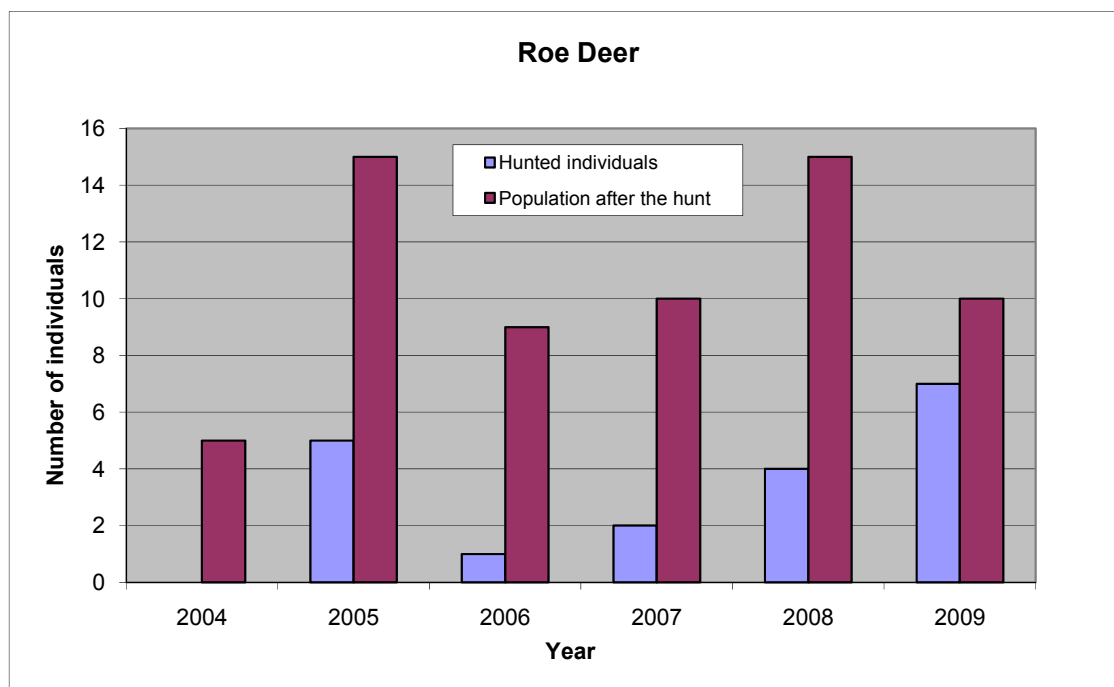
**Densities:** Density after hunting in 2009-2010 was ca. 8.3 inds./1000 ha in Olkiluoto.

**Hunting period:** Female and fawn 1.9. – 31.1.2009; male 1.9. – 31.1.2009 and 16.5. – 15.6.2010.

**Hunting in 2009-2010:** Seven Roe Deer were brought down in 2009 (Table 3) (Kallio 2010). The estimated size of the Roe Deer population after the hunting season was 10 individuals (Fig. 3). The exact number of hunted animals is not known for certain because hunting of Roe Deer is free and all hunters don't report the number they have killed. Furthermore the remaining stock is difficult to determine because all individuals cannot be observed in wintertime.

**Table 3.** Numbers of hunted Roe Deer and estimated population size after the hunting in different hunting seasons.

Roe Deer	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Hunted individuals	0	5	1	2	4	7
Population after the hunt	5	15	9	10	15	10



**Figure 3.** Numbers of hunted Roe Deer and estimated population size after hunting in different hunting seasons (year indicates the start of the season).

### 3.1.4 Red Fox (*Vulpes vulpes*)

**Habitat use:** Red Fox is a generalist and can adapt to a wide variety of habitats but is mainly found from forests, copses and field thickets, often in places with rock cavities or sandy ground. It can live in cultivated areas and near developments. In good habitats its home range is 5-12 km<sup>2</sup> and in poor habitats 12-50 km<sup>2</sup>. In a case study in Virolahti their home range was 5.7 km<sup>2</sup> on average (Kauhala et al. 2006). The dispersal distances of young females were 21 km and that of young males 29 km (Kauhala et al. 2006).

**Main food source(s):** Red Fox feeds mostly on various vertebrates, especially rodents (such as water voles, voles and mice), but also insects, molluscs, berries and fruits. They eat birds and eggs when available (Kauhala 2004, Kauhala et al. 1998). It can also catch bigger animals, like Mountain Hare, Brown Hare and even Roe Deer fawn. Sometimes it feeds on carrion and waste of foodstuff, such as surplus of butcheries and fisheries.

**Densities:** In Satakunta the mean density was 0.50-0.59 inds./km<sup>2</sup> in springtime 2007 (Kauhala 2007). In a case study in Virolahti their average density was 0.44 inds./km<sup>2</sup> (Kauhala et al. 2006).

**Hunting period:** Whole year but a female with cubs is not allowed to be killed 1.5. – 31.7.

**Hunting in 2009:** Only one Red Fox were killed at Olkiluoto in 2009 (Table 4) (Kallio 2010). There are no apparent changes in Red Fox population. In Olkiluoto area Red Foxes move freely to and from mainland and there is also migration between Olkiluoto and the surrounding archipelago.

*Table 4. Numbers of hunted Red Foxes in different years.*

Red Fox	2002	2003	2005	2006	2007	2008	2009
Hunted individuals	1	7	1	3	2	1	1

### 3.1.5 Raccoon Dog (*Nyctereutes procyonoides*)

**Habitat use:** Raccoon Dog lives in broadleaved and mixed woodlands intersected by streams and other water elements, and in scrubby and cultivated areas. Its home range is 2-10 km<sup>2</sup>. In a case study in Virolahti their home range was 2.6 km<sup>2</sup> on average (Kauhala et al. 2006). The dispersal distances of young females were 14 km and of young males 19 km (Kauhala et al. 2006).

**Main food source(s):** Raccoon Dog feeds on small mammals (also shrews) but also insects, larvae, earthworms, berries, fruits and grains. They eat birds and birds' eggs when available and also aquatic organisms including fish (Kauhala 2004, Kauhala et al. 1998). Raccoon Dog consumes also reptiles and amphibians. It feeds on carrion and waste of foodstuff. It can also scavenge food from bins and gardens.

**Densities:** In Satakunta the mean density was 0.60-0.69 inds./km<sup>2</sup> in springtime 2007 (Kauhala 2007). In a case study in Virolahti their average density was 0.77 inds./km<sup>2</sup> (Kauhala et al. 2006).

**Hunting period:** Whole year but a female with cubs is not allowed to be killed 1.5. – 31.7.

**Hunting in 2009:** Six Raccoon Dogs were reported killed in Olkiluoto (Table 5) (Kallio 2010). The number of catches does not necessarily indicate the population size, because formerly the hunting of Raccoon Dog has been much more effective. In autumn Raccoon Dogs move around considerably, especially the young individuals.

*Table 5. Numbers of hunted Raccoon Dogs in different years.*

Raccoon Dog	2002	2003	2004	2005	2006	2007	2008	2009
Hunted individuals	12	19	10	9	2	0	3	6

### 3.1.6 European Badger (*Meles meles*)

**Habitat use:** Badger lives in broadleaved and mixed woodlands and scrubby country intersected by fields and other kind of open areas. It can live in cultivated areas, near developments and even in urban area. In Southern Finland its home range in winter is 3.9 km<sup>2</sup> on average and in summertime 7.8 km<sup>2</sup> on average (Holmala 2008). In a case study in Virolahti their home range was 6.7 km<sup>2</sup> on average (Kauhala et al. 2006).

**Main food source(s):** The diet of Badger consists of earthworms, insects, small mammals, reptiles, amphibians, eggs, young birds, berries, fruit, and other plant matter, depending on the season (Kauhala 2004, Kauhala et al. 1998). Badgers can also dig up the nests of wasps and bumblebees in order to eat their larvae. They also feed on carrion and waste of foodstuff and butchery. In urban areas some badgers can scavenge food from bins and gardens.

**Densities:** In Satakunta the mean density was 0.20-0.29 inds./km<sup>2</sup> in springtime 2007 (Kauhala 2007). In a case study in Virolahti their average density was 0.26 inds./km<sup>2</sup> (Kauhala et al. 2006).

**Hunting period:** Whole year but a female with cubs is not allowed to be killed 1.5. – 31.7.

**Hunting in 2009:** No Badger was killed in Olkiluoto (Table 6) (Kallio 2010) though they exist on the island.

*Table 6. Numbers of hunted European Badgers in different years.*

Badger	2002	2003	2004	2005	2006	2007	2008	2009
Hunted individuals	0	1	0	0	0	0	1	0



### 3.1.9 Mountain Hare (*Lepus timidus*)

**Habitat use:** Mountain Hare is found in different habitats but it prefers forests and woodland glades, clearings, copses and field thickets. Its home range is from 2 to over 10 ha on average but in wintertime it can be up to 200 ha (Perkkiö 2008).

**Main food source(s):** The diet of Mountain Hare consists mainly of grasses, clovers, vetches, sprouts of oat, leaves (willow and aspen), shrubs (blackberry) but reed, sedge and herbs and berries are part of the nutrition. In winter Mountain Hare nibbles on the shoots and bark of young trees (birch, aspen, willow, rowan, juniper) and shrubs (blackberry).

**Hunting period:** 1.9.2009 – 28.2.2010.

**Hunting in 2009-2010:** Five Mountain Hares were killed in Olkiluoto (Table 9) (Kallio 2010). There is a strong population of Mountain Hare in Olkiluoto.

*Table 9. Numbers of hunted Mountain Hares in different hunting seasons.*

Mountain Hare	2002	2003	2004	2005	2006	2007	2008	2009
Hunted individuals	3	2	0	2	0	0	3	5

### 3.1.10 Brown Hare (*Lepus europaeus*)

**Habitat use:** Brown Hare is found in cultivated areas and forest margins, and also sand dunes. It can live near developed areas and even in parks in urban area. Its home range is from 2 to over 20 ha on average.

**Main food source(s):** The diet consists mainly of grasses, clovers, vetches, yarrow, herbs and sprouts of cereals. In winter Brown Hare eats sprouts of cereals, grasses and hay, but also nibbles on the shoots and bark of young trees.

**Hunting period:** 1.9.2009 – 28.2.2010.

**Hunting in 2009-2010:** One Brown Hare was killed in Olkiluoto (Table 10) (Kallio 2010). There is a continuous population of Brown Hare in Olkiluoto, even though it is much smaller than the population of the Mountain Hare. A Brown Hare brood existed exceptionally in Olkiluoto in 2009. Of those, at least one was run over by a car, one killed by Eagle Owl and one was hunted.

*Table 10. Numbers of hunted Brown Hares in different hunting seasons.*

Brown Hare	2003	2004	2005	2006	2007	2008	2009
Hunted individuals	1	0	2	0	0	0	1

### 3.1.11 Muskrat (*Ondatra zibethicus*)

**Habitat use:** Muskrat is found on the banks of flowing and standing water bodies with luxuriant shore and aquatic vegetation. It also lives on the seaside if there is protective archipelago. Along 1 km of shore there can be ten muskrats during the summer and three during the winter.

**Main food source(s):** The diet consists of both plants and animals. Most popular plants are cattail, common club-rush, sedges, water horsetail and sometimes common reed. In wintertime mussels are important food for Muskrat and it feeds also on crayfish and dead fishes, but it cannot catch living fish.

**Hunting period:** 1.10.2009 – 19.5.2010.

**Hunting in 2009-2010:** No Muskrat was killed in Olkiluoto (Kallio 2010). Muskrat is probably absent in Olkiluoto nowadays.

### 3.1.12 Red Squirrel (*Sciurus vulgaris*)

**Habitat use:** Red Squirrel is found on woodlands, parks and gardens, often in the immediate vicinity of humans. Its home range is 2-5 ha on average.

**Main food source(s):** Red Squirrel eats mostly the seeds of coniferous (spruce, pine) trees, neatly stripping conifer cones to get at the seeds within. Mushrooms, berries, young shoots, buds, flowers, fruits and nuts are also parts of the diet. Often Red Squirrel removes the bark of trees to access sap. Occasionally Red Squirrel eats animal food like birds' eggs, nestlings, insects and larvae.

**Hunting period:** 1.12.2009 – 31.1.2010.

**Hunting in 2009-2010:** No Red Squirrel was killed (Kallio 2010), though there is a strong population of Red Squirrel in Olkiluoto.

## 3.2 Birds

### 3.2.1 Mallard (*Anas platyrhynchos*)

**Habitat use:** Mallard is found near all types of wetland habitats, except the least productive and most barren waters. It also lives on seashore.

**Main food source(s):** Feeds on insects and larvae, other (mainly aquatic) invertebrates, seeds, aquatic vegetation and grain.

**Densities:** There are on average 3.5 nesting pairs per km<sup>2</sup> on lakes and river estuaries in Satakunta. Mallard is quite abundant also at seashore and in the inner archipelago. In Olkiluoto, estimated number of pairs was 30 in 2008 (Yrjölä 2009).



**Hunting period:** 20.8. – 31.12.2009.

**Hunting in 2009:** Four Mallards were hunted (Kallio 2010). There is a stable population of Mallard in Olkiluoto.

### 3.2.2 Teal (*Anas crecca*)

**Habitat use:** Teal prefers freshwater pools, lakes and streams with luxuriant shore vegetation, preferring shallower waters and smaller ponds and pools in breeding season. It also lives on seashore.

**Main food source(s):** Feeds on insects and larvae, other aquatic invertebrates like gastropods, and seeds and aquatic vegetation.

**Densities:** There are on average 2.9 nesting pairs per km<sup>2</sup> on lakes in Satakunta. However, Teal is much rarer at bays of the Baltic than on the mainland. In Olkiluoto, estimated number of pairs was 2 in 2008 (Yrjölä 2009).

**Hunting period:** 20.8. – 31.12.2009.

**Hunting in 2009:** No Teals were hunted in Olkiluoto (Kallio 2010).

### 3.2.3 Hazel Grouse (*Bonasa bonasia*)

**Habitat use:** Hazel Grouse inhabits different kinds of mixed forests, but favours dense spruce forests with some deciduous trees. It prefers glens of streams and coastal areas of lakes and the sea, where alder is abundant.

**Main food source(s):** Hazel Grouse feeds mostly on the ground, feeding mainly on plant food like leaves and shoots of herbaceous plants and shrubs, seeds and berries, supplemented by insects when breeding. Fledglings of Hazel Grouse eat insects. In winter Hazel Grouse eats buds and catkins of deciduous trees (alder, birch).

**Densities:** There are on average 6.3 inds./km<sup>2</sup> of Hazel Grouse in Satakunta and 5.2 inds./km<sup>2</sup> in SW Satakunta. In Olkiluoto, estimated density was 4.5 inds./km<sup>2</sup> in 2008 (Yrjölä 2009).

**Hunting period:** 10.9. – 31.10.2009.

**Hunting in 2009:** Three Hazel Grouses were hunted (Kallio 2010). There is a stable population of Hazel grouse in Olkiluoto.

### 3.2.4 Black Grouse (*Tetrao tetrix*)

**Habitat use:** Black Grouse inhabits bright boreal forests near moorland, bog areas and fields. It also lives in the archipelago. In winter Black Grouses gather to birch forests, where they find enough food.

**Main food source(s):** Black Grouse feeds mainly on plants like leaves, shoots and buds of shrubs, seed, berries and herbaceous plants. It also eats sprouts of cereals and grains on the fields. Fledglings of Black grouse eat insects, spiders and other small animals. In winter Black Grouse eats buds and catkins of birch, aments of alder and pine needles.

**Densities:** There are on average 4.9 inds./km<sup>2</sup> of Black Grouse in Satakunta and 3.4 inds./km<sup>2</sup> in SW Satakunta. In Olkiluoto, estimated density was 0.3 inds./km<sup>2</sup> in 2008 (Yrjölä 2009).

**Hunting period:** 10.9. – 31.10.2009.

**Hunting in 2009:** No Black Grouses were caught (Kallio 2010), though there is a small population of Black Grouse in Olkiluoto (a flock of five males was seen in autumn).

### 3.2.5 Woodcock (*Scolopax rusticola*)

**Habitat use:** Woodcock inhabits moist boreal forests, luxuriant mixed forests and broadleaved groves.

**Main food source(s):** Woodcock mainly eats earthworms, larvae, snails, insects and other invertebrates, but also plant material like seed and berries.

**Densities:** There are on average 0.9 nesting pairs of Woodcock per km<sup>2</sup> in south-western Finland.

**Hunting period:** 20.8. – 31.12.2009.

**Hunting in 2009:** No Woodcocks were caught (Kallio 2010), though there apparently is a stable population of Woodcock in Olkiluoto.

### 3.2.6 Hooded Crow (*Corvus corone*)

**Habitat use:** Hooded Crow lives in forests, open countryside, parks and gardens, often in the immediate vicinity of humans. It also lives in the archipelago.

**Main food source(s):** The Hooded Crow is omnivorous and a regular scavenger. It feeds on insects, earthworms, fish, molluscs, grains, seeds and fruits. Occasionally it eats eggs and nestlings from bird nests. In coastal areas it drops molluscs and crabs to break them. Hooded Crow also eats carrion, debris, and wastes of foodstuff and slaughterhouses, etc.

**Densities:** There are on average 1.9 nesting pairs of Hooded Crow per km<sup>2</sup> in southwestern Finland. In Olkiluoto, estimated density was 1.4 pairs/km<sup>2</sup> in 2008 (Yrjölä 2009).

**Hunting period:** 1.8.2009 – 9.3.2010.

**Hunting in 2008-2009:** No Hooded Crows are known to have been killed (Kallio 2010), though there is a strong population of Hooded Crow in Olkiluoto.

### **3.2.7 Other species**

In addition, five Common Goldeneyes and five Common Eiders were killed in and around Olkiluoto in 2009 (Kallio 2010).

## 4 DISCUSSION

This study presents game statistics for the island of Olkiluoto, and it is based on interviews of local hunters and numbers of kills of game animals. The population sizes and their variability are derived from observations and estimates made by hunters in Olkiluoto. The descriptions of habitat use and food sources are based on literature sources. Common knowledge on species' behavior in SW Finland has also been used in these descriptions.

The population of Elk has now largely stabilised in Finland, mainly following from the efficient hunting for several years (Leppäniemi & Halla 2006; Svensberg & Vikberg 2008a; Krusberg & Laaja 2009a; Metsästäjien Keskusjärjestö 2010a). However, Elk density still increased a bit in Satakunta (Impola & Laaja 2010a). The population of White-tailed Deer has been extraordinarily increasing for several years but now the population growth is slowing down, largely due to hunting (Svensberg & Vikberg 2008b; Krusberg & Laaja 2009b; Metsästäjien Keskusjärjestö 2010b). In Satakunta both the number of kills and population density decreased slightly (Impola & Laaja 2010b). The changes in the population of Roe Deer are not exactly known, but it is seemingly varying to some extent in different years (Svensberg & Vikberg 2008b). The number of kills of Roe Deer decreased in Satakunta to some extent (Impola & Laaja 2010b).

Smaller game animals have mostly been overlooked in the recent years in Olkiluoto, but the number of hunted small predators approximately doubled in the latest hunting season. One reason for this increase may be the population sizes of these species due to high numbers of voles during the previous hunting season. Moreover, altogether 17 waterfowl were reported as hunted in 2009, whereas none were shot in the previous year (Jussila & Nieminen 2009).

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**APPENDIX 1.** Nomenclature of the species.

<b>English name(s)</b>	<b>Finnish name(s)</b>	<b>Scientific name</b>
Elk (Eurasian Elk, Moose)	Hirvi	<i>Alces alces</i>
White-tailed Deer (Virginia Deer)	Valkohäntäkauris (valkohäntäpeura, laukonpeura)	<i>Odocoileus virginianus</i>
Roe Deer	Metsäkauris	<i>Capreolus capreolus</i>
Red Fox	Kettu (punakettu)	<i>Vulpes vulpes</i>
Raccoon Dog	Supikoira	<i>Nyctereutes procyonoides</i>
(European) Badger	Mäyrä (metsäsika)	<i>Meles meles</i>
American Mink	Minkki	<i>Neovison vison</i>
Pine Marten	Näätä	<i>Martes martes</i>
Mountain Hare (Blue Hare, Varying Hare)	Metsäjänis	<i>Lepus timidus</i>
European Hare (Brown Hare)	Rusakko	<i>Lepus europaeus</i>
Muskrat	Piisami (vesirotta, myskirotta)	<i>Ondatra zibethicus</i>
(Eurasian) Red Squirrel	Orava	<i>Sciurus vulgaris</i>
Mallard	Sinisorsa (heinäsorsa)	<i>Anas platyrhynchos</i>
(Common) Teal	Tavi	<i>Anas crecca</i>
		<i>Bonasa (Tetrastes) bonasia</i>
Hazel Grouse	Pyy	<i>Tetrao (Lyrurus) tetrix</i>
(Eurasian) Black Grouse	Teeri	<i>Tetrao (Lyrurus) tetrix</i>
(Eurasian) Woodcock	Lehtokurppa	<i>Scolopax rusticola</i>
Hooded Crow (Carrion crow)	Varis	<i>Corvus corone</i>
Common Goldeneye	Telkkä	<i>Bucephala clangula</i>
Common Eider	Haahka	<i>Somateria mollissima</i>

**APPENDIX 2.** Average weights of the species.

<b>Species</b>	<b>Weight of females</b>	<b>Weight of males</b>	<b>Average weight</b>
Elk	240-450 kg	250-600 kg	350 kg
White-tailed Deer	60-90 kg	85-140 kg	100 kg
Roe Deer	15-30 kg	20-36 kg	30 kg
Red Fox	3000-6500 g	4000-8000 g	6000 g
Raccoon Dog	4000-7000 g	4000-7000 g	5500 g
European Badger	4000-12000 g	6000-15000 g	10000 g
American Mink	500-1000 g	500-1500 g	1000 g
Pine Marten	500-1800 g	900-1800 g	1400 g
Mountain Hare	2000-5800 g	2000-5800 g	3500 g
European Hare	3500-9000 g	3500-9000 g	4000 g
Muskrat	1000-1800 g	1000-1800 g	1400 g
Red Squirrel	200-480 g	200-480 g	350 g
Mallard	900-1500 g	900-1500 g	1200 g
Common Teal	250-400 g	300-450 g	350 g
Hazel Grouse	350-450 g	350-450 g	400 g
Black Grouse	800-1000 g	1000-1300 g	1000 g
Woodcock	145-420 g	145-420 g	300 g
Hooded Crow	450-650 g	450-650 g	550 g

Each weight represents a typical Finnish animal, heavier and lighter individuals do occur. Average weights are not statistical means but estimated weights of both females and males.