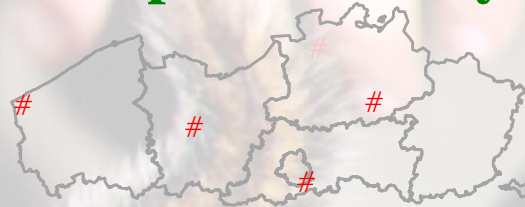


Asian chipmunks in De Panne (Belgium) : is a population explosion likely?



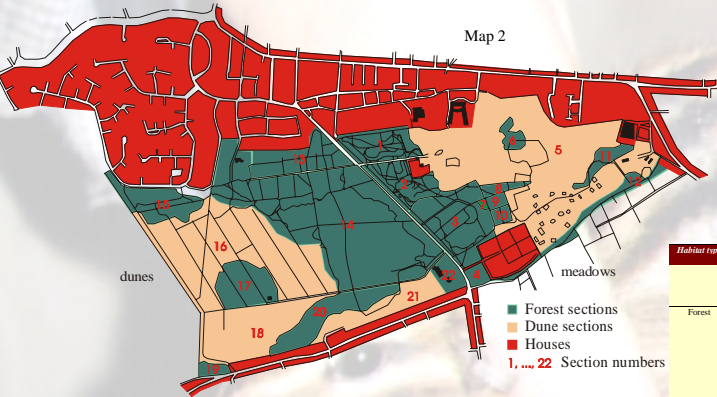
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Map 1. The 4 Belgian chipmunk populations (red) and the possible 5th (pink)

How did Asian chipmunks end up in De Panne?

Asian chipmunks are imported in Belgium as pets since the beginning of the sixties. Now there are 4 (maybe even 5) free-living populations in Belgium (map 1), one of them in the Calmeynbos in De Panne. As far as we know, in 1977 17 animals were released in the eastern part of this forest. People regularly release their pets there when they are tired of them. It has taken the chipmunks about 7 years to cross the main road to the western part of the forest, which suggests a very low dispersal rate. We also didn't find any exchange between both sides.



Why study these chipmunks?

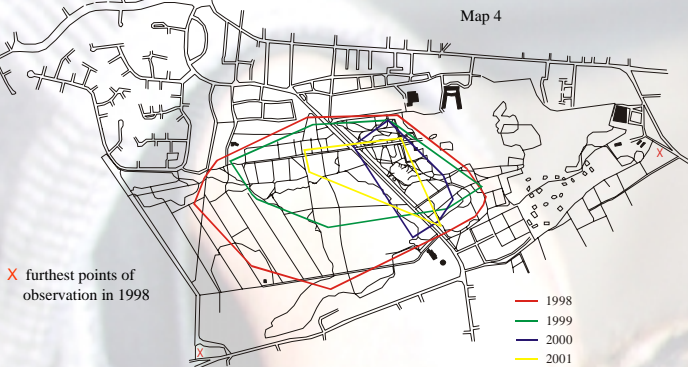
In their original distribution area these animals can, at high densities, cause a lot of damage to agricultural fields. In the Zoniënwoud a negative influence on some ground breeding birds is suggested, but not proven. But, even without proof and especially during years with low seed production and high chipmunk densities, one can imagine the negative effect on other seed-eating mammals and birds. Because of the danger of negative consequences on the ecological system due to increasing population pressure, preventive measures should be taken. There is need for a more specific study on the interaction of the chipmunks with the forestal ecological system. A first step taken in this direction is this estimate of chipmunk numbers and distribution, conducted in fall 1998-2001 in De Panne.

Habitat type	Tree layer										Section	Visibility (m)
	Sycamore, Poplar, Ash (Esdoo, Populier, Es)	Elm, Common Alder (Olm, Zwarte Els)	Corsican Pine (Corsicaanse Den)	Beech, English Oak, Hornbeam, Lime (Beuk, Zomerik, Haagbeuk, Linde)	Horse Chestnut (Paandekastanje)	Black Walnut (Zwarte Okkerboom)	Groundvy (Hondsdraf)	Nettle (Brandnetel)	Elder (Vlier)	Hippoboscum (Duindoorn)		
Forest	XXX	XX		X			XXX	XXX	X		1, 3	20
	XXX	XX					XXX	XXX	X		4, 11, 12, 15	20
	XXX	XX		X	X		XXX	XXX	X		17, 19, 20, 22	20
	XX	X	XX				XX	XX	XX	XXX	9	20
Dune	X		XXX				XXX	X	X		7, 8, 10	20
	XXX	X	X	XXX			XXX	X	X		2	50
	XXX	XX		X	X	X	XXX	X	X		6	50
	XXX	XX		X	X	X	XXX	X	X		13	50
	X		X						XX	5	50	
	X								XX	16, 18, 21	50	

Table 1. Abundance of trees and undergrowth for the different forest and dune sections and visibility (higher in the dune sections and in sections with fewer nettles and elders)

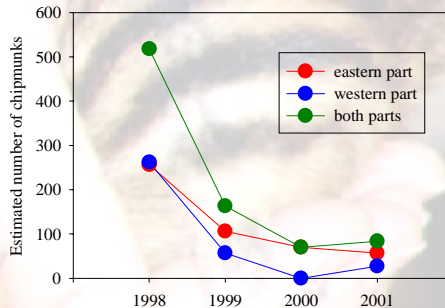
How to estimate chipmunk numbers?

A relative estimate of the population density in the whole study area was made using the 'transect method'. 5 transects were mapped out (map 3) and each walked several times at a constant speed, depending on the density of the vegetation. Visual and auditive observations of chipmunks were recorded on a map. Only visual observations were used to calculate densities. For each transect a buffer area was calculated, using a 20 m or 50 m buffer, depending on the visibility (higher in dunes than forest, higher in forest sections with less undergrowth) (table 1, map 2-3). The number of observations in the buffer area was converted to a total number of chipmunks for each section of the study area. To find the conversion factor from relative to absolute number of chipmunks, a capture-mark-recapture study was carried out in a limited part of the study area. Wooden box traps were used, baited with maize, grain, sunflower seeds and nuts and checked every 45 minutes to 3 hours. Captured chipmunks were individually marked with a metal ear tag or by cutting their fur. They were sexed, weighed and released again.



How many chipmunks are there?

The graph shows the estimated number of chipmunks for the 4 years, obtained by converting visual observations. The conversion factor between captures and observations was different every year, depending on a lot of factors, like weather (rain, wind, temperature), recreation pressure, timing of hibernation, food availability, season, ... Densities were very low the last 2 years, possibly due to low food availability and high rainfall, causing reproduction to fail by flooding of the nests.



Where are chipmunks present?

Map 4 shows where chipmunks were observed during this study and also gives for 1998 the furthest points where they were seen by local people. In 1998, when densities were high, the chipmunks occupied the central forest parts and started to move into the western dune sections. They were also often seen in gardens near the forest parts they occupied. The following years, when densities decreased, their distribution was more and more concentrated in section 2 (map 2). On this side of the road, where the chipmunks were released in 1977, always highest densities were seen. This is probably due to the presence of a lot of food (beech-nuts, acorns and maple and hornbeam seeds) in section 2, where you also have the highest recreation pressure and where people feed the animals.



In conclusion...

The chipmunks in De Panne form a very local and isolated population, and seem to be kept in line by environmental factors. This makes their extermination less urgent than other, already very large populations (like the one in the Zoniënwoud). Also, once the decision to exterminate is made, this should be relatively easy to achieve, considering the trap-happiness of the chipmunks. Nevertheless, the public should already be made aware of the damage these very cute animals may cause when they reach high densities. But to substantiate this – although very likely – scenario to really convince people, much more elaborated research will be necessary in future...