Report on

Hein Verkade's article

Common Swifts in Noordwijk-Binnen (the Netherlands) 2005

(***APUS***list 3061)

by HANS REMMEN

Summary:
Since 1993 all the 'fly-in places' of swifts in Noordwijk-Binnen (13,400 inhabitants.) are counted every five years. The results are:
1993: 167
1998: 167
2003: 173
2008: 148 different places where swifts flew in.

The population of Common Swifts in Noordwijk seems to be stable with a small decline during the last five years.

In 1993 the birds were concentrated in the older parts of the village just around the medieval centre. Between 1993 and 2008 the numbers declined in these areas but increased in the newly build parts of the village. The medieval centre is located in the middle of the eastside of the village. In 1993 44% of the 'fly-in places' were orientated to the east. Perhaps this can be explained by occupation strategy of swifts(circle m0del). So the origin of the 'Noordwijk colony' must have been in the medieval centre. Nowadays only a few pair of swifts are found there. Restoration of many monumental buildings during the 70's and 80's perhaps caused the decline of swifts in the centre.

The reason for the overall decline during the last five years is not yet clear. During this period 40 'fly-in places' were destroyed while 47 places were abandoned. Many of those sites abandoned in 2008 were just newly occupied in 2003.

On the other hand, of 48 similar nesting places, all known by swifts in 2003, 9 were occupied in 2003 and only 15 in 2008. So housing shortage cannot be the only reason for the decline. Perhaps another explanation should be found in winter survival rates, food availability etc.

In new buildings where special nesting places are created the occupation seems to follow a certain pattern. First the nesting places at the edges of the buildings are occupied followed by the nests at the centre.

Hein Verkade studied the development of breeding Swifts (Apus apus) and the location of their nest sites during three summers with a five-year interval in the coastal town of Noordwijk-Binnen (15000 inhabitants) in the Netherlands.

Figure 1. City map of Noordwijk-Binnen. The survey area was divided into;
1. Medieval centre 2. Transition area 3. Older residential area 4a-4f. New residential area.

System of surveying

The study area was divided into four districts (Figure 1). Observations were mostly carried out just before sunset continuing until darkness, and occasionally also in the morning.

In 1993 and 1998 surveying was carried out by the author; in 2003 by the author with assistance of four members of the local working group, using an agreed system of

surveying. Usually one roof site was surveyed each evening, but from some favourable positions it was possible to observe several roofs at the same time.

At complex sites a map was drawn marking the nest sites. Starting in 1992, during the summers between surveys the roofs were carefully examined for the presence of potential nest sites.

All occupied buildings were recorded on colour slides. When a recorded nest site seemed to be deserted, it was checked several times again for the presence of Swifts.

During the period of study, the survey area remained constant, but because of development the number of buildings in the study area increased.

The weather conditions

In 1993 and 1998 the weather conditions were similar, both lacking periods of high temperatures but with heavy rainfall. The summer in 2003 was by contrast very warm, dry and sunny. This may have had a positive effect on the number of recorded nest sites. (See Table 1).

	gegevens station De Bilt	langjarig gemidd.	1993	1998	2003
mei	gemiddelde temperatuur C.	12,7	14,3	14,9	13,2
	neerslag in mm. totaal	62	45	45	92
	aantal uren zon	204	226	206	192
juni	gemiddelde temperatuur C.	15,2	15,9	15,8	17,8
	neerslag in mm. totaal	72	64	181	35
	aantal uren zon	187	197	150	254
juli	gemiddelde temperatuur C.	17,4	16,1	16,3	18,8
	neerslag in mm. totaal	70	171	79	30
	aantal uren zon	196	166	148	226

Tabel 1. Gegevens over het weer gedurende de inventarisatiemaanden.
Bron: KNMI, Klimatologische Dienst

Table 1. Data about the weather conditions during survey period. For each month the average temperature is given in degrees Celsius, next the monthly total amount of rain in mm, and last the total amount of sunshine in hours. The third column presents the long-term data.
Source. KNMI, Klimatologische Dienst.

Results

During the survey of 1993 the author counted 166 nest places (Figure 2a).

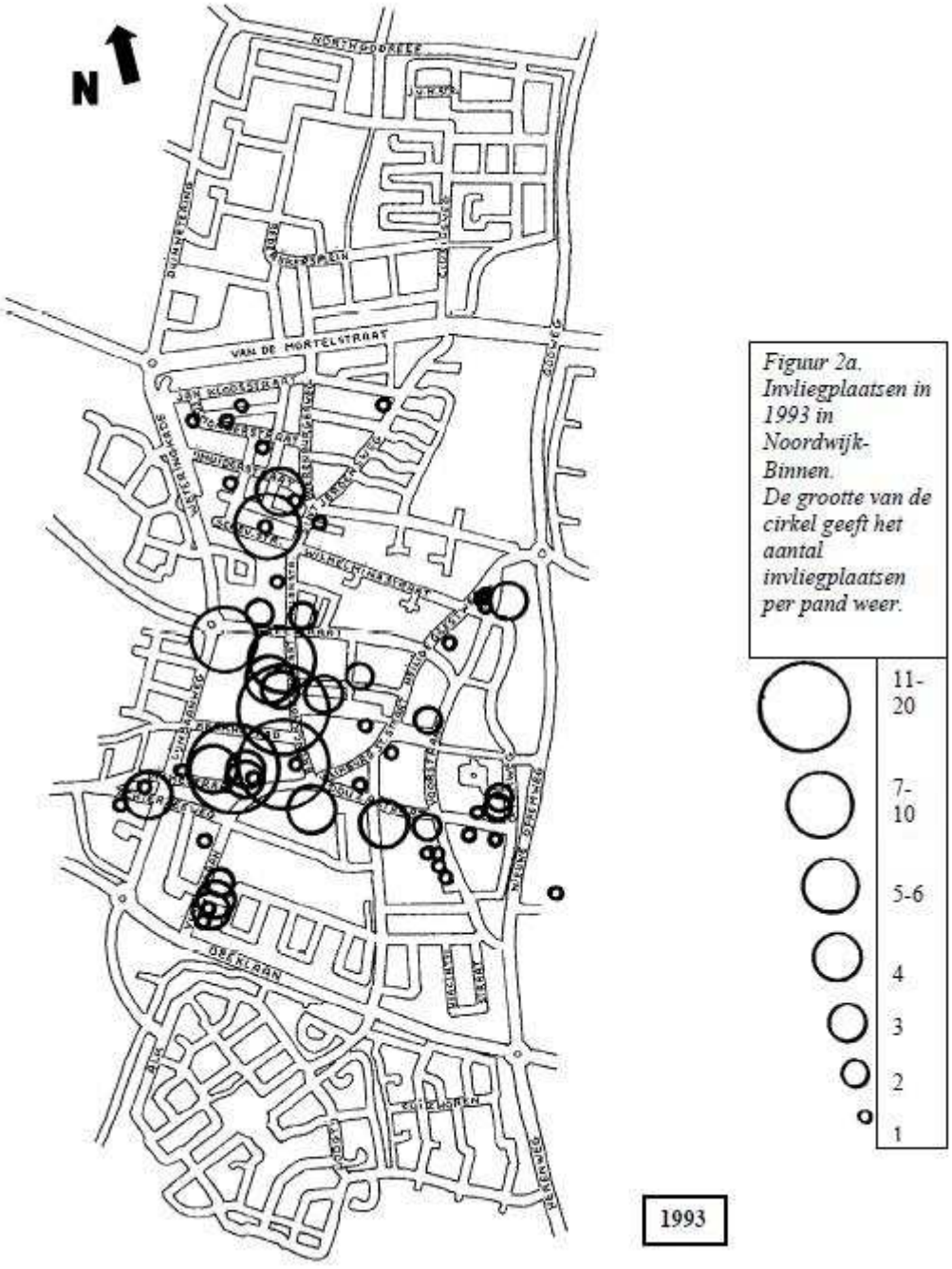


Figure 2a. 'Fly-in-places'registered in 1991 in Noordwijk-Binnen. Each circle represents a number of 'fly-in-places' - see scale for details.

Although some observers believed there had been a fall in the Swift population during the period of 1993 to1998, the survey result for the summer of 1998 was again 166 nest places (Figure 2b).

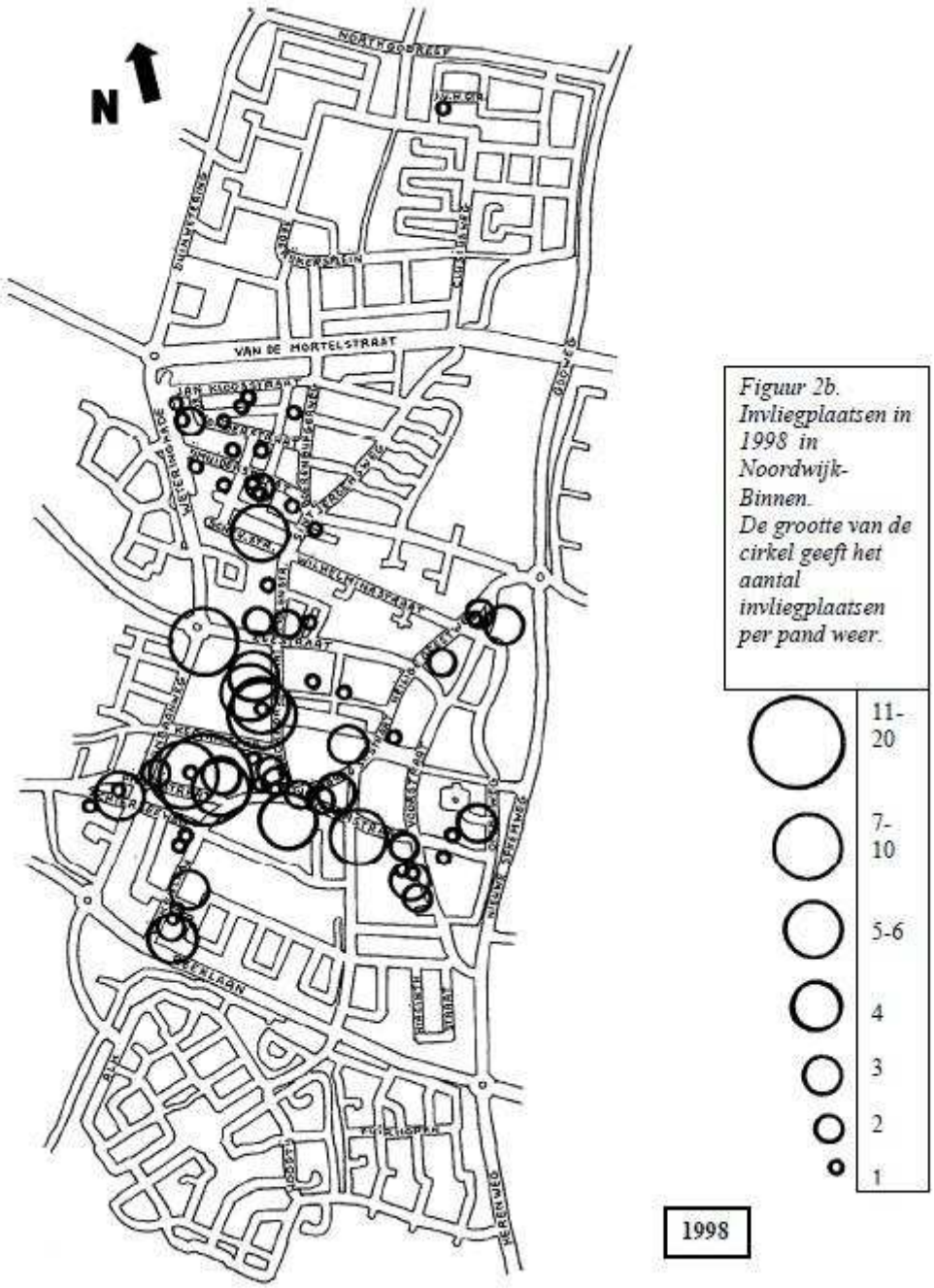


Figure 2b. 'Fly-in-places registered in 1998 in Noordwijk-Binnen. Each circle represents a number of 'fly-in-places' - see scale for details.

Between 1998 and 2003 at least 53 nest places were destroyed by building renovation and demolition, this being almost a third of the total number. In spite of these losses, 172 nest places were counted in 2003 (Figure 2c and Table 2).

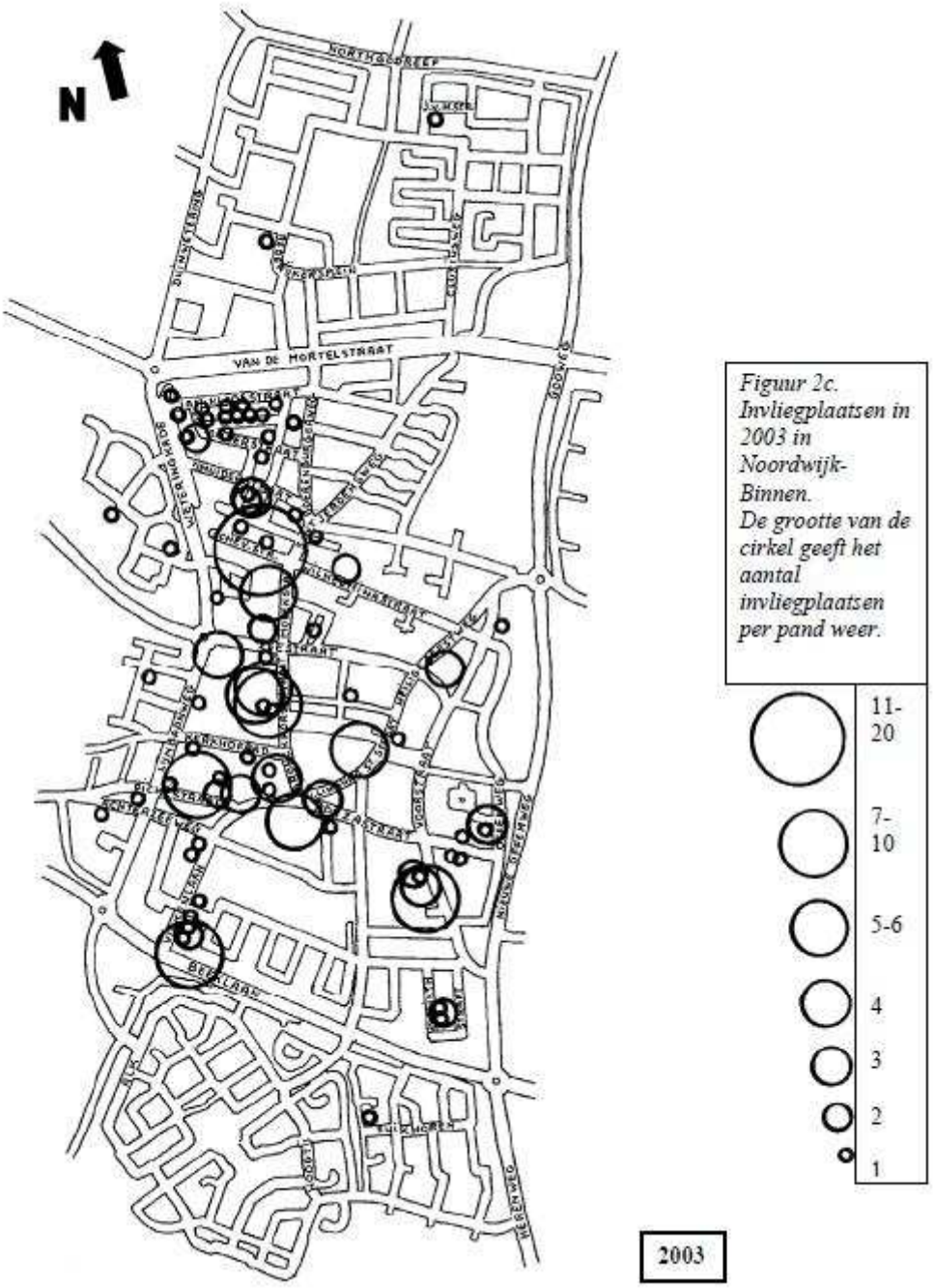


Figure 2c. 'Fly-in-places'registered in 2003 in Noordwijk-Binnen. Each circle represents a number of 'fly-in-places' - see scale for details.

	1993	1998	2003
aantal invliegplaatsen	166	166	172
aantal bewoonde panden	60	70	85
invliegplaatsen per pand	2,76	2,37	2,02

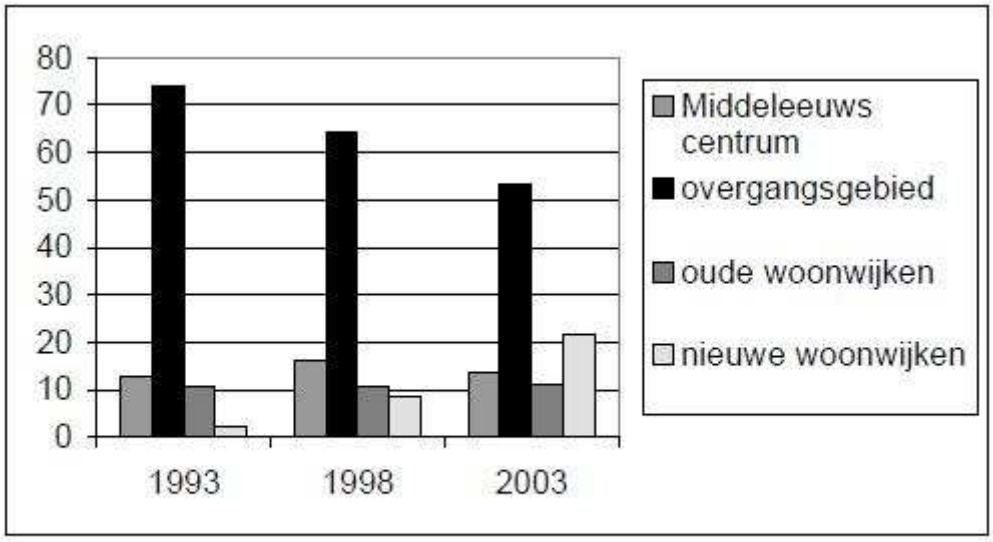
Tabel 2. Aantal invliegplaatsen en bewoonde panden door Gierzwaluwen

Table 2. presents (first line) the total Swift 'fly-in-places', next the total sites accommodating Swift nest places and last the average number of 'fly-in-places' per site.

Nest places

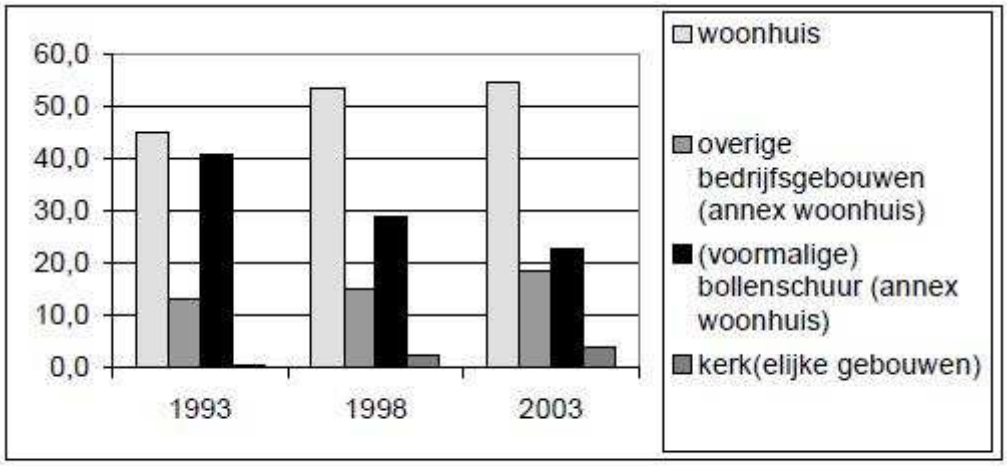
In the 1993 survey the 166 nest places were counted at 60 separate sites.

In 1998 this had increased to a total of 70 separate sites accommodating Swift nest places, and in 2003 this further increased to 85 separate sites. Figure 3 shows the number of nest places in the four districts of Noordwijk-Binnen.



Figuur 3. Percentage invliegplaatsen per type wijk

Figure 3. The percentages of 'fly-in-places' in the four sections 1.Medieval centre 2.transition area 3.Older residential area 4.New residential area.



Figuur 4. Percentage invliegplaatsen naar de functie van de panden

Figure 4 Shows the type of buildings used by Swifts. Private residence, Commercial Properties, (former) Agricultural Bulb Sheds (redeveloped as residences), and Churches with outbuildings.

There is a great diversity in the choice of nest sites, but most nest entrances are situated under, or between roof tiles. (.....)
The nest entrances were at a variety of differing heights, the lowest being at a mere 2.5 metres from the ground.

	HP	VHP	OVHP	SD	TN	KP	RP	GP	MH	GS	GO	BD	NK
1993	75,3	6,7	2,4	1,2	0,0	0,0	0,0	0,0	4,8	0,6	6,6	2,4	0,0
1998	62,7	8,5	9,0	1,8	0,6	1,2	1,2	1,8	6,0	1,2	4,2	1,8	0,0
2003	39,5	8,7	18,0	6,4	0,0	1,8	0,0	3,5	9,9	2,9	5,8	2,9	0,6

Tabel 3. Percentage per type invliegplaats in de verschillende teljaren. HP=oude holle pan,VHP=verbeterde holle pan, OVHP=opnieuw verbeterde holle pan, SD=sneldekker, TN=tuile du nord, KP=kruispan, RP=romaanse pan, GP=gierzwaluwpan, MH=muurholte, GS=gierzwaluwsteen, GO=achter dakgoot, BD=boeideel,dakkapel, NK=nestkastje.

Table 3 shows the percentage of each type of entrance. HP=oude holle pan (old type of roofing tile), VHP=verbeterde holle pan (old type of roofing tile) OVH=opnieuw verbeterde holle pan (old type of roofing tile), SD=sneldekker (modern roofing tile), TN=tuile du nord (old type of roofing tile), KP=kruispan (old type of roofing tile), RP=romaanse pan (old type of roofing tile), GP special Swift tile, MH=cavity in wall, GS= Swift brick, GO=behind gutters, BD=wainscoting and dormer, NK=nest boxes.

Artificial nest places

In Noordwijk as in the rest of the Netherlands the use of artificial nest places for Swifts, installed at random in the 1980's, has proved very disappointing.

The local working group *Vereniging voor Natuur- en vogelbescherming in Noordwijk* now installs Swift nest boxes, Swift Tiles and Swift Bricks only at sites close to buildings that already contain Swift nests, or else in new locations when they seem to be highly promising. Such careful placing of the artificial Swift nest places is proving successful, with new artificial sites now being easily accepted by Swifts.

The provision of nest places for Swifts is closely related to the building materials used and the architecture of the buildings. Old sites vanish as renovation or demolition takes place, and new opportunities arise when new buildings are suitably adapted or equipped for Swifts.

Fidelity to nest places

It is well known that Swifts stay loyal to their nest places (Weitnauer 1980). The situation in nine buildings in Noordwijk with only one nest place in each was constant, the nests being occupied every year during the nine-year survey period.

At a roof site in one building there was only one nest place in use, but the position of the entrance was different in 1993, 1998 and in 2003.

	1993/1998	1998/2003
(vrijwel) dezelfde invliegplaats	45,7	50,0
verdwenen invliegplaats	19,3	31,4
verlaten invliegplaats	35,0	18,6

Tabel 4. Het percentage invliegplaatsen dat hetzelfde, verdwenen of verlaten is ten opzichte van de telling ervoor.

Table 4. The percentage of nest places that remained the same, those that for whatever reason became unavailable, and those that were deserted; all relative to the last survey.

The percentage of nest places that remained in use was 45% between 1993/1998 and 50% between 1998/2003. It should be taken in consideration that some nest places were already deserted when they became unavailable to the Swifts.

For an accurate calculation of loyalty to a nest place, the percentage of no longer available nest places was compared with the percentage of nest places that remained in use and the percentage of nest places that were deserted.

For 1993/1998 loyalty to a nest site was calculated at 56.7%, and for 1998/2003 it was rather higher at 72.8%. It should be noted that some of the birds seen entering nest places during the survey may have been non-breeding adults seeking new nest sites for the following year.

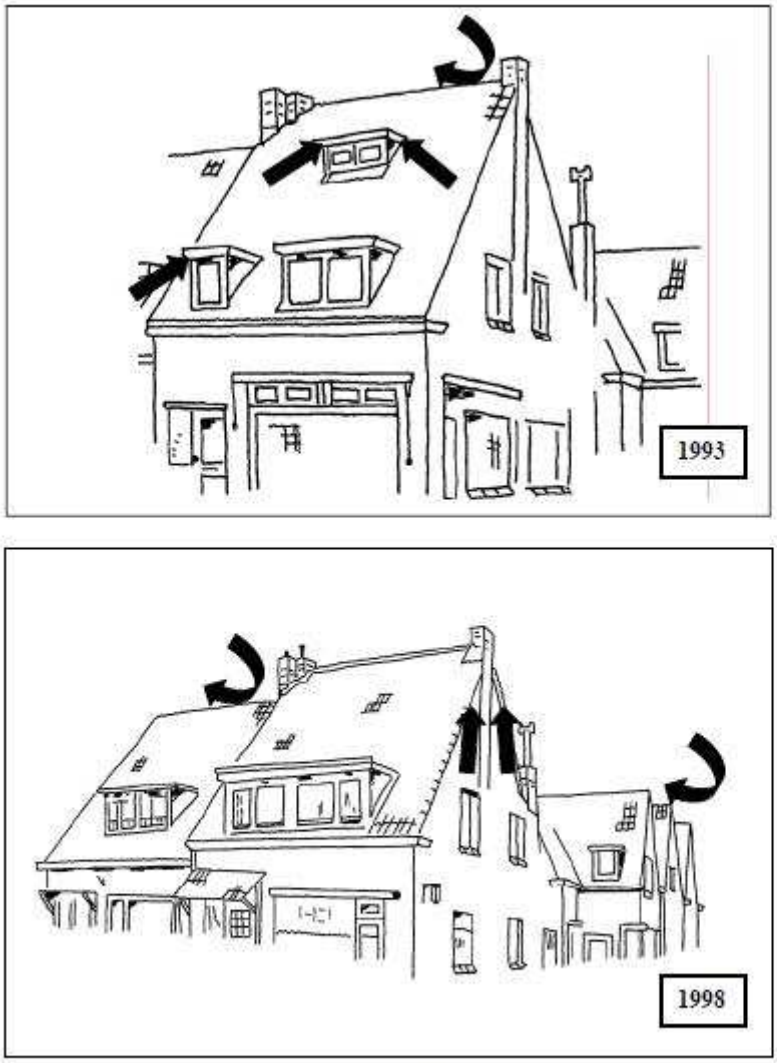
So we can surmise that Swifts are demonstrably loyal to their nest sites and move to new nest places usually only when they are forced to.

Enforced movement to new nest places

As a result of this detailed survey it has been possible to study the reaction of breeding Swifts when they are forced to move to another nest location when their nest places are either blocked off or are demolished after the breeding season,

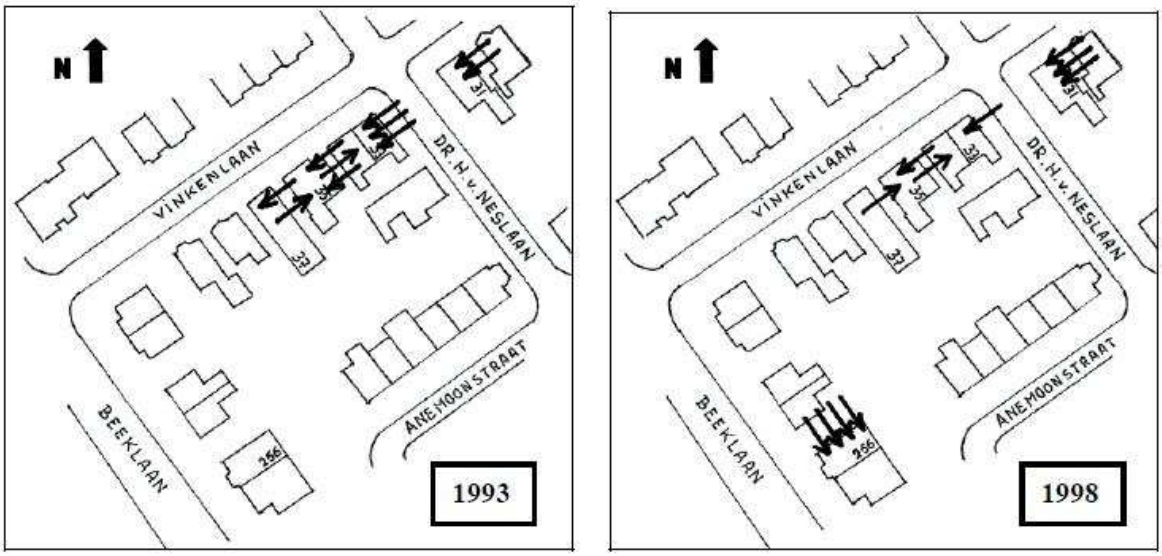
usually by building activities. How did Swifts react to this new situation when they returned for the next breeding season?

In three isolated colonies it was possible to observe the behaviour of Swifts.



Figuur 7. IJmuiderstraat 19 in 1993(boven) en IJmuiderstraat 19 met nr. 23 rechts en Katwijksestraat 15 links (onder) in 1998. De pijlen geven de respectievelijke invliegplaatsen aan. De halfronde pijlen verwijzen naar invliegplaatsen aan de achterkant van het dak onder dakpannen.

Figure 7, IJmuiderstraat 19. Arrows show where the Swifts entered the buildings to reach their nest places, in 1993 and the fly-in places in 1998 when the situation was changed due to renovation.

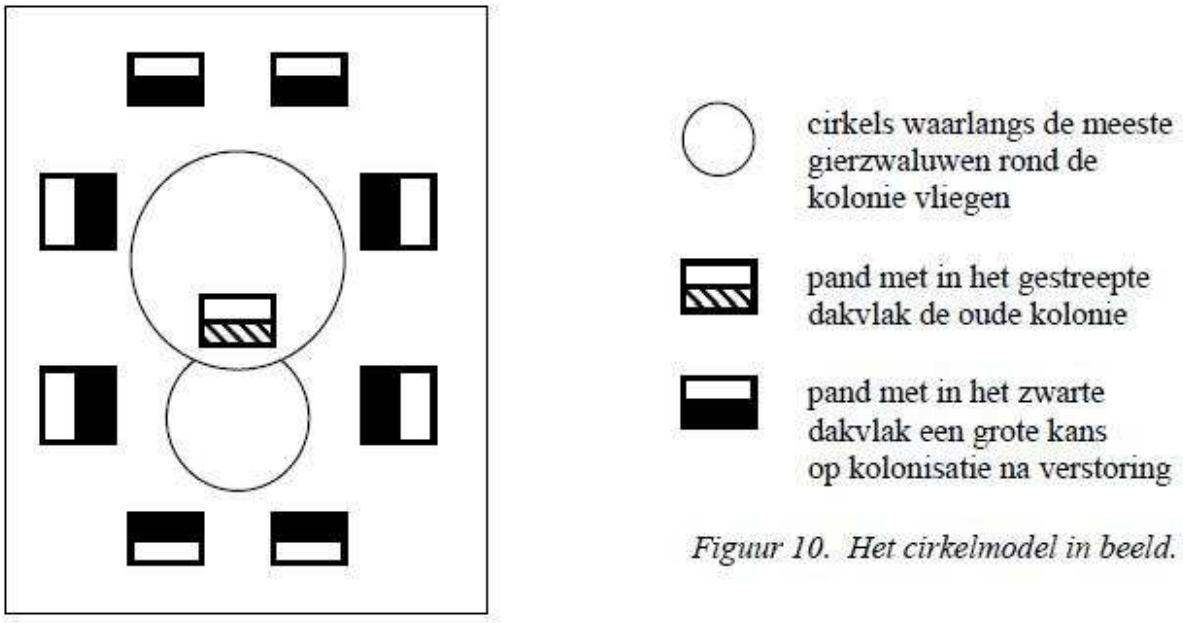


Figuur 8. Invliegplaatsen aan de kop van de Vinkenlaan en de Beeklaan in 1993 en 1998. De pijltjes geven de invliegplaatsen en hun richting weer.

Figure 8. Vinkenlaan and Beeklaan. Situation in 1993 and 1998. The arrows point out the direction and mark the fly-in places.

Circle Model

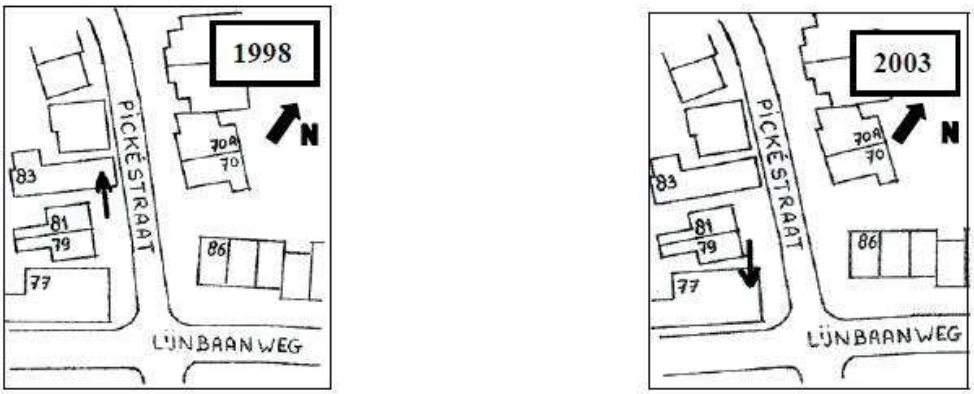
There seems to be a certain pattern, which Hein Verkade calls the "circle model". When forced to move Swifts look for new nest accommodations close to the old nest. Roof sites that are attached to old nest sites seem to be most favourite.



Figuur 10. Het cirkelmodel in beeld.

Figure 10. This shows the "circle model". The old nest place was located in the shaded centre. When Swifts were forced to move, they usually chose a new breeding place in one of the black roof sites. The circle indicates how most Swifts fly around the colony.

In one situation the “circle model” could be tested. The Swifts chose a new nest site as predicted by the model (see Figure 11). For further confirmation a study using marked Swifts could be designed to prove this model.



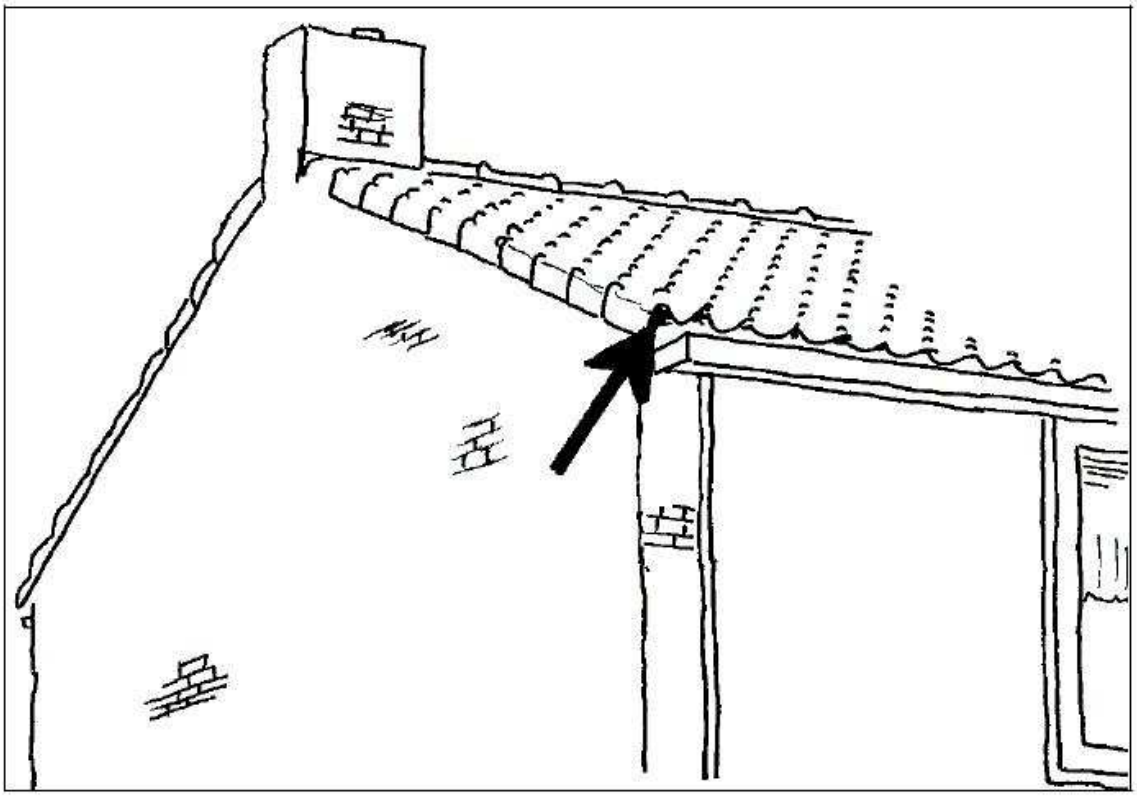
Figuur 11. Invliegplaatsen in Pickéstraat 83 en 77 in 1998 en 2003. De pijltjes geven de invliegplaatsen en hun richting weer.

Figure 11. The arrows point out the direction and mark the fly-in places in 1998 and 2003 at the Pickestraat 83 and 77.

The "circle model" is applicable when alternative breeding places are present close to the old nest and the loss of the nest place happens outside the breeding season. By using the model the position of the new nest sites can be predicted.

The "circle model" can probably not be used when breeding Swifts experience nest site loss during the breeding season. In such an event the Swifts will return again and again in vain to the nest place before abandoning it.

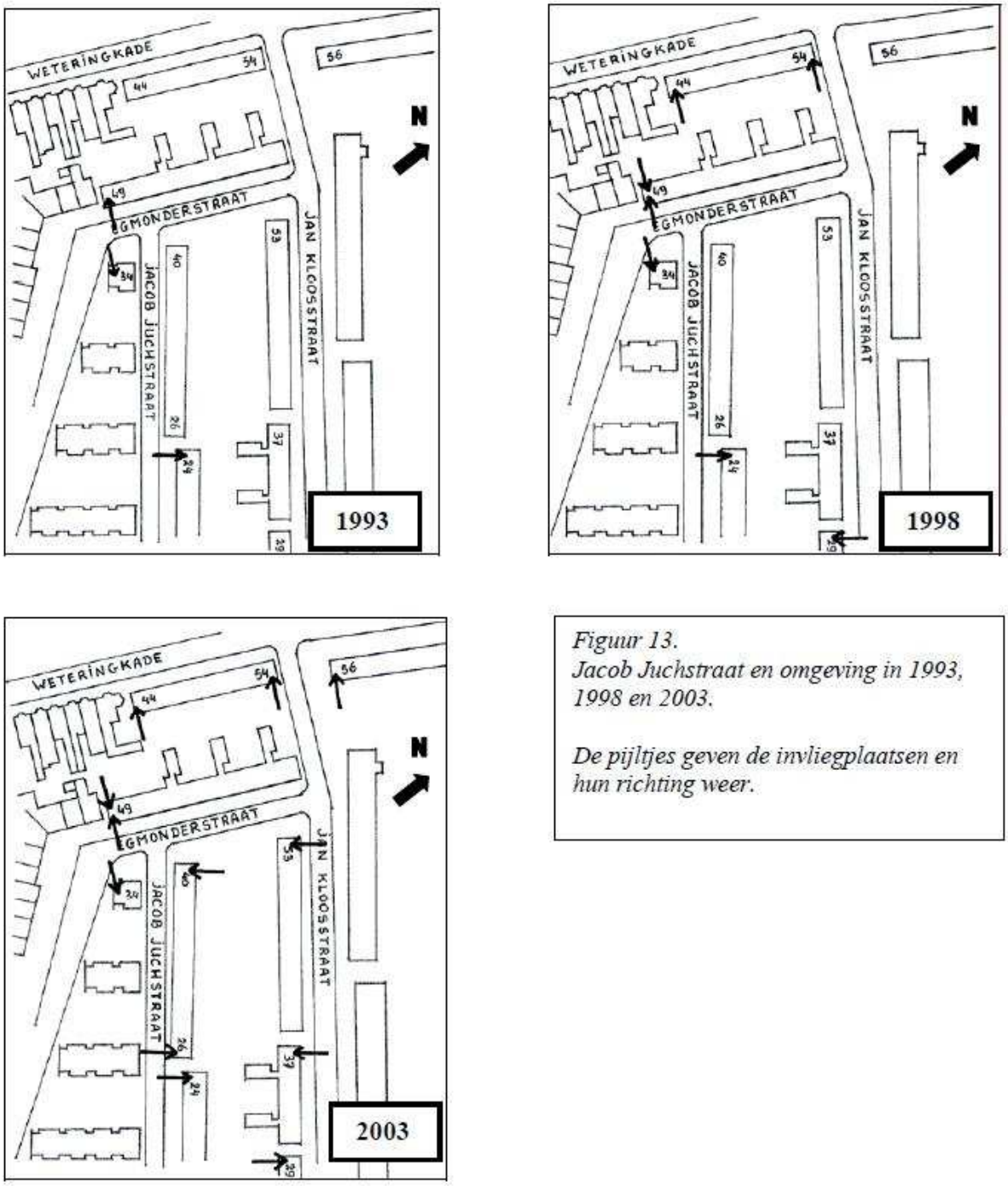
Notable increase of nest sites in one colony



Figuur 12. Jacob Juchstraat 24. De pijl geeft de invliegplaats aan. Aan de Weteringkade, Jan Kloosstraat, Egmonderstraat en Jacob Juchstraat liggen de invliegplaatsen onder de hoekpannen.

Figure 12. The arrow indicates the entrance hole under the corner tile.

When the Swifts discovered the possibility of entering the roofs of the corner houses in one street (see figure12) they occupied all the same type of nest places in the area, totalling 15 nests in 2003 (see figure 13). So it seems that Swifts colonise a small area more quickly when suitable nest places are available within a short distance of each other.

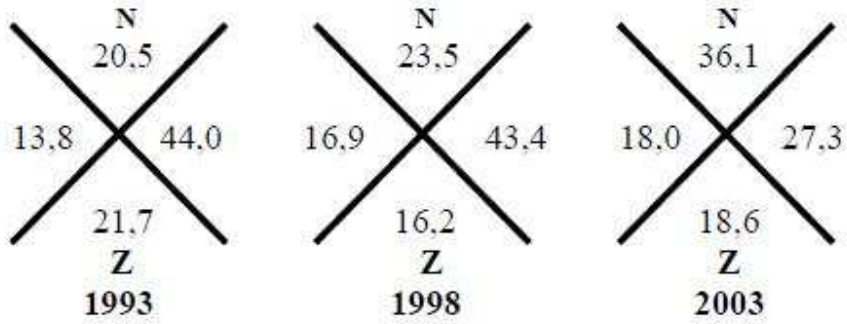


Figuur 13.
Jacob Juchstraat en omgeving in 1993, 1998 en 2003.

De pijltjes geven de invliegplaatsen en hun richting weer.

Figure 13. The arrows indicate the entrance holes and the direction.

Nest entrance and compass direction



Figuur 14. Percentage invliegplaatsen naar de windrichting waarnaar deze zijn gericht.

Figure 14 shows the percentage count for the compass direction that each fly-in nest place faced.

In 1993 and 1998 it seemed that Swifts should prefer an eastern entrance for their nest place. This preference can be explained by the pattern of village development and the 'circle model'. With replacement of nest sites the 'preference' also changed.

The Dutch Swift population

To arrive at an estimate of the Dutch breeding Swift population the author compared similar surveys of Swifts in the Netherlands. Only six such studies were available for use, this being because such surveys are so labour-intensive they are quite rare.

All the surveys studied these occupied nest sites that were identified through observation of the adults entering the nest place. In these studies the average ratio of Swift nests to human inhabitants was roughly 1 Swift nest for every 100 inhabitants (table 5.) When this number is extrapolated the Netherlands may have hosted about 150,000 breeding pairs in the last decade of the 20th century.

	jaar van inventarisatie	aantal invliegplaatsen	aantal inwoners	inw./invl.pl ratio
Tilburg	1978	1.298	150.000	115
Hilversum	1984	1.075	93.000	86
Drenthe	1989	4.000	416.000	104
Wageningen	1990	279	31.000	111
Noordwijk-Binnen	1993	166	15.000	90
Roermond	1994	486	38.000	78

Tabel 5. De verhouding van het aantal invliegplaatsen van Gierzwaluwen ten opzichte van het aantal inwoners van die plaats.

Table 5. The ratio of Swift nests to human inhabitants in five Dutch cities and one province

Discussion

In spite of building demolition and renovation work, bringing about drastic changes to some colonies in the study area, the Swift population in Noordwijk-Binnen remained stable during the period of 1993 to 2003.

In other monitored Swift colonies in the Netherlands such as Roden in Drenthe, the population was likewise stable during the period 1989 to1997.

Nest places eliminated in Noordwijk-Binnen, were in every case replaced with new nest places. Suitable nest accommodation was quite clearly sufficiently available in Noordwijk-Binnen to house all those Swifts needing a replacement nest place. The Swifts did not show a preference for any compass direction when they choose a nest place.

In some colonies in the area of study there were major fluctuations in the numbers of breeding birds, without our being able to find any clear reason for this. It could be that other factors such as the situation in the wintering areas, and the availability of food near the nest location have an effect on the population size.

It is hard to make any detailed statements about the Swift population in the Netherlands. There are many who claim that there has been a nation-wide decrease, but still there are no reliable statistics.

The Dutch Swift population was believed to have been much larger in the last decades of the 20th Century. The author has estimated that the Dutch Swift population during that period was about 150,000 breeding pairs, a ratio of one Swift nest for every 100 human inhabitants. This is not however comparable with any other periods, as both building design, and the number of buildings, as well as the areas occupied by the human population, were very different in the past.

In France the Swift population is estimated as being at least 1 million during the same period. In former West Germany it may have also been as high as 1 million (Cramp & Simmons 1985), a ratio of 1 Swift nest for every 50 inhabitants in France, and a similar ratio of 1 nest for every 60 inhabitants in West Germany.

I am thankful to Edward Mayer for checking the English text.

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