

10 NIGHT-SINGING BIRDS CENSUS

Zoological Museum, Finnish Museum of Natural History
 Night-singing Birds Census / Zoological Museum
 P. Rautatiekatu 13
 SF-00100 Helsinki

1. BACKGROUND AND AIMS. Nocturnal singers include species from several taxonomic groups (the Bittern, rallids, Nightjar, *Luscinia*, *Locustella* and *Acrocephalus* species; owls are excluded here). These birds sing most actively at night and in the beginning of summer. Thus, a reliable census can be done only at night.

Night-singer censuses have been carried out in Finland ever since the beginning of the 1960s. Nation-wide collection of observations started in 1980. The aim of the survey is to monitor annual and long-term population changes in different parts of Finland. The data includes results of standard route censuses (started in 1988) and additional observations collected from birdwatchers. In addition, nesting and ringing material is used to throw light upon site fidelity, breeding success and mortality. All observations (also those outside the routes) should be reported to the local ornithological societies, who forward the data for the use of the night-singer survey.

2. EQUIPMENT AND TIME NEEDED. The most practical way to make a night-singer census is to walk or cycle. All the observed territories are marked on a map (1:20 000 or more precise). To ring night-singers, you need a mist net, a tape recorder, a tape for playback of the song, and other ringing devices (see Sect. 11). The time needed varies according to the length of the route and the number of birds. Usually it is possible to cycle about 30–50 kilometres during one night.

3. CHOOSING A CENSUS AREA AND ROUTE. The census area should include habitats favoured by nocturnal singers, such as wetlands, lush meadows, abandoned fields, gardens, scrub and lush shore woods. If you like to count Nightjars, dry pine forests should be included in the route. Preferably the census area should be surrounded by habitats unfavorable to night-singers (forests, open fields, city

etc.). In a case like this minor changes of territories of males faithful to their breeding grounds are most likely to take place inside the census area. The census route is planned to cover night-singer habitats in such a way that it can be counted during one night between 11 p.m. and 6 a.m. (see Sect. 5). There may be one or more routes in one census area. If there are several routes in the same area, they may cross but not run alongside of each other. In an ideal case the routes cover the area so well that all the suitable habitats will probably be checked. This is the most reliable way to estimate the density of the singers.

4. CENSUS PERIODS. The best period for censusing nocturnal singers varies according to the species in the area, which depends on the habitats available. The Bittern and rallids "sing" usually from the end of April to mid-June. Thrush Nightingales sing in thickets and lush woods most actively from mid-May to early June. The main singing period of *Locustella* and *Acrocephalus* species lasts from the end of May to the end of June. There are great differences between individuals both in the timing and length of the singing period. In most species males cease singing totally after pairing. For this reason the same route is counted three times during the nesting period, as increasing the number of visits improves the reliability of the census noticeably. In southern Finland (about 62° N) the census periods are:

1st period: 20–31 May

2nd period: 1–12 June

3rd period: 13–24 June.

The census day may be chosen freely as long as the weather is good and there are at least seven days between successive censuses. The first census should be made according to the arrival of the Thrush Nightingale and other early migrants: in early summers one should count earlier than in late summers.

5. **TIME OF DAY.** The most efficient census time is from mid-night to 3 a.m. Almost all unpaired males sing then and daytime singers do not "disturb" the census. The count may be started already at 11 p.m. and finished not later than 6 a.m.

6. **WEATHER.** Warm, calm or weak wind, clear and dry weather is best for counting night-singers. Do not count if the weather is cold, windy and rainy.

7. **FIELD WORK.** The count is started in good weather between 11 p.m. and mid-night and it is finished between 3 and 6 a.m. (see Sect. 5). Counting on foot or by bike gives a greater possibility of noticing the birds singing in unexpected places than when driving a car. Stop often enough to listen to the singers, in suitable habitats after each 100–200 m. At each stop listen for approximately three minutes. If necessary, the identification or exact number of the singers may be checked by moving closer. All the territories are marked on a map by separating the species and the visits. If personal codes are used for bird species, remember to present explanations in the margin of the map. A list of the territories is written down in a notebook (species, location and habitat according to Form 10C–D). If the weather changes radically for the worse during the census, clearly affecting the singing activity of the birds, stop counting and continue the rest of the route on another night when the weather is suitable again. All the observations made of nocturnal singers in Finland are collected as part of the survey. The territories (species, number of birds, municipality, exact place and date) and the number of census nights when a listening trip lasted at least one hour should be reported to the local ornithological society (see the instructions for collecting faunistic bird observations, Ch. 12 in this Manual).

8. **INTERPRETING OBSERVATIONS.** The unit of the census is one "territory". All the singing males are interpreted as a territory. Pairs, nests and single females, if met, are treated similarly. Possible migrants or non-local singers are not segregated, because it is difficult and such cases represent only a small number of the total anyway.

9. **FILLING IN THE FORMS.** All information

about the census area and the counts is reported on Night-singer Census Route Form 10A. The results of the censuses are reported on Night-singer Observation Form 10C–D. A map of the route and the territories is stapled to Form 10C–D.

10. **REPEATING THE CENSUS.** The census should be repeated in the same area and route on as many consecutive years as possible (at least two). In order to maintain comparability the censuses should be repeated as identically as possible:

- exactly the same route
- the same census intensity: the amount and timing of counts, time of day, the amount, duration and location of the stops along the route
- the same observer(s)
- good weather.

Normally the counting dates of different periods in consecutive years should not differ from each other by more than seven days.

11. **SEARCHING FOR NESTS AND RINGING OF NIGHT-SINGERS.** Night-singers should be ringed at as many survey sites as possible; searching for nests is also desirable. Night-singer monitoring is most effective when working in groups; the listeners report all their observations to the ringer as soon as the singers have been found. Ringers can find information about ringing nocturnal singers and searching for their nests in "The handbook for ringers" (published by the Zoological Museum). It is possible, in principle, to trap the males of all the different species with playback of song and a mist net. The ringing and searching for nests requires continuous walking throughout the suitable habitats in the area and the checking of territories. If the aim is to ring all the males of the area, they should be searched for at least two or three times a week during the singing period. After spontaneous singing has ceased the males in the territory are usually found by playing the song of the species within the territory. The male comes close uttering alarm calls. The nests are most easily found by following the birds either when they build their nests or feed their young. A Nest Record Card (check the instructions for using the Nest Record Cards and Form 7A–B in Ch. 7 of this Manual) should be filled for all the nests found.

Return the Night-singer Census Route and Observation Forms to the Museum before the end of August!

SELECTED REFERENCES

Koskimies, P. 1981: The expansion of the Great Reed Warbler *Acrocephalus arundinaceus* into Finland. – *Ornis Fennica* 58:151–158.

Koskimies, P. 1986: The occurrence of night-singers in Finland in 1985 (in Finnish with English summary). – *Lintumies* 21:146–150.

Koskimies, P. 1988: The occurrence of night-singers in Finland in 1987 (in Finnish with English summary). – *Lintumies* 23:146–149.

Koskimies, P. 1989: The occurrence of night-singers in Finland in 1988 (in Finnish with English summary). – *Lintumies* 24:119–121.

NIGHT-SINGER CENSUS ROUTE FORM

Night-singer censuses / Zoological Museum
P. Rautatiekatu 13
SF-00100 Helsinki

Return before
the end of
August!

10A

Version
II/1990

ROUTE NUMBER: YEAR: 19 OBSERVER NUMBER: Name: _____
Addr.: _____
Tel.: _____

REPEATING THE CENSUS (cross)

New route Counted last year Observer changed Habitats changed

NATIONAL GRID S - N: W - E: MUNICIPALITY (6-letter code): ROUTE LENGTH: km

MODE OF TRANSPORT

(circle one code):

- 1 Walking
- 2 Cycling
- 3 Car
- 4 Other, what:

NAME OF THE ROUTE

STANDARD CENSUSES

	DAY MONTH		CENSUS HOURS		CLOUDI- NESS	WIND	TEMPERATURE	RAIN	Remarks
	START	END	START	END					
1.	<input type="text" value="29"/>	<input type="text" value="5"/>	<input type="text" value="24"/>	<input type="text" value="03"/>	<input type="text" value="2"/>	<input type="text" value="2"/>	<input type="text" value="+7"/>	<input type="text" value="1"/>	
2.	<input type="text" value="08"/>	<input type="text" value="6"/>	<input type="text" value="24"/>	<input type="text" value="03"/>	<input type="text" value="5"/>	<input type="text" value="1"/>	<input type="text" value="+15"/>	<input type="text" value="2"/>	LIGHT SHOWER DID NOT HINDER LISTENING
3.	<input type="text" value="20"/>	<input type="text" value="6"/>	<input type="text" value="24"/>	<input type="text" value="04"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="+10"/>	<input type="text" value="1"/>	

LENGTH AND APPROXIMATE WIDTH OF HABITATS ALONG THE ROUTE (accuracy 100 m)

CHANGE	LENGTH WIDTH			CHANGE	LENGTH WIDTH		
	(km)	(codes 0-4)			(km)	(codes 0-4)	
<input type="checkbox"/>	<input type="text" value="0.6"/>	<input type="text" value="2"/>	FORESTS (FO)	<input type="checkbox"/>	<input type="text" value="1.1"/>	<input type="text" value="2"/>	FIELDS & MEADOWS (FM)
<input type="checkbox"/>	<input type="text" value="0.4"/>	<input type="text" value="1"/>	Rich forest (RF)	<input type="checkbox"/>	<input type="text" value="0.1"/>	<input type="text" value="1"/>	Half-open meadow (HM)
<input type="checkbox"/>	<input type="text" value="0.2"/>	<input type="text" value="2"/>	Pine forest (PF)	<input type="checkbox"/>	<input type="text" value="0.4"/>	<input type="text" value="2"/>	Open meadow (OM)
<input type="checkbox"/>	<input type="text" value="0."/>	<input type="text" value="0"/>	Rocky pine forest (RP)	<input type="checkbox"/>	<input type="text" value="0.4"/>	<input type="text" value="2"/>	Grain field (CF)
<input type="checkbox"/>	<input type="text" value="1.3"/>	<input type="text" value="1"/>	EXTENSIVE SCRUB (ES)	<input type="checkbox"/>	<input type="text" value="0.2"/>	<input type="text" value="2"/>	Grass or pasture (LP)
<input type="checkbox"/>	<input type="text" value="0.1"/>	<input type="text" value="1"/>	Willows (WI)	<input type="checkbox"/>	<input type="text" value="1.6"/>	<input type="text" value="1"/>	WETLANDS (WE)
<input type="checkbox"/>	<input type="text" value="0.6"/>	<input type="text" value="1"/>	Other decid. scrub (OS)	<input type="checkbox"/>	<input type="text" value="0."/>	<input type="text" value="0"/>	Dry shore meadow (DM)
<input type="checkbox"/>	<input type="text" value="0.6"/>	<input type="text" value="1"/>	Garden scrub (GS)	<input type="checkbox"/>	<input type="text" value="1.6"/>	<input type="text" value="1"/>	Wet meadow (WM)
<input type="checkbox"/>	<input type="text" value="1.1"/>	<input type="text" value="0"/>	EDGE BUSHES (EB)	<input type="checkbox"/>	<input type="text" value="0."/>	<input type="text" value="0"/>	Sedges (SE)
<input type="checkbox"/>	<input type="text" value="0.3"/>	<input type="text" value="0"/>	Road side bushes (RB)	<input type="checkbox"/>	<input type="text" value="0."/>	<input type="text" value="0"/>	Horsetails (HO)
<input type="checkbox"/>	<input type="text" value="0.2"/>	<input type="text" value="0"/>	Ditch bank bushes (DB)	<input type="checkbox"/>	<input type="text" value="0."/>	<input type="text" value="0"/>	Cattails (CA)
<input type="checkbox"/>	<input type="text" value="0.6"/>	<input type="text" value="0"/>	Border bushes of open area (EO)	<input type="checkbox"/>	<input type="text" value="0."/>	<input type="text" value="0"/>	Reed-bed (RE)
<input type="checkbox"/>	<input type="text" value="0.2"/>	<input type="text" value="1"/>	OTHER, what: LARCH FOREST (LF)	Habitat changes: _____			

10B HOW TO FILL IN THE NIGHT-SINGER CENSUS FORMS?

The forms are filled in with clear handwriting, in pencil using BLOCK LETTERS. All numbers are written so that they end at the right margin (e.g. the length of the route). All data with letters are started from the left margin (e.g. name of the route).

The annual summary from one census route is reported on NIGHT-SINGER ROUTE FORM 10A and the respective observations on NIGHT-SINGER OBSERVATION FORM 10C-D.

NIGHT-SINGER ROUTE FORM 10A

The information in the upper part of the form is given every year. ROUTE NUMBER: The number of a new route is given at the Zoological Museum. In the following years the observer writes it himself. All the changes in the census are reported after the OBSERVER NUMBER; if the route was changed, remember to give the new length and to describe the habitats.

The 10x10 km square containing all or most of the route is reported using the NATIONAL GRID coordinates. The MUNICIPALITY is abbreviated according to Appendix 2 of the Manual. If the route runs through several municipalities, write the one which includes the biggest part of the route. The ROUTE LENGTH is given with an accuracy of 0.1 km and the route is named after a place which best describes the location of it.

There are three STANDARD CENSUSES per route. The time of counting is given with an accuracy of one hour (e.g. 0.20 a.m. to 3.40 a.m. is coded 24-04). Describe the average weather conditions during the census. The TEMPERATURE is usually read at the beginning and end of the count; the average temperature asked for is estimated according to these (one degree's accuracy). CLOUDINESS is coded as follows: 1 = clear, 2 = only a few clouds, 3 = half cloudy, 4 = almost cloudy, 5 = cloudy. WIND is coded in the same manner: 1 = calm to weak, 2 = weak to moderate, 3 = moderate to brisk, 4 = brisk to hard (disturbed counting). RAIN is coded as follows: 1 = clear, 2 = drizzle, 3 = light rain, 4 = heavy rain (short showers are ignored). You should never count during windy or rainy weather. Part of the codes are used only in special cases, which are more closely explained in the remarks (e.g. sudden changes during the count, different climatic factors possibly having a cumulative worsening effect on the census, etc.).

The LENGTH of the night-singer habitats are reported with an accuracy of 0.1 km and the WIDTH in hundreds of meters. These data are given only in the first census year, if there are no changes in them afterwards. The data are used for estimating densities of nocturnal singers and the amount and changes of habitats suitable for certain species. Information on the length of the habitats should be collected from all the routes; reporting data on the width of the habitats is less essential.

FORESTS, on average, are above 5 m and scrub below 5 m high. EXTENSIVE SCRUB is more than 5 m wide and fairly continuous. Bordering bushes are typically lone bushes or rows of bushes. If these simultaneously border both a road side and a ditch bank, include as part of the latter. All the scrub on the border of a field or other open area is reported as scrub at the edge of open area. In a half-open meadow there are bushes growing here and there. In an open meadow there

WETLANDS are separated into dry shore meadows and wet meadows, where a lot of different plant species (even willows) grow, and more monotonous habitats such as patches of horsetail, cattail, sedges or a reed bed. Habitats not favoured by nocturnal singers are not included (e.g. spruce forest, pine mire); their location is marked on the habitat map sent with the forms.

The length of a habitat is the distance which can be covered from as far as 200 m on both sides of the route (the song of practically all singers can be heard from this distance). The habitats should be classified as carefully as possible according to the habitat list on Form 10A. The habitats impossible to classify exactly are included in the main habitat types written with capital letters (FORESTS, EXTENSIVE SCRUB etc.). The lengths of all subhabitats are totalled in the main habitat (see Form 10A). Note that there may be more than one habitat along the same part of the route (e.g. if there are different habitats on the left and right sides of the route). Thus the total length of habitats may be far longer than the length of the route.

The average WIDTH of each habitat is estimated from the 400 m wide belt (200 m on both sides of the route) from where all the singers may be heard: write up how wide the habitat patches are along the route, on average. The estimates are quite rough (accuracy 100 m): 0 = less than 50 m, 1 = 50-150 m, 2 = 150-250 m, 3 = 250-350 m, 4 = more than 350 m. By reporting the average length and width of the habitats, the area covered in censuses can be roughly estimated (naturally the loudest singers may be heard also from outside this area). The average width of subhabitats in each main habitat is written in the row of the main habitat.

NIGHT-SINGER OBSERVATION FORM 10C-D

All the observed night-singing birds are reported on Form 10C-D. The singers (territories) are marked on a map with a number in the order of detecting; also, the route is marked on the map (if the copying of maps causes difficulties, ask the Museum for help). The same territory number is written both on the map and on Form 10C-D. The species is written with a two letter code as follows: BS = Bittern, RA = Water Rail, PP = Spotted Crake, CC = Corncrake, GC = Moorhen, CE = Nightjar, AO = Long-eared Owl, LL = Thrush Nightingale, LN = Grasshopper Warbler, LF = River Warbler, AH = Sedge Warbler, AD = Blyth's Reed Warbler, AP = Marsh Warbler, AI = Reed Warbler, AA = Great Reed Warbler. Of all other species write the complete name.

The type of record is reported as follows: 1 = singing male, 2 = other voice, 3 = pair. Circle all the censuses (1, 2 or 3) during which the individual was observed. The habitat is written with a two letter code according to the NIGHT-SINGER CENSUS ROUTE FORM. The shortest distance of the bird from the route is estimated with an accuracy of 10 m. In the remarks you may write information about changes of habitat and on the location of a bird, ringing (number of the ring), nesting (reference to a nest record card), behaviour of the bird etc.

Staple the forms together before returning them; place the NIGHT-SINGER CENSUS ROUTE FORM on the top, the

NIGHT-SINGER OBSERVATION FORM
10C

Version
II/1990

Night-singer censuses / Zoological Museum
P. Rautatiekatu 13
SF-00100 Helsinki

Return with Route
Form before the end
of August!

ROUTE NUMBER	YEAR	NATIONAL GRID		OBSERVER NUMBER	TOTAL NUMBER OF TERRITORIES
17	1990	S - N	W - E	1234	52
		690	67		

TERRITORY NUMBER	SPECIES	TYPE OF RECORD IN VISIT NO.			HABITAT	DISTANCE OF BIRD m	RING NUMBERS; * NEST RECORD CARD FILLED IN REMARKS
		1	2	3			
1	L,L	1	1	1	♂,S	80	
2	L,L	1			♂,S	250	*
3	A,D	1	1		♂,S	50	V-617.103*
4	A,D	1	1		♂,S	130	V-617.108*
5	A,D	1	1	1	♂,S	150	UNPAIRED
6	A,D	1			♂,S	140	V-617.114*
7	A,D	1	3		♂,S	20	CONTROL: V-132.185
8	A,D	1			♂,S	170	DISAPPEARED TOTALLY
9	L,N	1	1		♂,S	40	
10	L,N	1	1		G,S	20	
11	A,D	1	1	1	E,♂	160	UNPAIRED?
12	A,D	1	1	3	E,♂	20	*
13	C,C	1	1		♂,M	10	BREEDING? RESPONSE TO PLAYBACK AS LATE AS 20.7.
14	A,D	1			L,F	20	V-617.125
15	A,D	1			L,F	100	
16	L,L	1	1		♂,S	140	P-432.518
17	A,D		1		H,M	40	V-617.117; DISAPPEARED
18	A,D		2		H,M	20	V-617.118; UNPAIRED
19	A,D		1	1	R,B	10	UNPAIRED
20	L,N		1	1	R,B	200	
21	L,N		1	1	E,♂	150	
22	A,D		1		R,B	20	V-617.104*
23	A,D		1		E,♂	100	V-617.109
24	A,D		1	1	E,♂	80	UNPAIRED