

## SPECTROGRAM ANALYSIS OF THE NIGHT HERON (*NYCTICORAX NYCTICORAY* L.) CALLS AT THE HERONRY OF LABODÁR

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### Abstract

The calls of the night herons in the heronry of Labodár was followed by tape recording and subsequent spectrogram analysis from pair forming till end of the nestling period. Several breeding and nestling calls were recorded. Breeding calls were registered from the second half of April 1978 reaching their maximum immediately before the start of nesting and then stopping abruptly. A second smaller maximum was observed later emitted by those birds who failed with nesting owing probably to egg robberies.

Nestling voices were audible from the second half of May and they got more and more intensive week by week. In the second fortnight of June the young birds left their nests and were standing around on the nearby branches of willows.

### Introduction

The social and sexual behaviour of the night heron and black-crowned night heron (*Nycticorax n. hoactli*) were investigated in details by LORENZ (1938), ALLEN and MANGELS (1940), NOBLE and coworkers (1938, 1942) and STEINFATT (1943). Different hoarse, greeting voices are described at the breeding places as quark-quark, quok-quok frequently followed by a guttural cawing "wa-wa-wa-wa-wa" and tenderness under mutual preening. The nesting period consists of 21 days (NIETHAMMER 1966).

The heronry of LABODÁR is on a territory of the Tisza flood-plain between the borders of the villages Csanytelek and Felgyő. LABODÁR stretches from the 226 till the 227 river km. on the right flood-plain side of the Tisza river. Its vegetation consists of willow and poplar gallery forests (*Salicetum albae fragilis*), (Fig. 1 and 2).

The heronry is located on the southern part of the LABODÁR channel of the Tisza. It originates from 1963 when the previous colony northwards was distructed owing to woodcutting. The LABODÁR territory is since 1976 under strict protection of the Council of National Nature Protection (BOD and MOLNÁR 1979).

### Methods of investigation

Night heron calls were recorded at the heronry from April till July 78 and 79 continously once weekly during several hours. A Grundig C 200 automatic tape recorder was used at 19 cm/min speed with a cardioide dynamic microphone cable transformator Type MKT—1H, AEG.

A Sound Spectrograph Series 700 model (voice identification Inc.) was used to prepare spectrograms with a frequency response of 85—8000 Hz as described previously (Wollemann and Olaszky 1977). One spectrogram displayed 2.4 sec of sound.

## Results

The nesting stock of the willow trees consisted in 1978 of 61 pairs of night herons and 7 pairs of little egrets, in 1979 68 pairs of night herons and 14 pairs of little egrets were observed. Behind the canal on the poplars further night heron (56) and grey heron (37) nests were situated but their voices were not recorded owing to approaching difficulties and the height of the nests. These trees were occupied first by the grey herons who arrived already in the first half of March (11) whereas night herons were observed only on March 31 and little egrets on April 15, 1979. First breeding calls of night herons were observed on April 22, 1978 resp. April 15, 1979. (Fig. 3, 4, 5, 6) The frequency/min of the breeding calls increased gradually and reached the maximum on April 29, 1978 (3/min) resp. May 5 1979 4/min in average counting for one hour. Thereafter an abrupt stopping of the breeding call occurred reaching somewhat later a second minor maximum on June 4, 1978 1 call/min. resp. May 20, 1979. This could be attributed to those birds who failed with nesting since numerous empty eggshells were found on May 13, 1979 on the dam owing to the nest robberies of hooded crows (*Corvus corone cornix*).

Nestling voices were barely audible from May 13, 1978 and subsequently recorded from May 28, 10 and 17, 1978. (Fig. 7, 8, 9, 10). As it turned out few high pitched

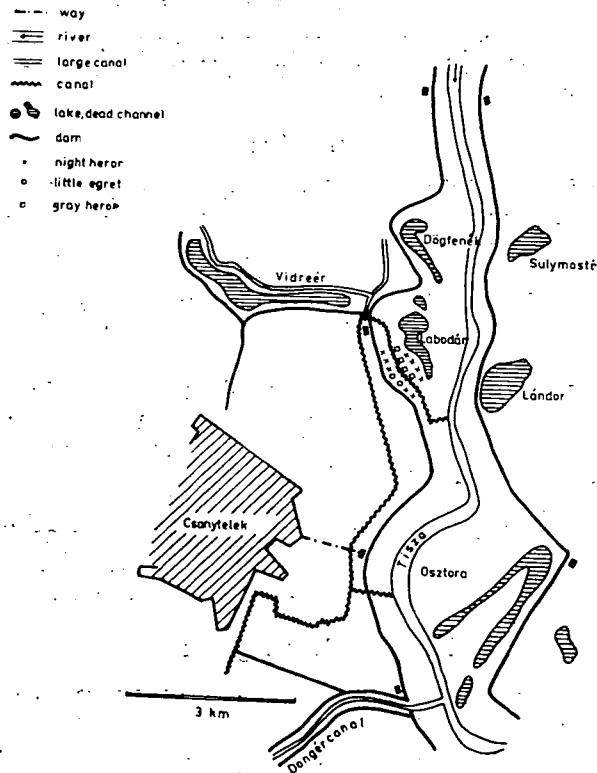


Fig. 1. The heronry of Labodár and its surroundings.



Fig. 2. The main nesting places of Labodár as seen from the dam.

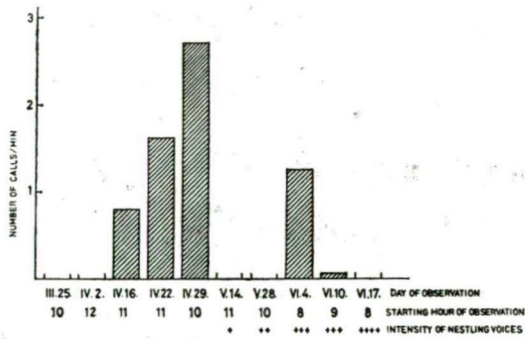


Fig. 3. Frequency of breeding calls during the breeding and nesting period. Occurrence of nestling voices.

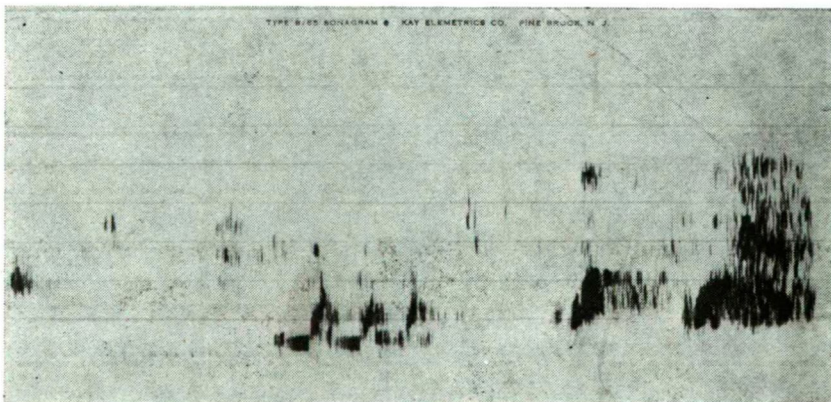


Fig. 4. Spectrogram of breeding call "wawawa" repeated twice. The timing gradation on the abscissa is 0.1 sec and on the ordinate 1000 Herz.

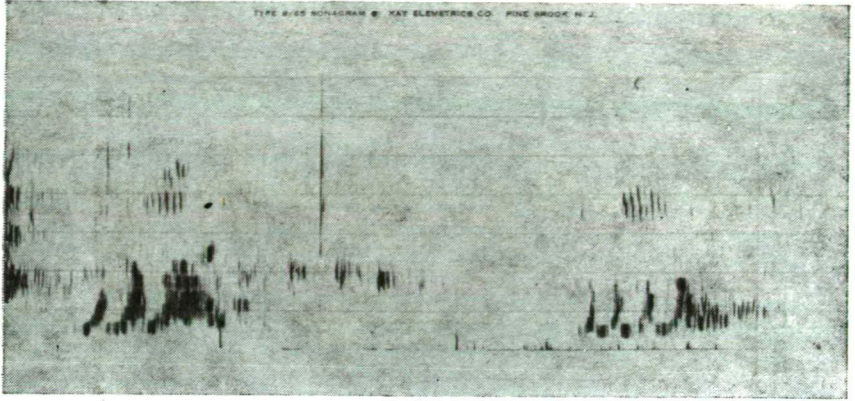


Fig. 5. Spectrogram of breeding call "wawawa" and "quock".

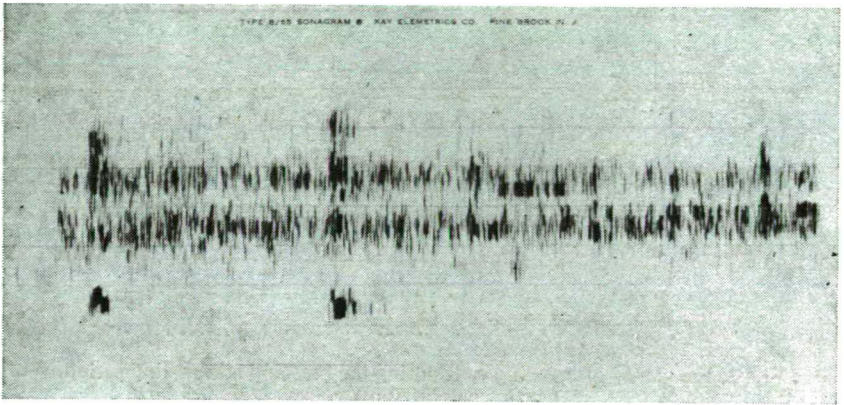
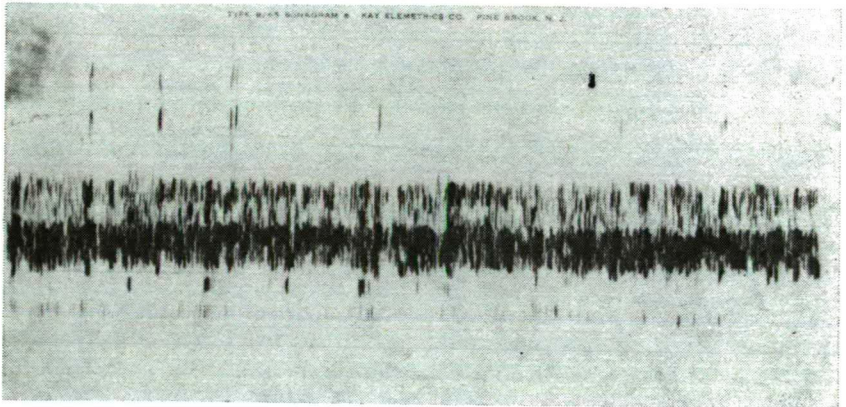


Fig. 6. Spectrogram of "quark" call.





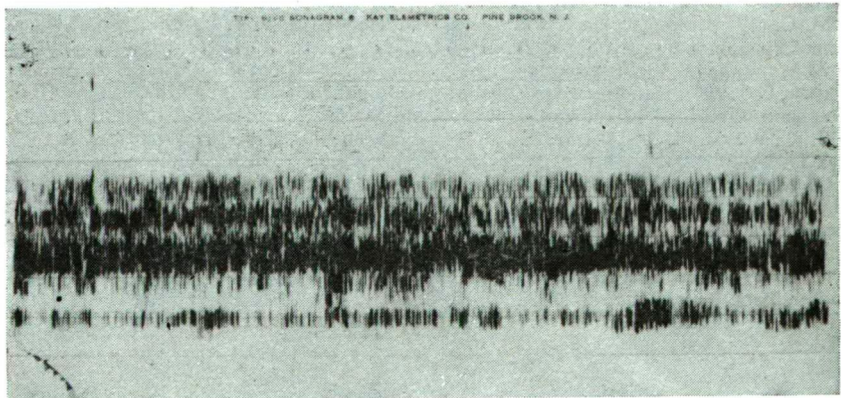
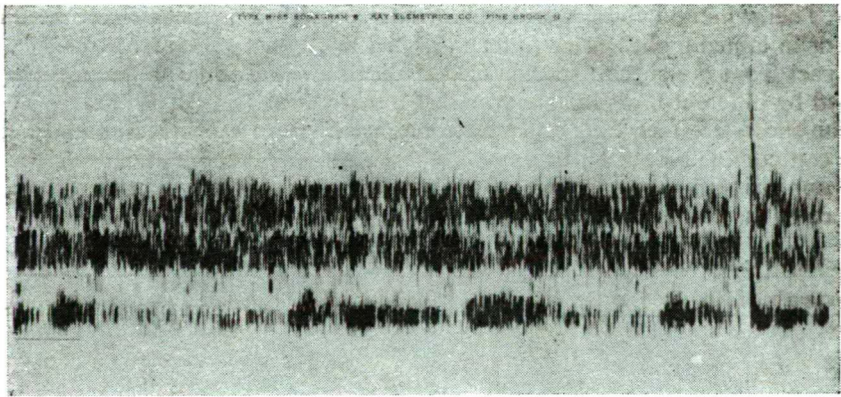
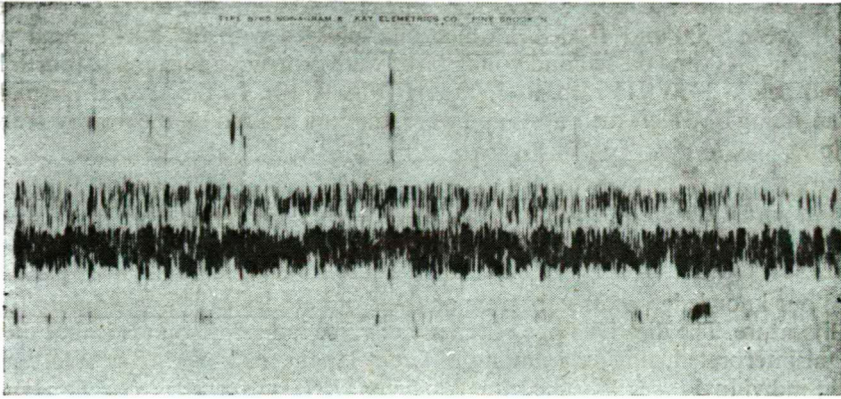


Fig. 7. 8. 9. 10. Spectrograms of nestling voices recorded successively on V. 28, VI. 4, VI. 10 and VI.17, 1978.

voices appeared first at 5000—8000 KH on the sonogram and more in two broad bands between 2000 and 4500 KH which intermingled with the background voices of the colony. As time passed and young birds were growing a third resp. fourth band appeared below 2000 KH resp. at 3500 KH (Fig. 9, 10). In the second fortnight of June the young birds left their nests and were standing around on the nearby branches of willows.

### Discussion

To our knowledge no spectrogram analysis of heronry calls appeared up to now in the literature. The disadvantage of the use of voice imitating sounds is that they are easily misinterpreted, not only among different languages speaking people but also between individuals speaking the same language (Peterson et al. 1966). For example no sharp difference is audible between the calls "quark and quock" of the night heron (Fig. 4 and 6) although they can be clearly distinguished in the spectrogram, whereas the breeding call "wawawa" is very characteristic in appearance. Further some of the observed behavior and voices were until now only observed in the black crowned night heron or in tamed night herons (NIETHAMMER 1966, LORENZ 1938).

Apart from the species specific calls dialectic or individual differences are also reported by different birds in sonograms of the literature (BAKER 1975).

The successive recording and spectrogram analysis of the breeding and nestling voices can complete data on beginning of breeding or hatching and also estimation of the approximative average age of the nestlings is possible without essential disturbance of the colony.

### Acknowledgement

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## A labodári gémtelap bakcsó hangjainak szonogram analizise

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### Kivonat

A *Nycticorax nycticorax* és *Nycticorax n. hoactli* szociális és szexuális magatartását több szerző részletesen tanulmányozta. Nem vizsgálták azonban a gémtelapok hangjait szonogram analízissel. Hangutánzó szavakkal történő leírásuk könnyen félreérthető. A faj ugyanis a specifikus hangok on kívül még tájjellegű vagy egyéni különbségeket is rögzíteni lehet szonogram analízissel (BAKER 1975). — A párképző- és fiókahangok folyamatos regisztrálása és spektrogram analízise kiegészítette a fészkelésre és a fiókák kikelésére vonatkozó, valamint a fiókák megközelítő átlagos életkorára vonatkozó adatokat, a gémtelap lényeges zavarása nélkül.

## СОНОГРАММНЫЙ АНАЛИЗ ИЗДАВАЕМЫХ КВАКВОЙ ЗВУКОВ В КОЛОНИИ ЦАПЕЛЬ В ЛАБОДАРИ

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### Резюме

Социальное и сексуальное поведение *Nycticorax nycticorax* и *Nycticorax n. hoactli* подробно изучено многими авторами. Однако сонограммный анализ голосов в колонии цапель ещё не имел места. Описание их с помощью звукоподражающих слов очень легко может оказаться ошибочным. В то же время с помощью сонограммного анализа (Бакер 1975 г.) кроме специфических для вида звуков можно зафиксировать и индивидуальные особенности, а также и особенности, связанные с местностью нахождения. Последовательная запись звуков особей, образующих пару, и птенца и их спектрограммный анализ пополняет данные относительно закладки гнезда и появления птенцов, а также среднего возраста птенцов, не причиняя при этом существенной помехи колонии цапель.

## Sonogramska analiza glasova gakova na koloniji čaplji kod Lobodár-a

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### Abstrakt

Više autora je detaljno istraživao socijalno i seksualno ponašanje *Nycticorax nycticorax* i *Nycticorax n. hoactli*. Međutim nije istraživano oglašavanje kolonije čaplji sonogramom. Opisi glasovnih ponašanja su često pogrešno shvaćeni. Pomoću sonograma moguće je analizirati osim specifičnih glasovnih svojstava vrste još i individualne i lokalne razlike (BAKER 1975). — Neprekidno registrovanje i spektrogramska analiza dopunila je podatke u odnosu na period gneždjenja i piljenja, a takodje omogućuje i približno odredjivanje uzrasta mladunaca bez znatnijeg uznemiravanja kolonije.