If one endemic bird copies the other endemic bird

Song mimicry of Jos-Indigobird (*Vidua maryae*) in central Nigeria

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Background

Jos-Indigobird and Rock Fire Finch are endemic species to Jos-Plateau in Nigeria.

Jos-Indigobird is a brood parasite and lays its eggs in the nest of the Rock Fire Finch (*Lagonosticta sanguinodorsalis*; Fig. 4).

The adult male (Fig. 3) and the non-breeding male (Fig. 5) imitate the song of the host bird While the song mimicry of other *Vidua* species was very well investigated in the last decade, nobody looked at the Jos-Indigobird since von Payne (1998).

Aim of this study

Is to compare the song mimicry of the Jos-Indigobird with the model song of the host Rock Fire Finch checking the hypotheses that

(1) The todays songs mimicry of the Jos-Indigobird divers from the song parameters described by Payne (1998).

(2) The song of non-breeding Jos-Indigobird males has less repertoire than the song of adult males.

Study area

In three territories in July (raining season) 2018 songs of the Jos-Indigobird (total 18) and Rock fire finch (total 11) were recorded in Amurum Forest Reserve at the Jos-Plateau in central-Nigeria (Fig. 1).

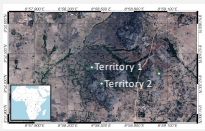


Fig. 1

Method

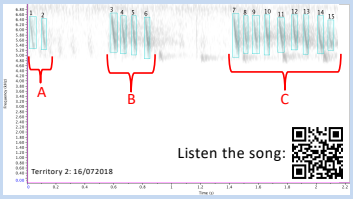
Songs were recorded using a Sennheiser ME66 / K6 directional microphone with Olympus LS-11 and DM-720 recorders (Fig. 2), at a sample rate of 44100 Hz and 16-bit amplitude resolution and stored in WAV-format. For analysing the program Raven Pro 1.5 (The Cornell Lab of Ornithology, Bioacoustics Research Program 2017) was used and spectrograms were calculated using a discrete Fourier transformation.

Fig. 2

First Results

Fig. 3

Jos-Indigobird (Ad.)

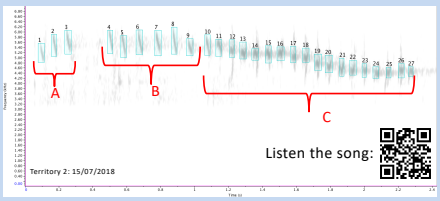


selection	group	duration (sec)	frequency min. (kHz)	frequency max. (kHz)	IQR* Band width (kHz)
1-2	A	0.04	5.21	6.42	0.32 ± 0,02
3-6	B	0.04	4.85	6.64	0.31 ± 0,06
7-15	C	0.04	4.91	6.37	0.24 ± 0,07

* IQR: Inter-quartile range is the difference between the first and the third quartile value of the measured frequency

Fig. 4

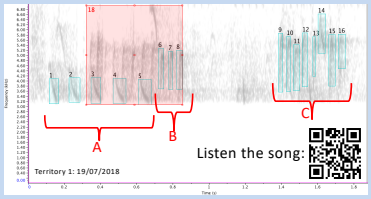
Rock Fire Finch



selection	group	duration (sec)	frequency min. (kHz)	frequency max. (kHz)	IQR* Band width (kHz)
1-3	A	0.04	4.81	6.05	0.22 ± 0,04
4-9	B	0.04	5.00	6.18	0.25 ± 0,06
10-27	C	0.04	4.18	5.88	0.09 ± 0,03
Payne 1998	*Chew*	*0.6*	*3.2*	*4.8*	-
	Treeee	-	*5*	*6*	-

Fig. 5

Jos-Indigobird (non-breeding)



selection	group	duration (sec)	frequency min. (kHz)	frequency max. (kHz)	IQR* Band width (kHz)
1-5	A	0.06	3.06	4.13	0.23 ± 0,03
6-8	B	0.03	3.66	5.26	0.21 ± 0,14
9-16	C	0.03	4.17	6.61	0.36 ± 0,12
18		0.53	3.07	6.95	0.92

Conclusion

In this first analyse I selected parts of the songs of the Jos-Indigobird and the Rock Firefinch which could be recognized optically in the sonogram to the song description „chew" (A, B) und „treee" (C) after Payne (1998). Both species have more song syllabes.

(1) The song mimicry of the Jos-Indigobird has changed during the last 20 years:
My measurements of the song of the Rock Firefinch are different to the parameters measured by Payne (1998): shorter duration of single calls, changing frequencies. The frequency of the song of the Rock Firefinch is higher in our days in group A,B and in group C less than described by Payne (1998). Most likely followed the song of the Jos-Indigobird this development, because the male showed here sings even higher than the model Rock Firefinch.

(2) Singing non-breeding males of the Jos-Indigobird own a different song structure than adult males of the same species.
The song parameters of the non-breeding juvenile male is different to the model host and the adult male Jos-Indigobird: optically, duration of single calls, and frequency (min. and max.). It has combination of song parts, which do not occur in the songs of Rock Firefinch nor Jos-Indigobird adult (marker 18).

Outlook

The analyse of the existing song records will continue, to proof these first results and to enlarge the hypotheses to the question that Jos-Indigobirds in neighbour territories have different song mimicry.

An other expedition to the Amurum Forest Reserve is planned in 2019 to record more songs of both species, if possible with a better recorder, and to confirm the results of this year.

Reference: Payne, R. B. 1998. A new species of firefinch *Lagonosticta* from northern Nigeria and its association with the Jos Plateau Indigobird *Vidua maryae*. *Ibis* 140: 368-381.

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