

# Distribution and abundance of nectar resources in the territories of two Sunbird species in

## Bamenda Highlands, SW Cameroon

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### Study area

Bamenda Highlands (SW Cameroon, N 6° E 10°) belongs to the volcano Mountain ridge running from SE Nigeria to Bioko Island. The highest peak Mt. Oku, reaches 3 011 m. Its isolation from other mountain systems determines a unique species composition, both in Flora and Fauna. Due to high occurrence of endemic species it was included into Endemic Bird Areas of the World. The study site was placed near village Big Babanki at 2 200 m. The montane forests were mostly damaged and remained by streams only. The rest of area is covered by cow pastures with scrubs, *Pteridium aquilinum* growth and rocky hillsides.

### Material and Methods

The territories were assessed according to simultaneous singing records (mean 18.5±7.3 singing points) and territorial quarrels. We gathered locations to seven territories of *C. reichenowi* and five in *C. bouvieri* (Fig. 5). In six cases we found nest, containing eggs or youngs (*C. bouvieri* 2, *C. reichenowi* 4). In total we mapped five territories of *C. bouvieri* and seven for *C. reichenowi*. According to previous observations of feeding sunbirds, we chose six plant species being most important as nectar sources (Tab. 1). For each territory, we counted these nectar sources and estimated number of flowers (Fig. 4). To estimate total daily nectar production, we took samples of nectar volume from five flowers for each plant species (using microcapilars). The plant nectar characteristics shows Tab. 1.

### Sunbird species

#### Northern Double-collared Sunbird (*Cinnyris reichenowi*)

The species occupies open montane forests and highland thickets. It is one of most dominant sunbird in the area. The species build oval nests, hanged on trees or scrubs. Its voice is conspicuous by short chirping. It vocalizes also during the feeding or utters its song from elevated points.

#### Orange-tufted Sunbird (*Cinnyris bouvieri*)

The species inhabits more open habitats, such as scrubby grasslands or forest edges. It build pocket-like nest, hanged on vegetation near the ground (especially *Pteridium aquilinum* growth). The voice is a short, repeated notes. It sings also during the feeding or at elevated points, especially *Lobelia* plants. The species is slightly heavier than previous one (males: 6.8 vs. 8.4 g) and has longer bill ( 19.4 vs. 21.1 mm).

### Results

The territories were indicatively larger in *C. bouvieri* (Kruskal-Wallis median test, p=0.07; Fig. 1). The territory overlap between species reached 13.8%, for *C. reichenowi* territories 2.4% and for *C. bouvieri* 4.2%. *Hypericum lanceolatum* and *Lobelia columnaris* were the main nectar resources for Sunbirds (Tab. 1). The proportion of *Lobelia* plants was higher in territories of *C. bouvieri*. However, this difference was indicative only (Fig. 3). Simultaneously, there was higher proportion of *Hypericum* scrubs in the territories of *C. reichenowi*. Although, the territories of *C. bouvieri* were larger than territories of *C. reichenowi*, the total daily nectar production in whole territory (all six plants included) was similar in both Sunbird species (Fig. 2).

Figure 1 The territory size of two *Cinnyris* Sunbirds (bouvieri n=5, reichenowi n=5). Kruskal-Wallis median test, p=0.07.

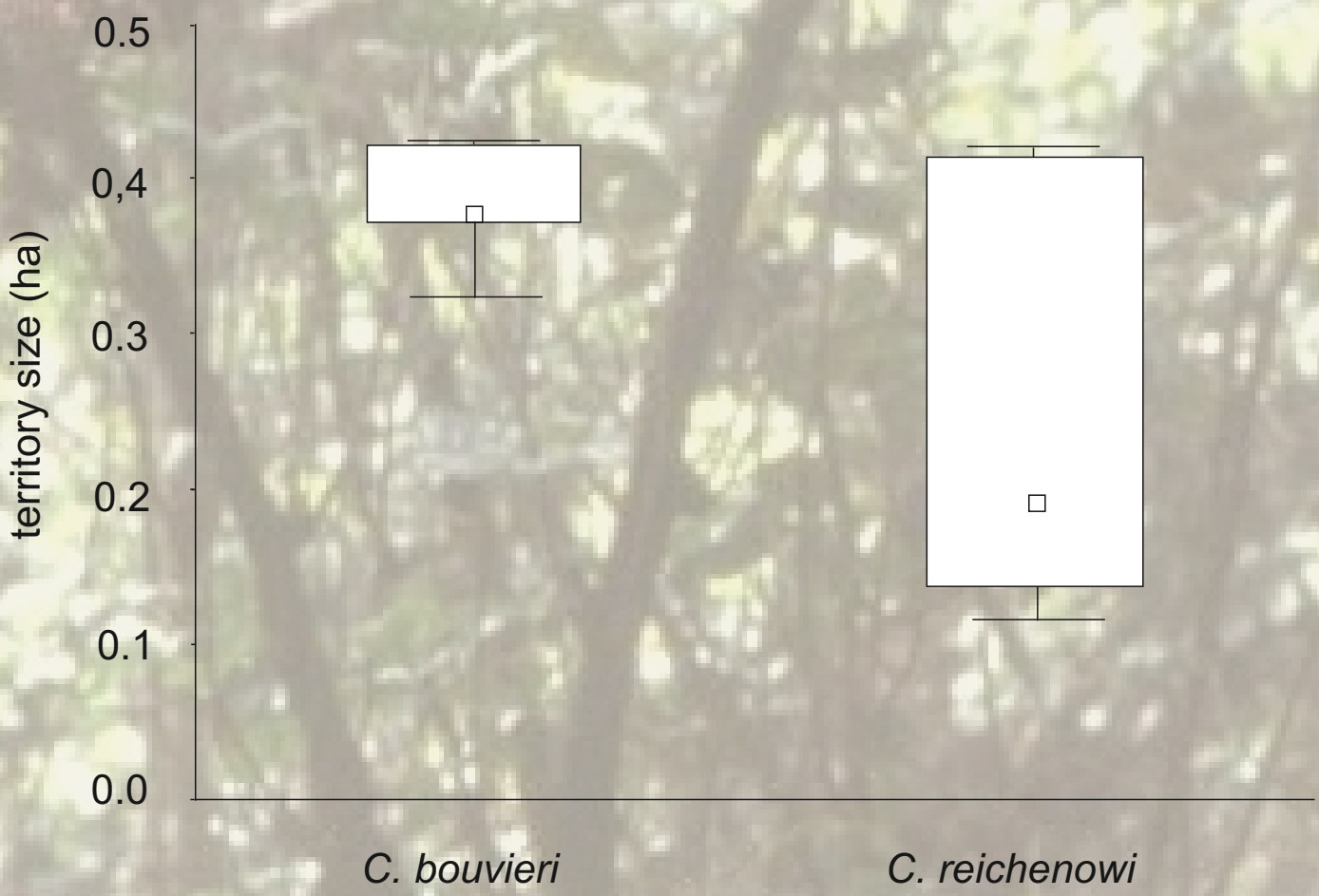


Figure 2 The total nectar production (ml) of all plants in territories of two *Cinnyris* Sunbirds. Kruskal-Wallis median test, p>0.4.

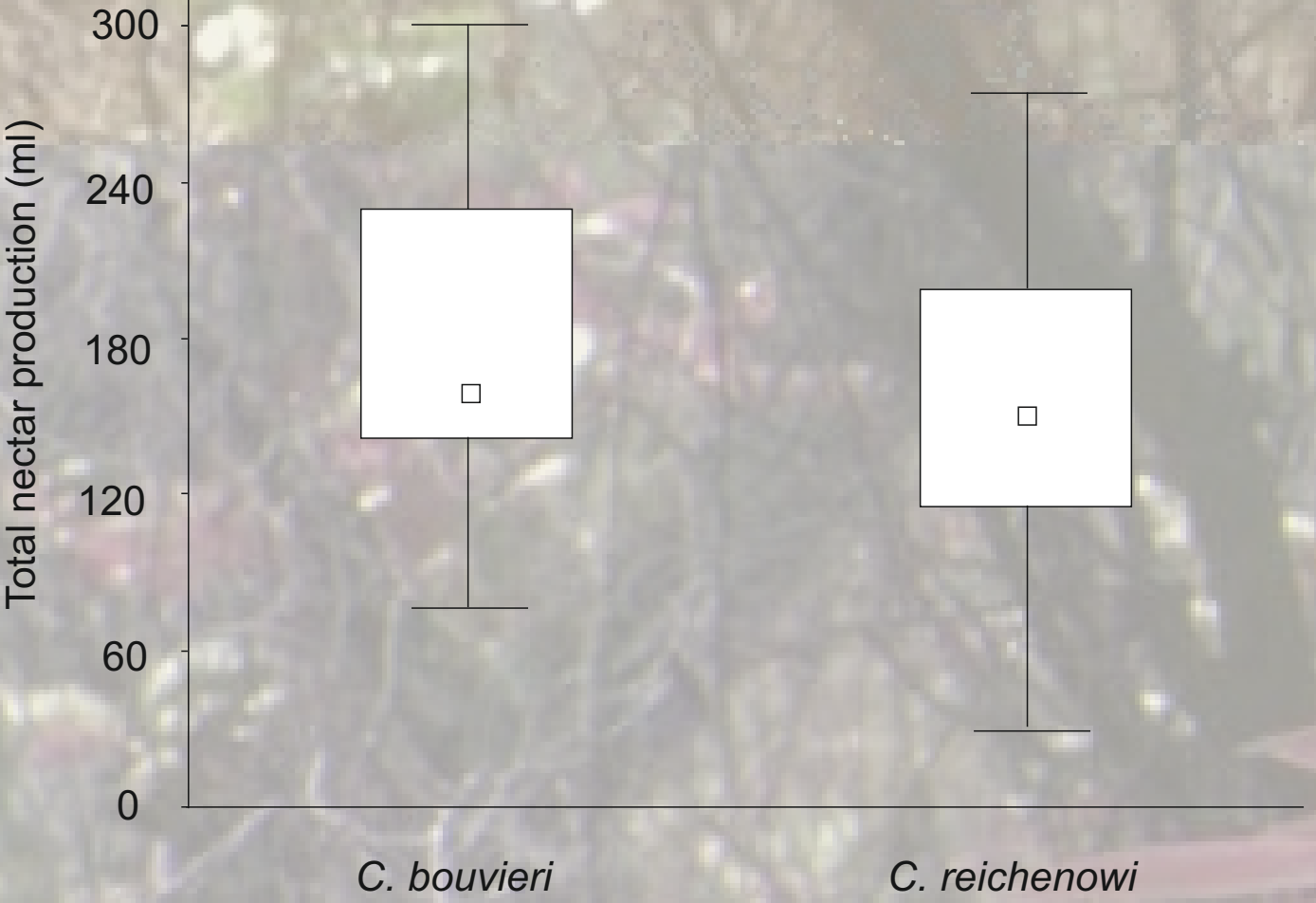


Figure 3 The proportion of total daily nectar production in two main plants for two *Cinnyris* Sunbird species. Kruskal-Wallis, p=0.15.

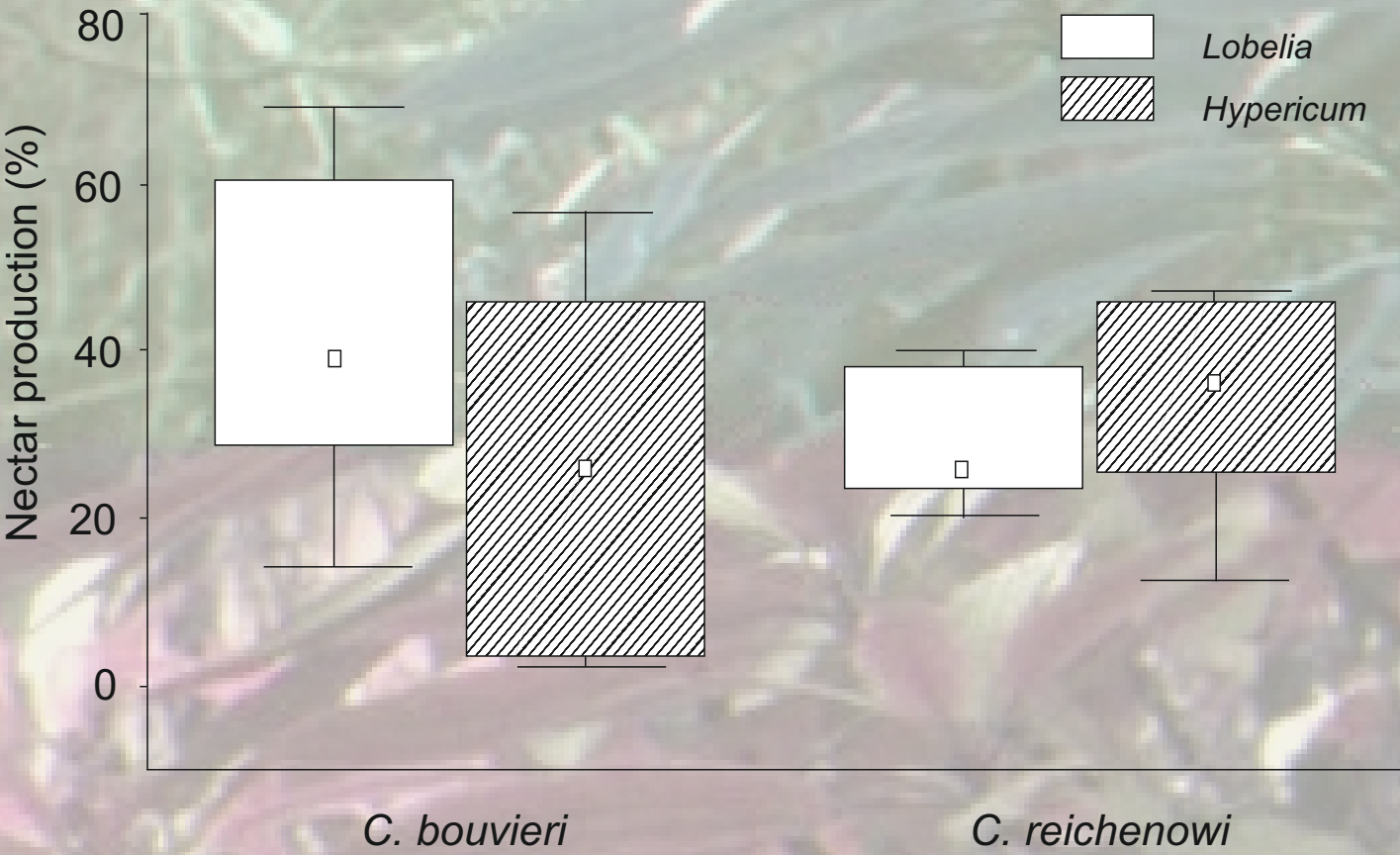


Figure 4 Example of resources distribution in Northern Double-Collared Sunbird. Numbers indicate number of florescences.

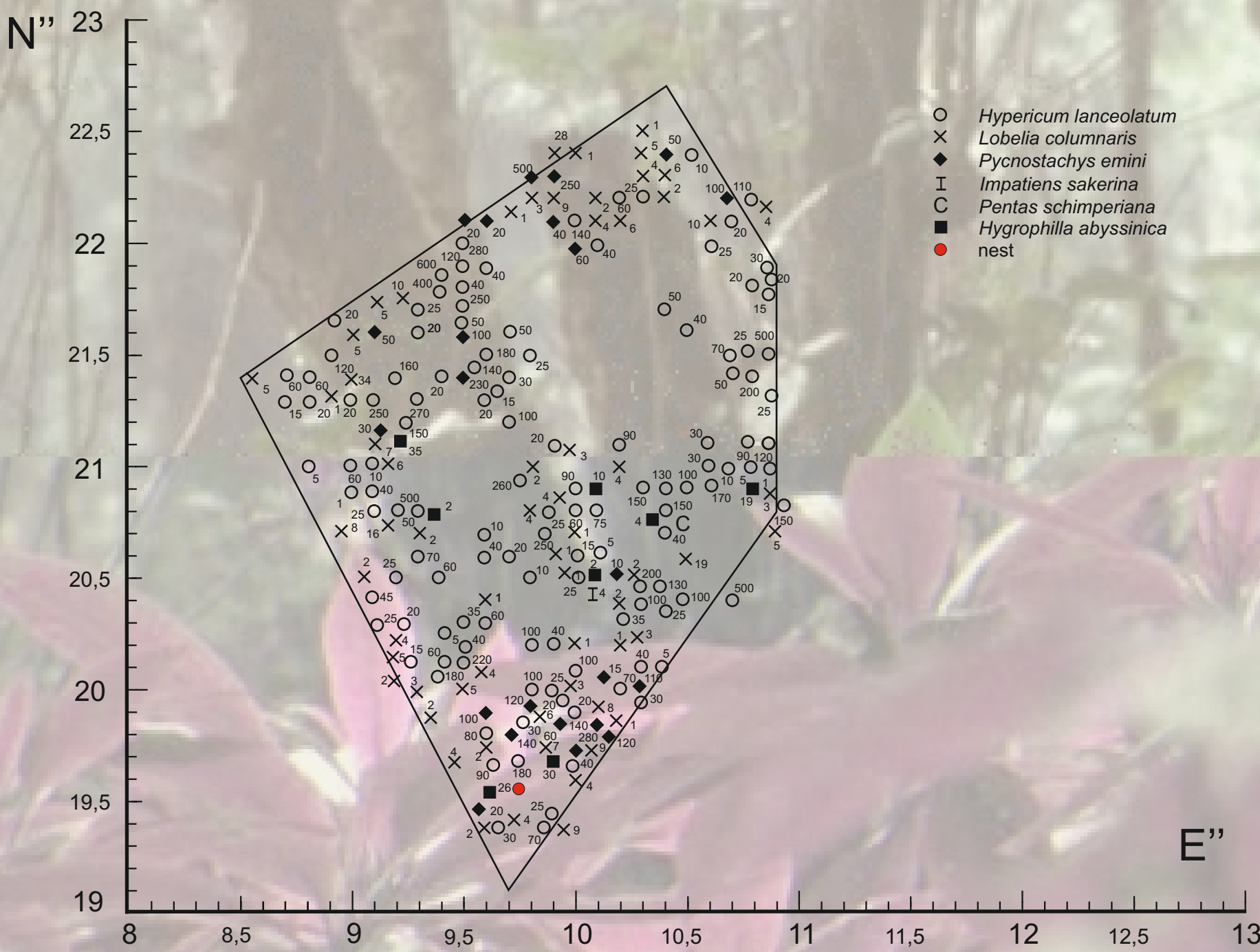


Figure 5 Placement and overlaps of territories in two Sunbird species.

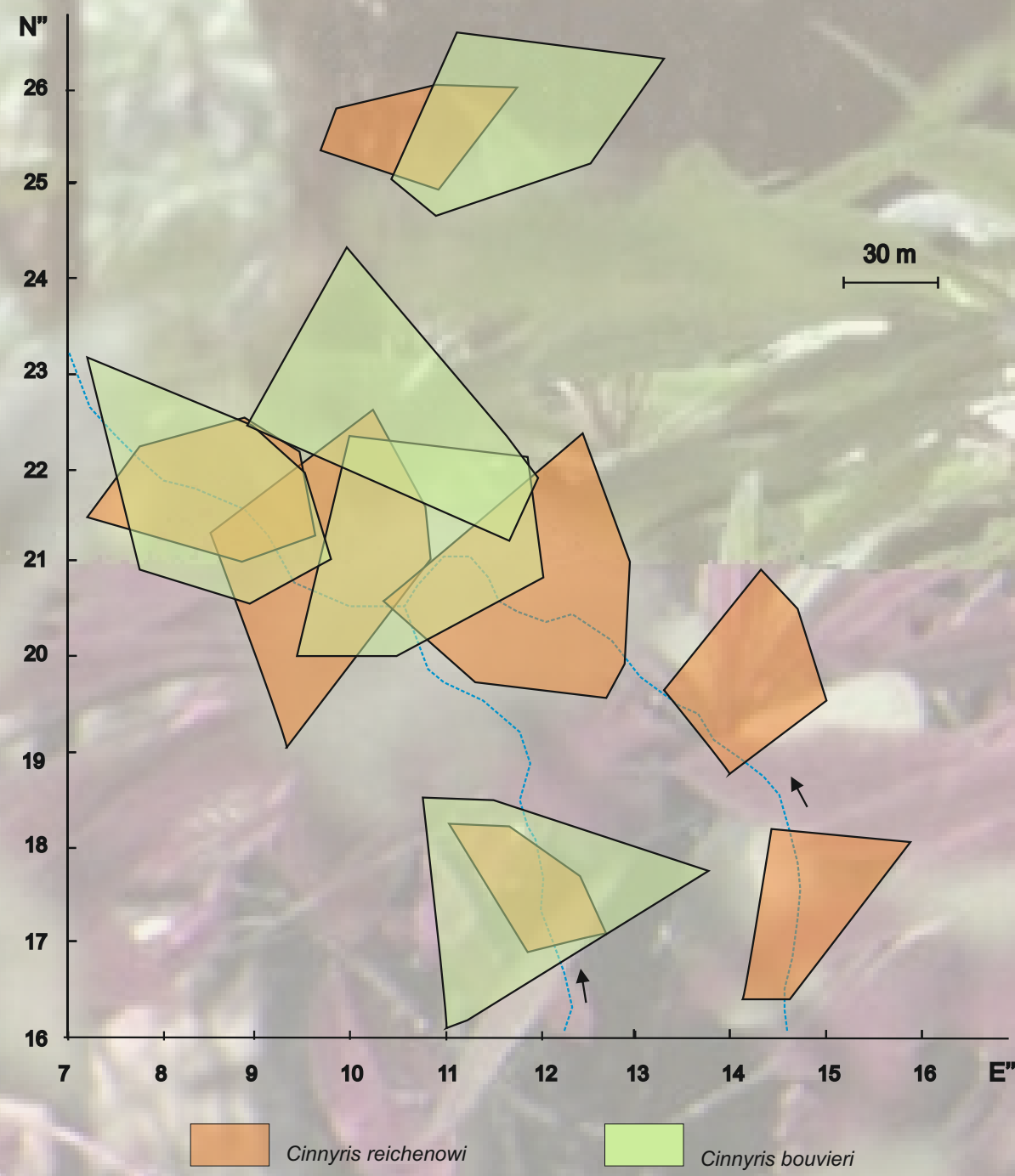


Table 1 Number of resources, nectar characteristics of studied plant species and mean daily nectar production (%) for studied Sunbird territories.

plant species	mean number of nectar sources per territory		mean number of flowers per territory		mean nectar volume per flower (µl)	mean of nectar production in territory (%)	
	bouvieri	reichenowi	bouvieri	reichenowi		bouvieri	reichenowi
<i>Lobelia columnaris</i>	42	31	158	137	13.02	52.2	38.8
<i>Hypoestes sp.</i>	9	8	489	1553	1.06	1.3	9.6
<i>Impatiens sakerina</i>	1	3	17	20	12.71	0.0	0.2
<i>Hypericum lanceolatum</i>	47	48	100	111	14.2	36.8	44.0
<i>Pycnostachys emini</i>	16	12	2405	2506	0.37	8.3	4.5
<i>Pentas schimperiana</i>	8	7	1209	0	2.12	1.4	2.9

### Conclusions

- \* The territories of *C. bouvieri* were larger than those of *C. reichenowi*. However, this difference is indicative only.
- \* The proportion of nectar resources of *C. bouvieri* is largely represented with *Lobelia* plants, for *C. bouvieri* rather *Hypericum* scrubs.
- \* The total daily nectar production (in whole territory) did not differ between *C. bouvieri* and *C. reichenowi*.

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