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Population Dynamics of the White Stork in Belozem – the European Stork Village in Bulgaria, During the Period 2015–2025

Stilyana Yaneva, Gradimir Gradev, Dimitar Popov & Irina Kirova

Presenter: Stilyana Yaneva
Green Balkans

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Belozem – the European Stork Village in Bulgaria

European Stork Village since 2005 • long-term annual monitoring dataset

2005

designation as European Stork Village

2015–2025

monitoring period used in this analysis

11 years

annual breeding data records

- Belozem has been part of the European Stork Villages Network since 2005 and is one of the most important White Stork breeding settlements in Bulgaria. The village is well known for its long tradition of coexistence between local people and nesting storks.

Its regular annual monitoring provides a valuable long-term dataset for assessing breeding dynamics, breeding success and juvenile production.

The analysis focuses on interannual dynamics, breeding success and juvenile production.

The dataset includes breeding pairs, successful pairs, pairs without fledglings and fledged juveniles.

Data and indicators used

Annual monitoring indicators used for the assessment of population dynamics and breeding performance

Indicator	Meaning
HPa	number of breeding pairs
HPm	number of breeding pairs with fledglings
HPo	number of breeding pairs without fledglings
HPx	number of breeding pairs with unknown breeding success
JZG	total number of fledged juveniles
JZa	fledglings per breeding pair
JZm	fledglings per successful breeding pair

0

HPx records in 2015–2025

The analysis uses descriptive statistics and year-by-year comparisons to show general trends and fluctuations in breeding performance.

Main outputs shown in the presentation: pair dynamics, success rate, fledged juveniles and productivity indicators.

Key results for the whole period

Belozem supported a stable and productive White Stork breeding population during 2015–2025

511

breeding-pair records

433

successful breeding-pair
records

78

pairs without fledglings

1,226

fledged juveniles

84.7%

overall success

46.5

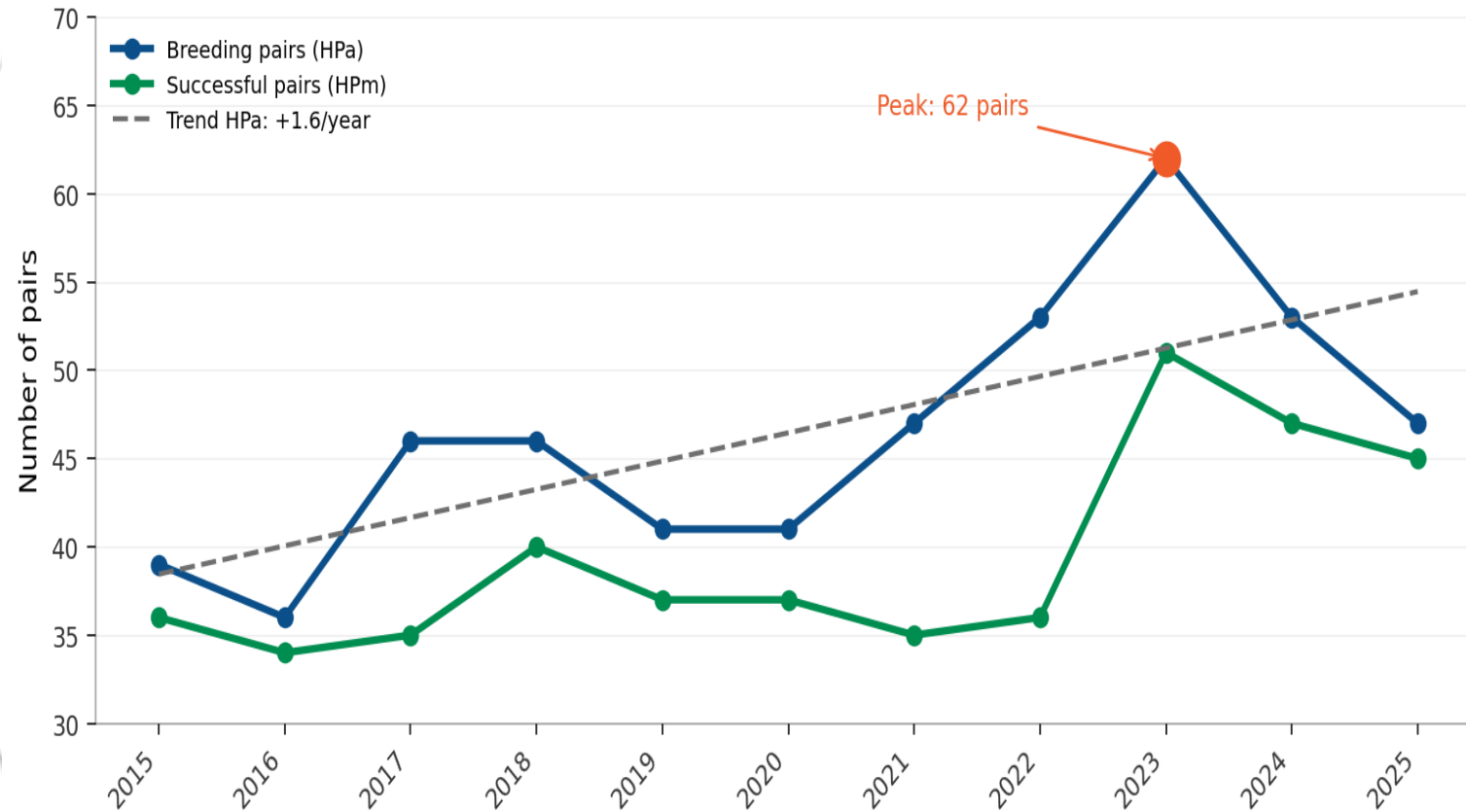
breeding pairs / year

111.5

fledged juveniles / year

Overall result: 84.7% of all breeding-pair records in the 11-year period were successful.

Breeding pair dynamics



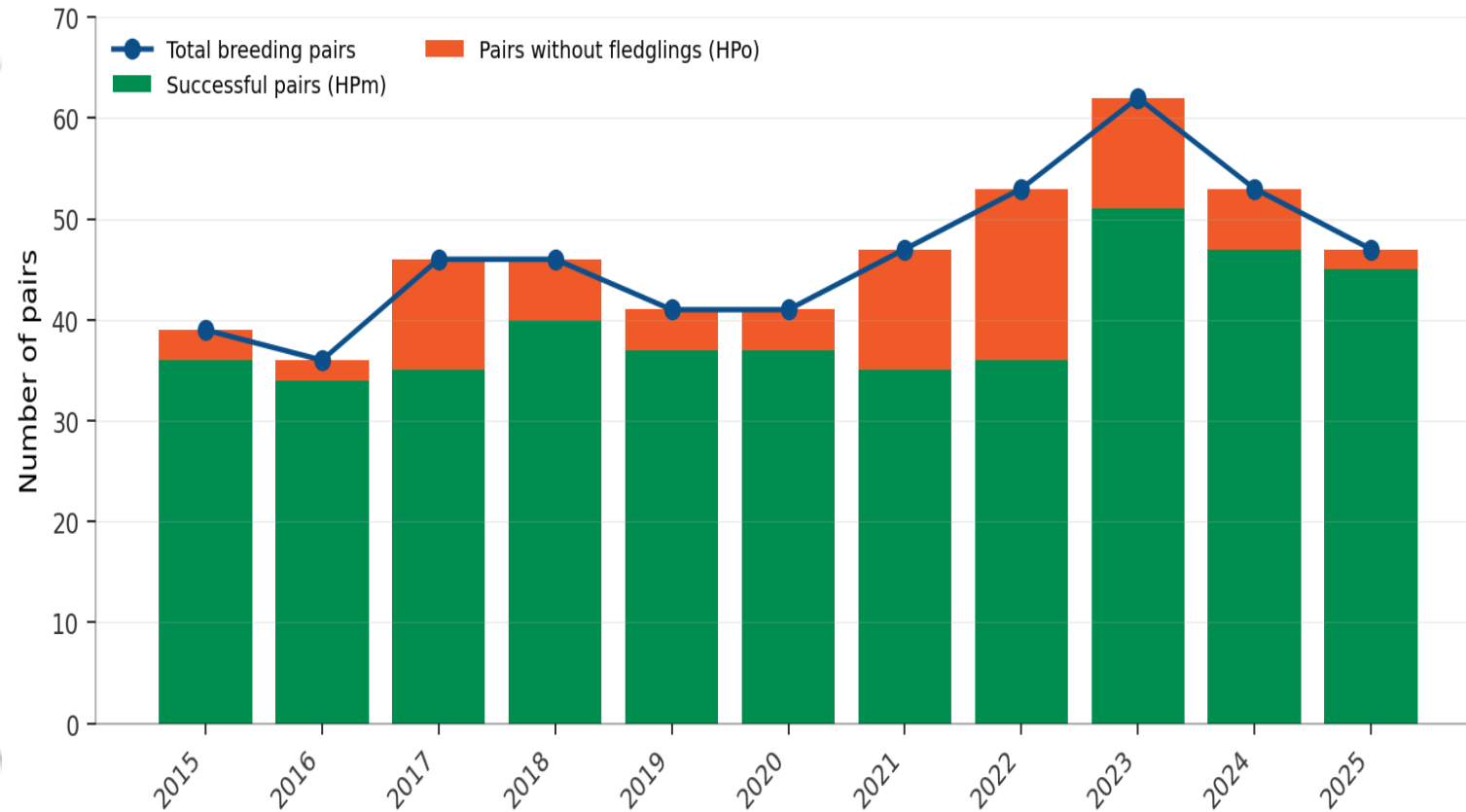
Total breeding pairs ranged from 36 to 62 per year.

A clear increase is visible from 2021 to the peak in 2023.

Successful pairs followed the same general pattern, reaching 51 in 2023.

Trend line for HPa: approximately +1.6 breeding pairs/year over the 11-year period.

Successful and unsuccessful breeding records



Successful pairs strongly dominated in most years.

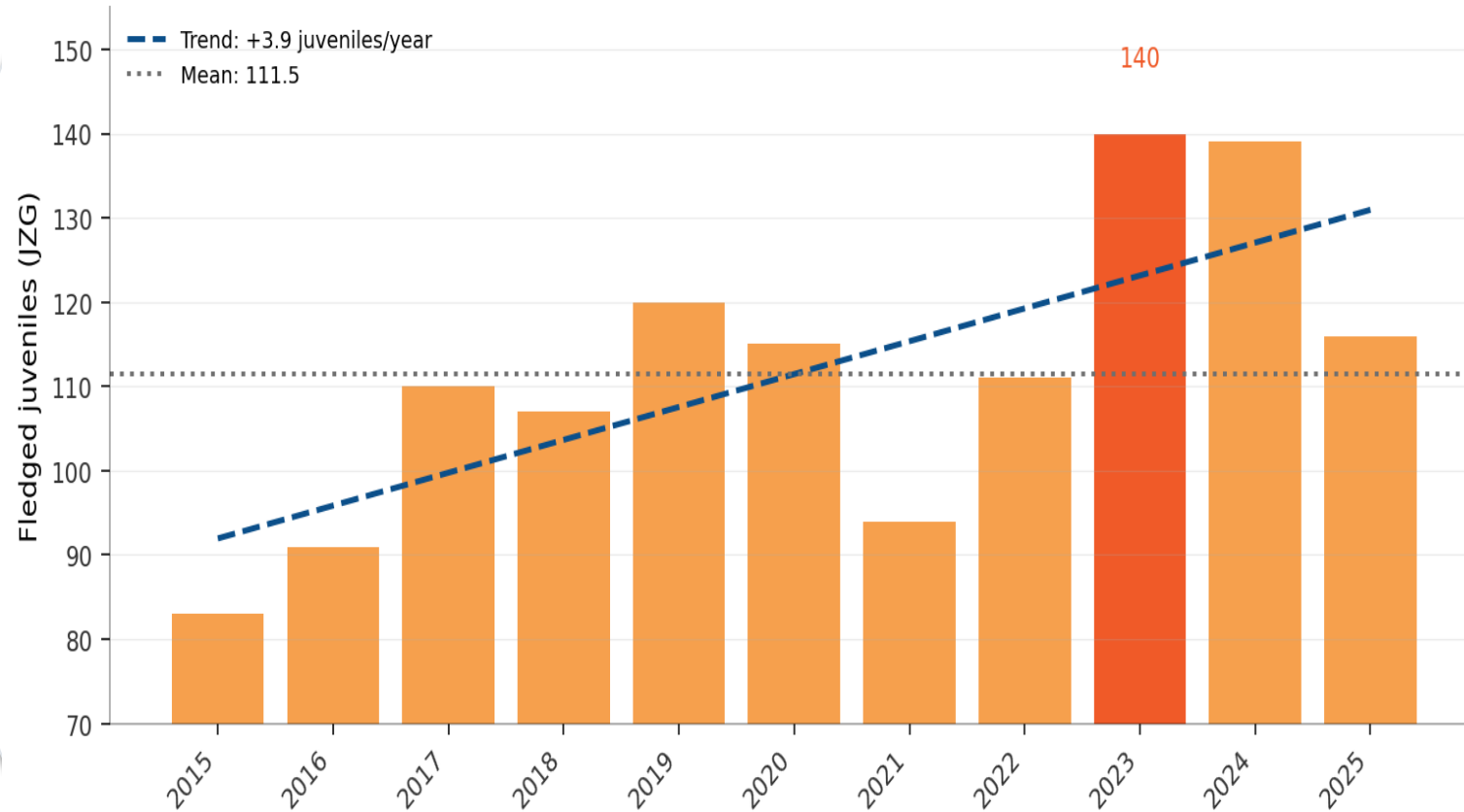
The highest number of unsuccessful pairs was recorded in 2022.

After 2022, the share of successful pairs increased again.

433 / 511

successful breeding-pair records

Annual production of fledged juveniles



A total of 1,226 juveniles fledged during 2015–2025.

Annual production ranged between 83 and 140 fledged juveniles.

The highest values were recorded in 2023 and 2024.

Long-term mean: 111.5 fledged juveniles per year.

Breeding success rate proportion of pairs with fledged juveniles



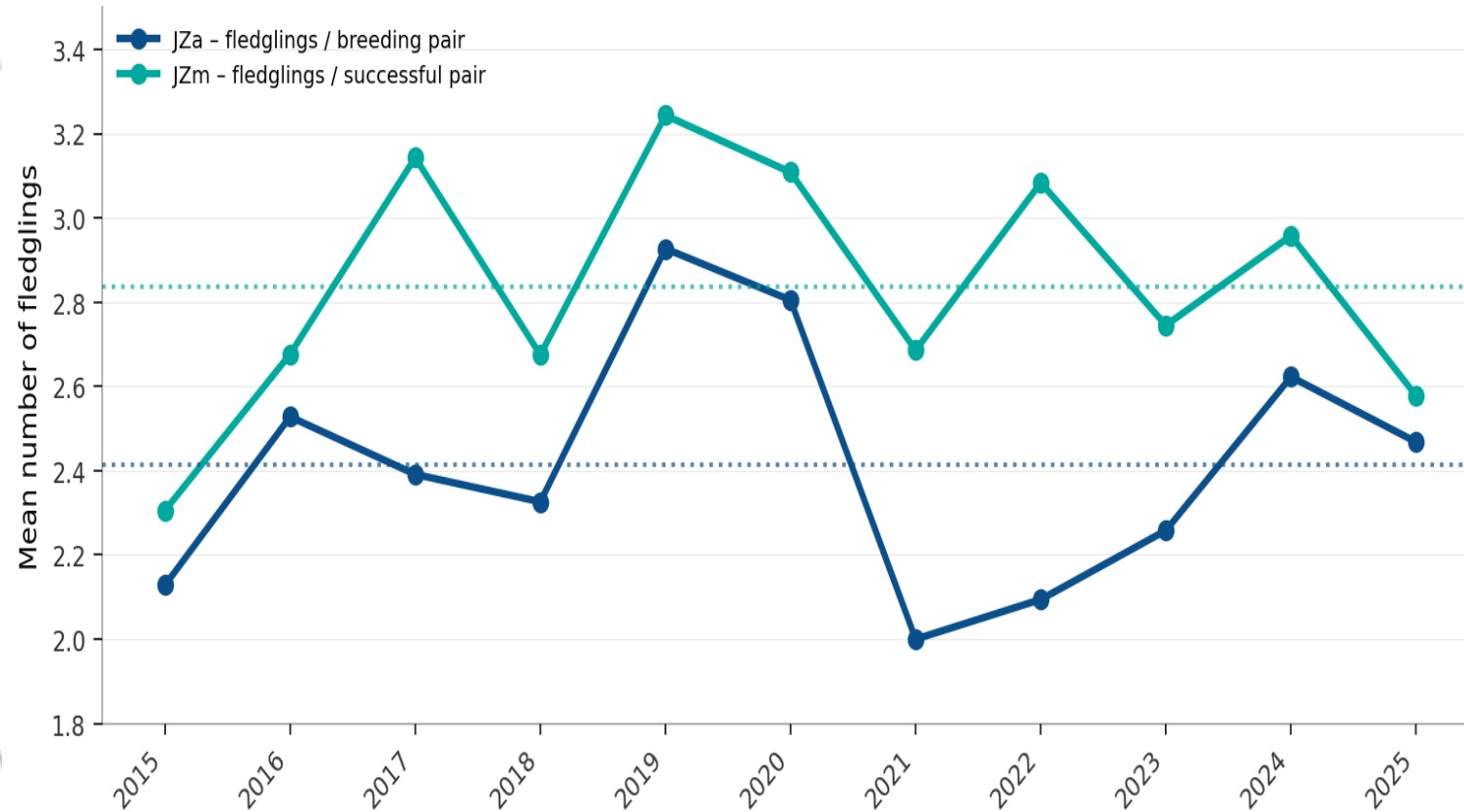
Overall success for the period:
84.7%.

The lowest annual value was
recorded in 2022.

The highest annual success rate
was recorded in 2025.

Despite annual fluctuations, the
population maintained high
breeding success in most years.

Productivity indicators



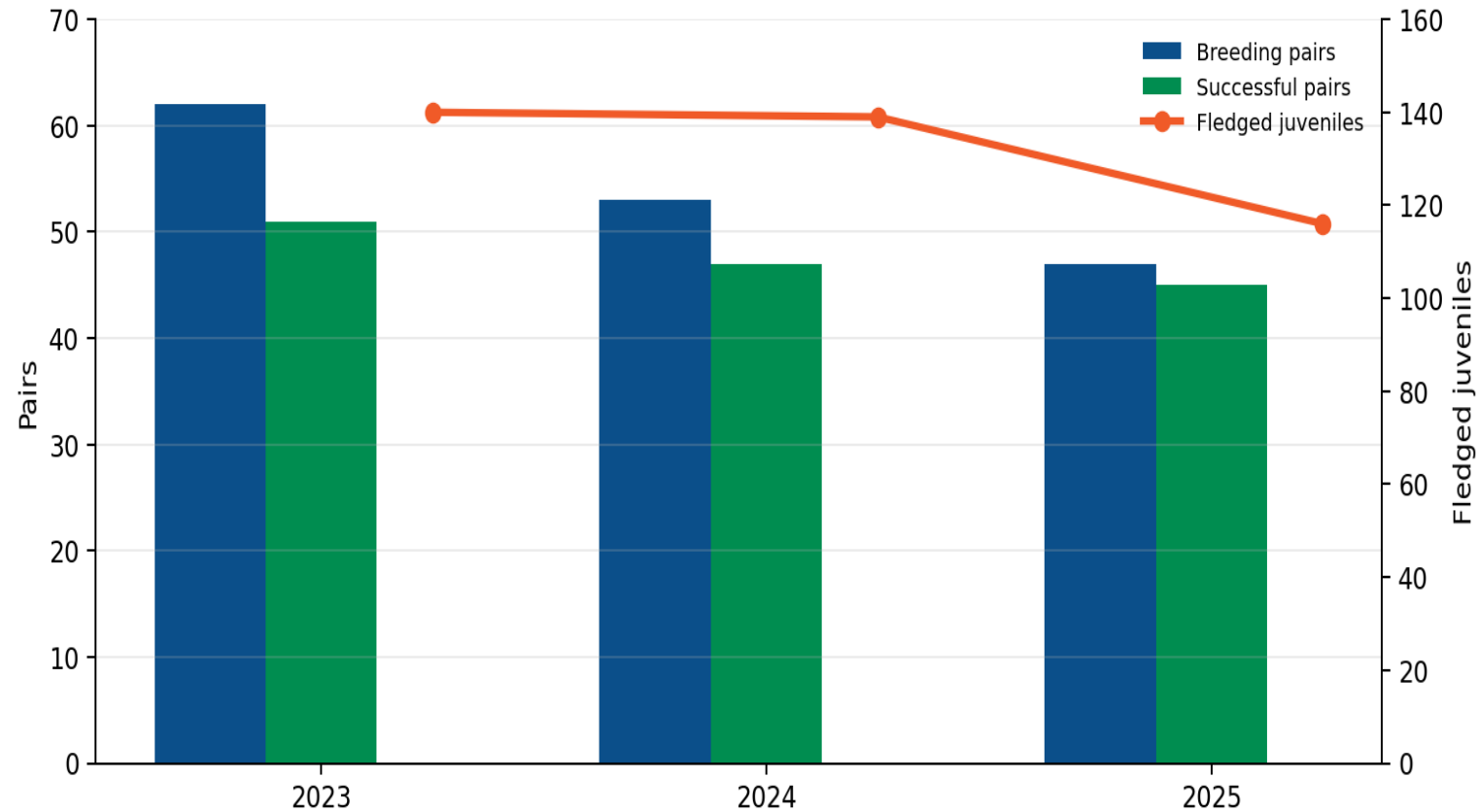
JZa averaged 2.41 fledglings per breeding pair.

JZm averaged 2.84 fledglings per successful pair.

Productivity remained within a relatively stable range throughout the period.

The highest productivity values were recorded in 2019.

Peak and recent years: 2023–2025



2023: peak year for breeding pairs, successful pairs and fledged juveniles.

2024: slightly fewer pairs, but almost the same fledged juvenile output.

2025: fewer breeding pairs than 2023–2024, but the highest annual success rate.

95.7%

success rate in 2025

Annual results table

Core monitoring values used for the analysis

Year	HPa	HPm	HPo	JZG	JZa	JZm	Success
2015	39	36	3	83	2.13	2.31	92.3%
2016	36	34	2	91	2.53	2.68	94.4%
2017	46	35	11	110	2.39	3.14	76.1%
2018	46	40	6	107	2.33	2.67	87.0%
2019	41	37	4	120	2.93	3.24	90.2%
2020	41	37	4	115	2.80	3.11	90.2%
2021	47	35	12	94	2.00	2.69	74.5%
2022	53	36	17	111	2.09	3.08	67.9%
2023	62	51	11	140	2.26	2.75	82.3%
2024	53	47	6	139	2.62	2.96	88.7%
2025	47	45	2	116	2.47	2.58	95.7%

Highlighted row: 2023, the peak year for breeding pairs, successful pairs and fledged juveniles.

Main conclusions

Belozem supports a stable and productive White Stork breeding population.

The population produced 1,226 fledged juveniles over 11 monitoring years.

The overall proportion of successful breeding-pair records was high: 84.7%.

The peak performance in 2023 and the high success rate in 2025 confirm the long-term importance of the village as a breeding site.

Continued annual monitoring is important for early detection of changes in breeding success and productivity.

Stable

breeding population

Productive

juvenile output

Important

ESVN representative site

Research support

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THANK YOU!

Questions?

Stilyana Yaneva | Green Balkans

