

Development of a sensitivity map and a web-based tool for the assessment and mitigation of disturbance risk for nesting birds, caused by climbing activities in Greece.

Methodological approach and interaction with the climbing community.



LIFE 17/NAT/GR000514

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Hellenic Ornithological Society

19-20-21 September 2023
Matera (Italy)



Introduction

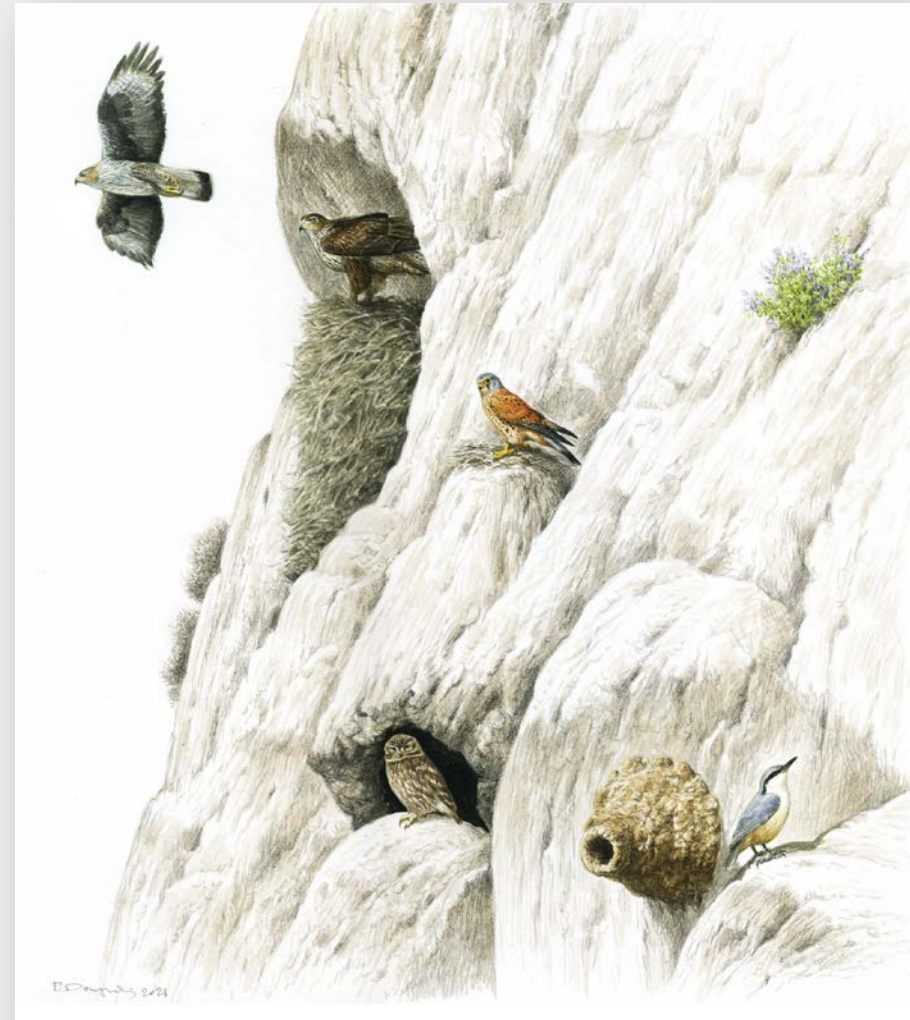
Vertical rock-wall (*cliffs*) ecology



Vertical rock-walls constitute an important, yet fragile ecosystem

Some Vertical Rock-walls' facts:

- ✓ They are among the least degraded habitats
- ✓ They host few but very important species (specialized / endemics)
- ✓ Vertical rock-walls are contributing to biodiversity more than one would expect based on their extent
- ✓ Despite their worldwide distribution they are rather poorly surveyed
- ✓ They are present everywhere on earth



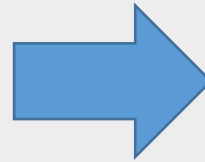
Introduction

Vertical rock-wall ecology

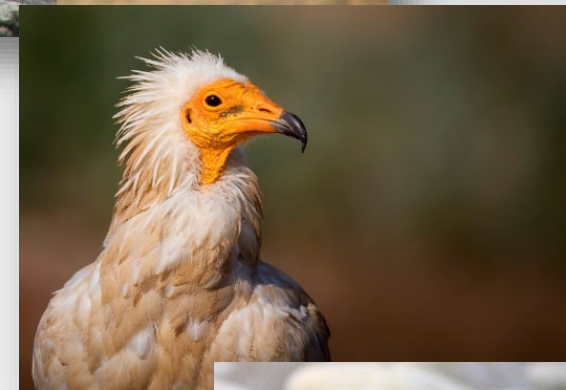
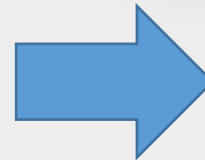
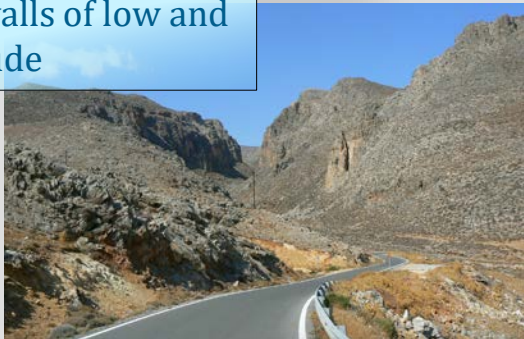


Rock-walls in the mediterranean region can belong to different **bioclimatic zones**.
As a result ,each zone hosts different species, that are specifically adapted there

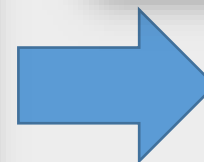
Coastal rock-walls



Inland rock-walls of low and medium altitude



Inland rock-walls of high altitudes



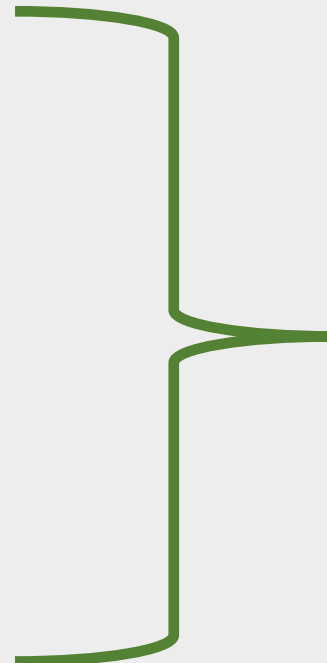
Humans on the rocks

the variety of activities



The variety of human recreational activities on, or around the rock-wall environment, is an important factor when studying the possible impacts.

-  CLIMBING (in all its forms)
-  CANYONING (& speleology)
-  AIR SPORTS (including drones)
-  HIKING
-  WILDLIFE WATCHING
-  OTHER (incl. hunting / fishing)



Wildlife may be able to tolerate (at a certain degree) one type of activity if it is routinely practiced, but can hardly cope with the existence of different, simultaneous, activities that significantly increase pressure on a site.

Impact of climbing on the avifauna and the rest of the wildlife



Unfortunately, the impact of climbing and other outdoor activities on avifauna is not thoroughly studied.

Ardeola 51(2), 2004, 425-430

ROCK CLIMBING AND RAVEN *CORVUS CORAX* OCCURRENCE DEPRESS BREEDING SUCCESS OF CLIFF-NESTING PEREGRINES *FALCO PEREGRINUS*

Mattia BRAMBILLA*¹, Diego RUBOLINI** & Franca GUIDALI*

Rock climbing activity and physical habitat attributes impact avian community diversity in cliff environments

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Apart from the avifauna, several other taxa might be severely affected by human outdoor activities such as climbing.

Methodology

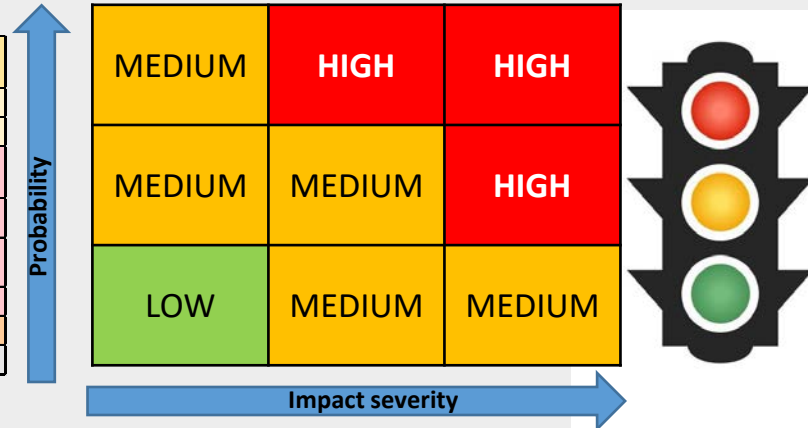
The approach in the case of the Bonelli's eagle



Risk Assessment was treated as a multi-factor problem.

Weighted Multi Criteria Analysis (MCA) was used to express various Risk levels according to the Traffic Light Indicator System

RISK MATRIX			Potential Impact * Weighted					
			Unknown (0)	Very Low (1)	Low (2)	Medium (3)	High (4)	Very High (5)
			0	0.05	0.2	0.6	1.2	1.75
Probability	Very High	5	0	0.25	1	3	6	8.75
	High	4	0	0.2	0.8	2.4	4.8	7
	Medium	3	0	0.15	0.6	1.8	3.6	5.25
	Low	2	0	0.1	0.4	1.2	2.4	3.5
	Very Low	1	0	0.05	0.2	0.6	1.2	1.75
	Unknown	0	0	0	0	0	0	0



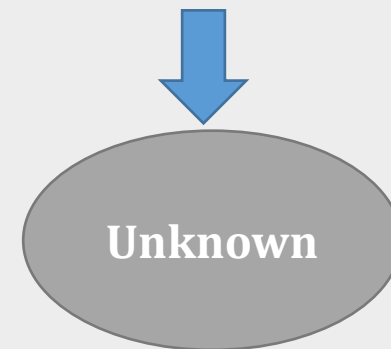
Disturbance Probability Criteria

- ✓ Species (ecology, morphology etc)
- ✓ Season (breeding or not)
- ✓ Topography and Morphology of the area (Direct visual contact and distance from nesting site)
- ✓ Type of Activity (sport climbing, trad etc.)
- ✓ Volume of visitors (cumulative effects)

Potential Impact criteria

- ✓ Mortality / Loss of individuals
- ✓ Displacement
- ✓ Impacts on reproduction/foraging success
- ✓ Habitat degradation (loss of roosts, perches, prey, a.o.)

Last but not least!!!
A 4th color of Risk level was introduced



Methodology

The approach in the case of the Bonelli's eagle



	Categories	Score	weight	final score	
Disturbance Probability Criteria _ Basic List	Distance from nesting site	0-250m	3	0,6	
		250-500m	2	0,4	
		500-1000m	1	0,2	
		over 1000m	0	0	
	Season	Breeding	3	0,2	0,6
		Non_Breeding	1	0,2	0,2
	Visual contact	Yes	2	0,2	0,4
		No	1	0,2	0,2
	Species	Eagle / Vulture	3	0,2	0,6
		Big Falcon	2	0,2	0,4
		Eagle Owl	2	0,2	0,4
		Small Falcon	1	0,2	0,2
	Type of Activity	Sport Climbing	3	0,1	0,3
		Via Ferrata	3	0,1	0,3
		Other (Hiking / Camping)	2	0,1	0,2
		Trad Climbing / Bouldering	1	0,1	0,1
Volume of visitors	High	3	0,1	0,3	
	Medium	2	0,1	0,2	
	Low	1	0,1	0,1	
	total weight		1		

Probability of Disturbance SCORE	Distance from nesting site	250-500m	0,4
	Season	Breeding	0,6
	Visual Contact	Yes	0,4
	Species	Eagle / Vulture	0,6
	Type of Activity	Sport Climbing	0,3
	Volume of Visitors	Low	0,1
	total disturbance rating		

Probability of Disturbance RATING	Very High	>2.5	5
	High	2<>2.5	4
	Medium	1.5<>2	3
	Low	1.0<>1.5	2
	Very Low	<1.0	1
	Unknown	0	0

Potential Impact Criteria	Mortality / Loss of individuals	Very High	5	CRITICAL damage factors
	Displacement of resident birds		5	
	Reproductive success	High	4	factors that can cause SEVERE damage
	Foraging success		4	
	Loss of roosting / perching sites	Medium	3	MODERATE damage / factors not necessarily connected to breeding territories
	Reduction of prey abundance		3	
	Minor degradation of habitat	Low	2	factors with minor / SUSTAINABLE impacts
	Minor degradation of habitat	Very Low	1	

Methodology

The approach in the case of the Bonelli's eagle



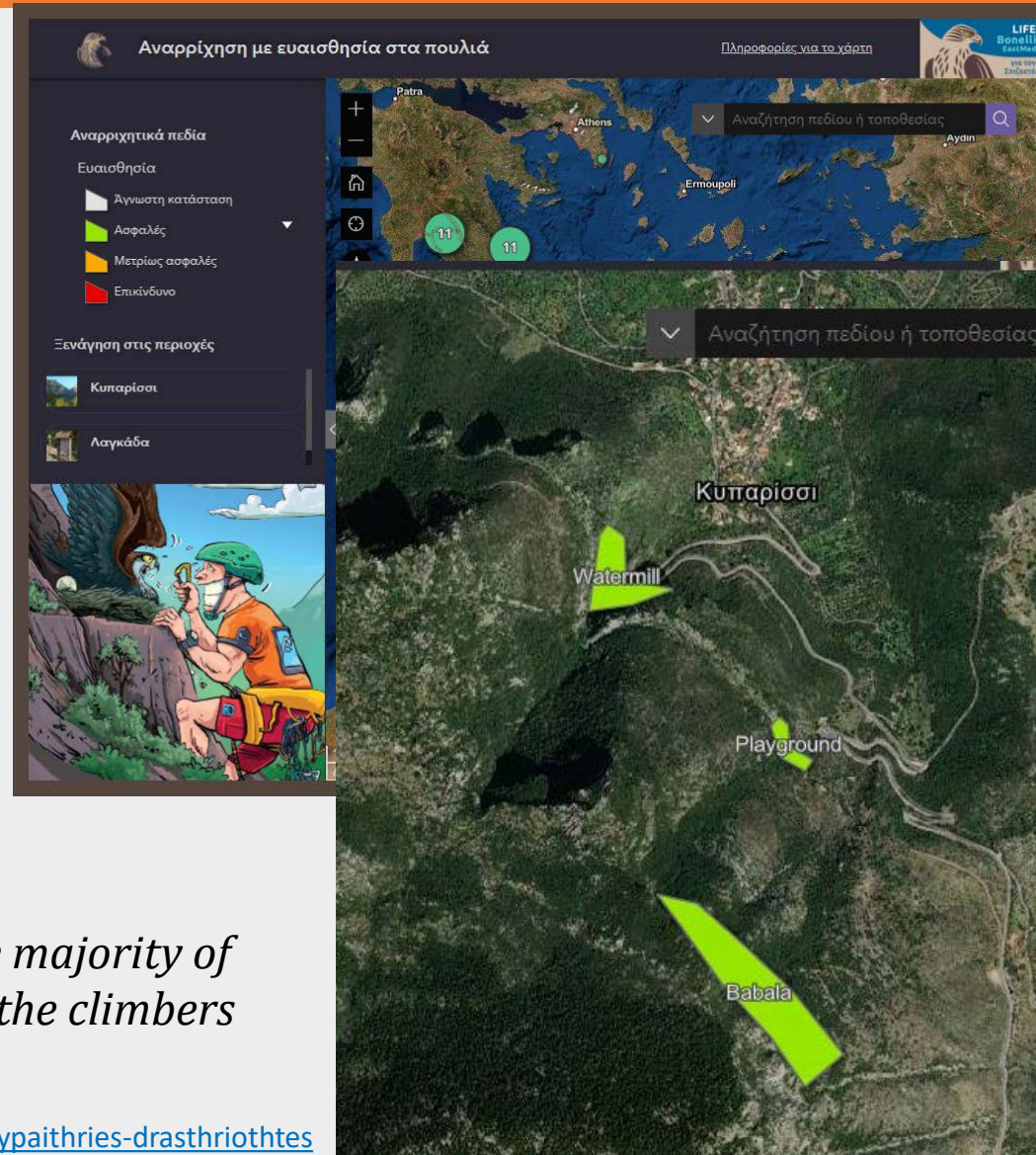
Way of Presentation to the climbing community

- ✓ We created a web-based tool, based on a map depicting the risk-level per season (breeding / non-breeding) **at the Sector Level**

But why at Sector-Level?

- ✓ Ease of site discrimination
- ✓ Accuracy VS Safety (of the birds)
- ✓ Facilitation of fieldwork
- ✓ Facilitation of data input from climbers and local stakeholders

Restrictions are not mandatory (in the majority of the cases) and rest on the good-will of the climbers



Communication

Working together with the climbing community



- ✓ Meetings with climbing clubs at local level
- ✓ Development of guidelines for creation and responsible behavior (legislation)
- ✓ Introduction of seasonal restrictions for climbing in coordination with the local clubs and/or the responsible authorities
- ✓ Cooperation at national-level with the Greek climbing federation
- ✓ Info material (leaflet / stickers etc.)
- ✓ Webinars for Mountain Guides and Clubs
- ✓ Questionnaires
- ✓ Cooperation with the climbing community on the field (data collection, research, decision-making)



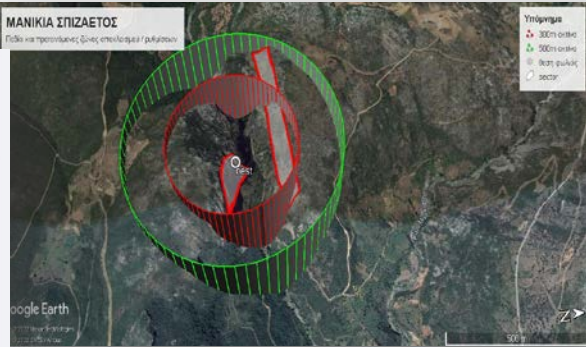
Ο χώρος της **Petal** είναι στην τοποθεσία **Manikia, Evvoia, Greece**.
 [Important Update] #PetzRocTrip Manikia

For the avifauna protection, you are requested to avoid recreational activities at the North Face sector that causes serious disturbance: Climbing and opening of new climbing routes, Paragliding & Drone flying.
 Event date: from the 12th of May 2022 to the 15th of May 2022

ΠΡΟΣΟΧΗ - ATTENTION

Για λόγους προστασίας ειδών ορνιθοπανίδας παρακαλούμε να αποφεύξετε οποιεσδήποτε δραστηριότητες στο νέο North Face:

- ✓ Αναρρίχηση & άνοιγμα αναρρηκτικών πεδίων
- ✓ Αιωροπτερισμός
- ✓ Πέταγμα drone
- ✓ Climbing and opening of new climbing routes
- ✓ Paragliding
- ✓ Drone flying



Conclusions - Suggestions



CONCLUSIONS

- ✓ Climbing and the rest of outdoor activities (o.a.) are getting increasingly popular (especially in the post-Cov19 era).
- ✓ The extent of o.a's impact and the ways it is inflicted are rather understudied.
- ✓ National legislation is not sufficient in providing guidelines or regulatory measures.
- ✓ Introduction of restrictions for o.a can significantly reduce the risk for avifauna.
- ✓ Cooperation with the climbing community and adoption of common decision-making processes is considered as a productive solution.
- ✓ Education and information of the stakeholders is of principal importance for the successful protection of rock-wall ecosystems

SUGGESTIONS

- ✓ Scientific knowledge on the impacts of o.a must be improved.
- ✓ National and EU legislation must be updated accordingly.
- ✓ The co-operation between scientists, authorities and the o.a community must be strengthened.
- ✓ All stakeholders must be thoroughly informed on the potential dangers.

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