2026 The 4th International Symposium of Mapping Asia Plants
Harbin, China
Aug. 30-Sep. 1
第四届亚洲植物多样性编目国际研讨会
Perspectives on Temperate Asia

Mapping plant diversity in Iran: from floristic patterns to future distributions

Alireza Naqinezhad- University of Derby, UK & University of Mazandaran, Iran

Aug/Sep 2026- Harbin, China

My presentation

1. Present occurrence species data and rationale for its development

2. Present and future perspective on vegetation database

3. Asian Regional Section of IAVS-a new initiative

"Although there are certain independent efforts of biodiversity database development in China Mainland and China Taiwan, India, Japan and Korea, ***there is no complete biodiversity database in most Asian countries, which has serious impacts on biodiversity research and protection at a regional scale in Asia".***

Biodiversity Committee
Chinese Academy of Sciences



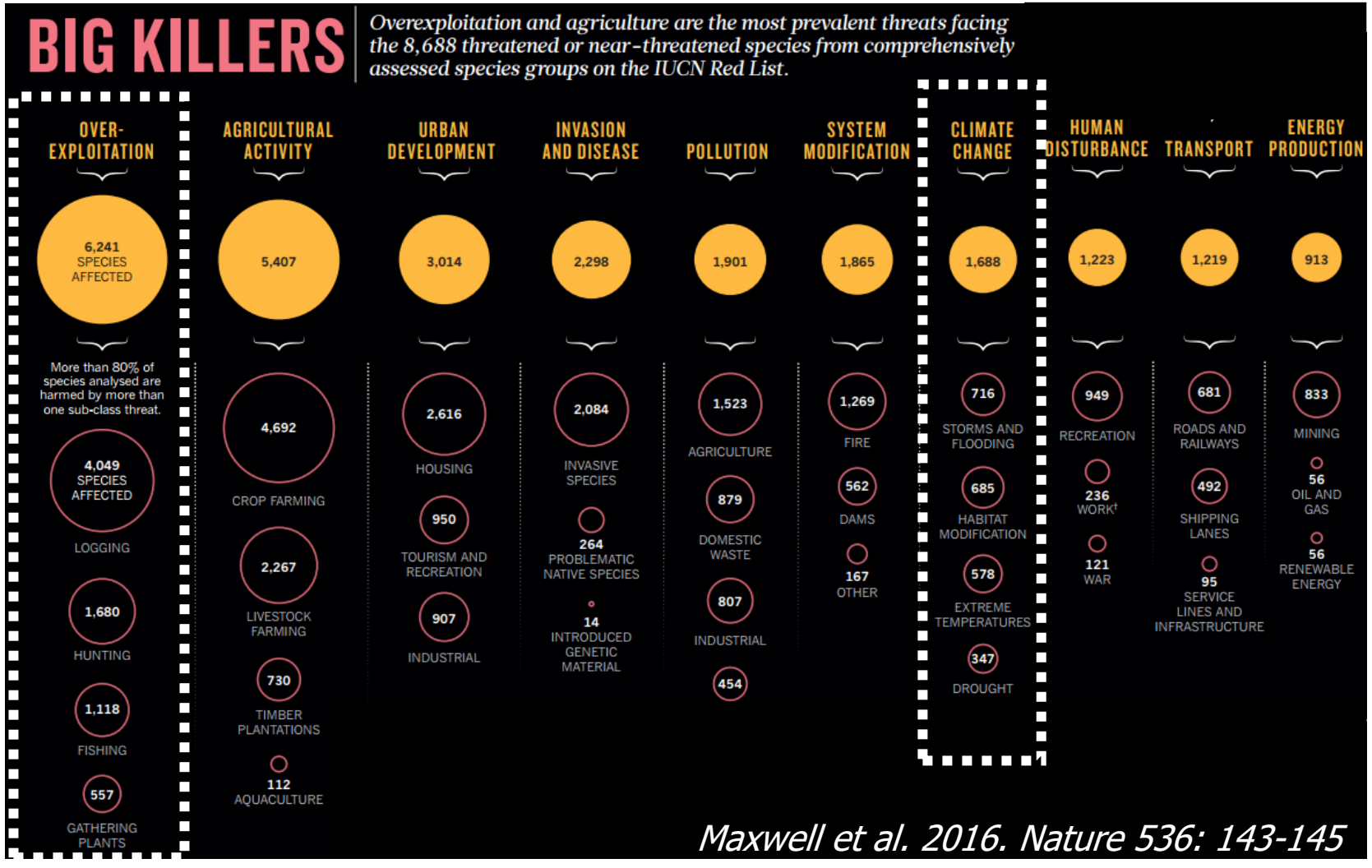
BIG KILLERS of biodiversity?



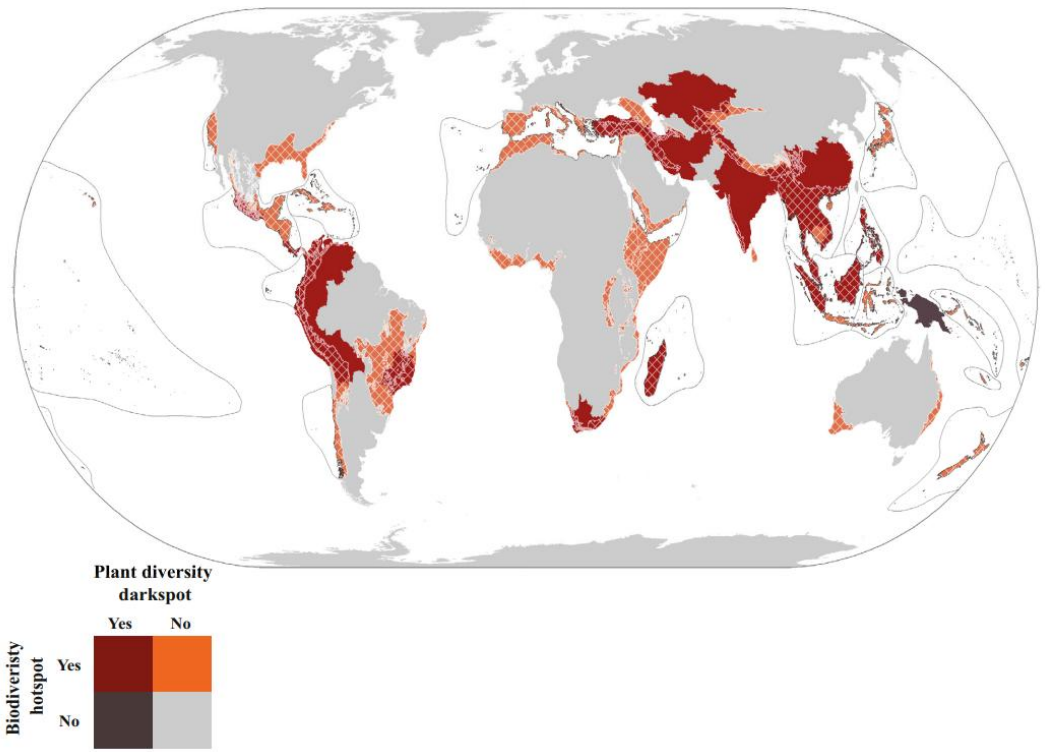


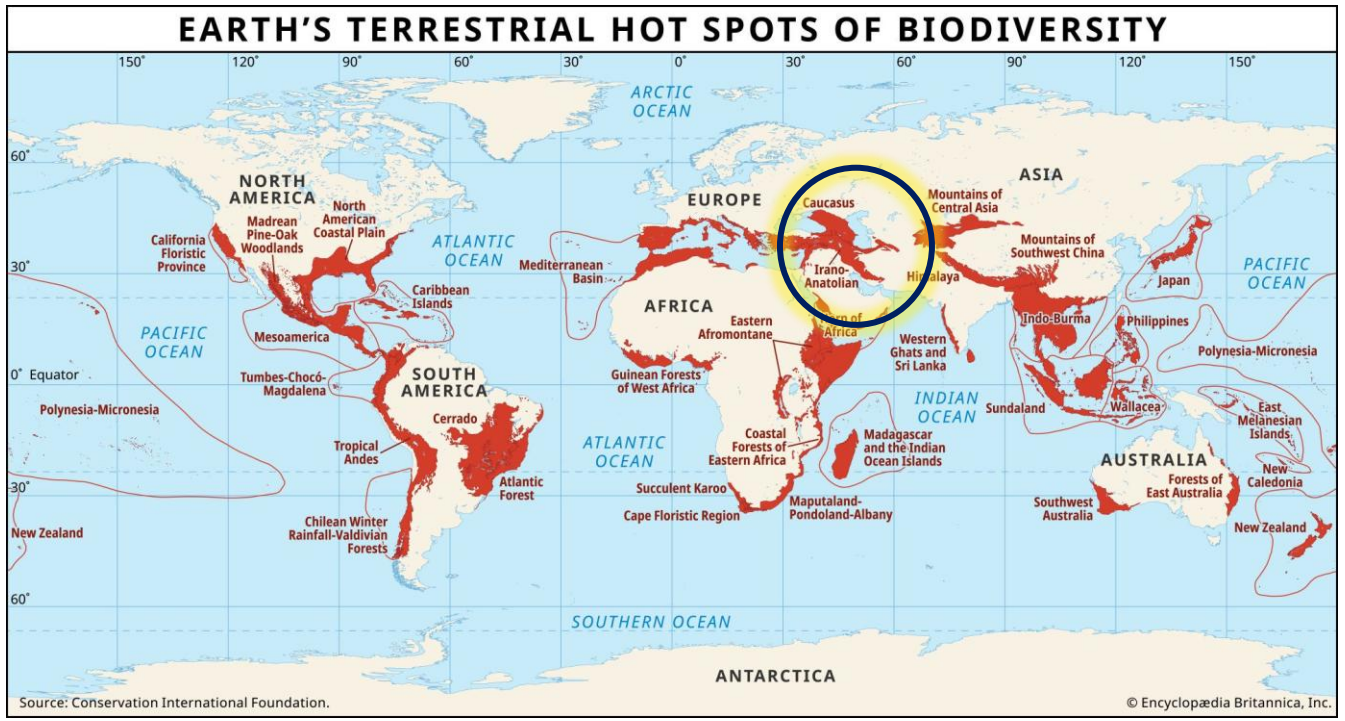
>72% of species

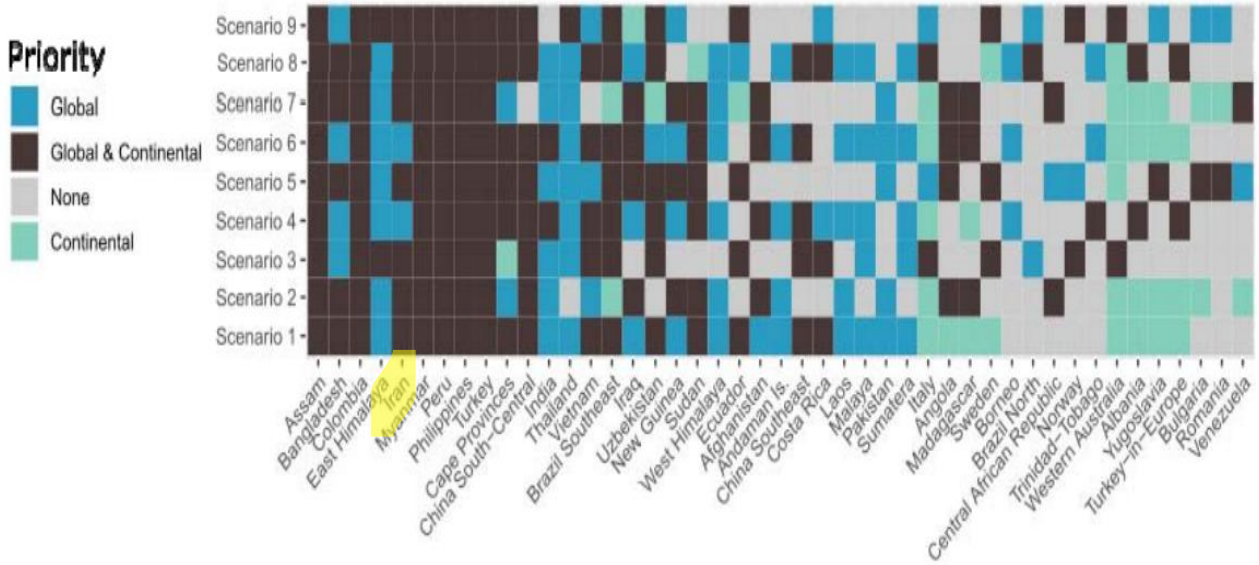




SW Asia as a dark spot!







- Poor scientific knowledge
- High number of unknown or under-documented species
- 33 regions

Ondo et al. 2024. *New Phytologist*, *244*(2), 719-733.

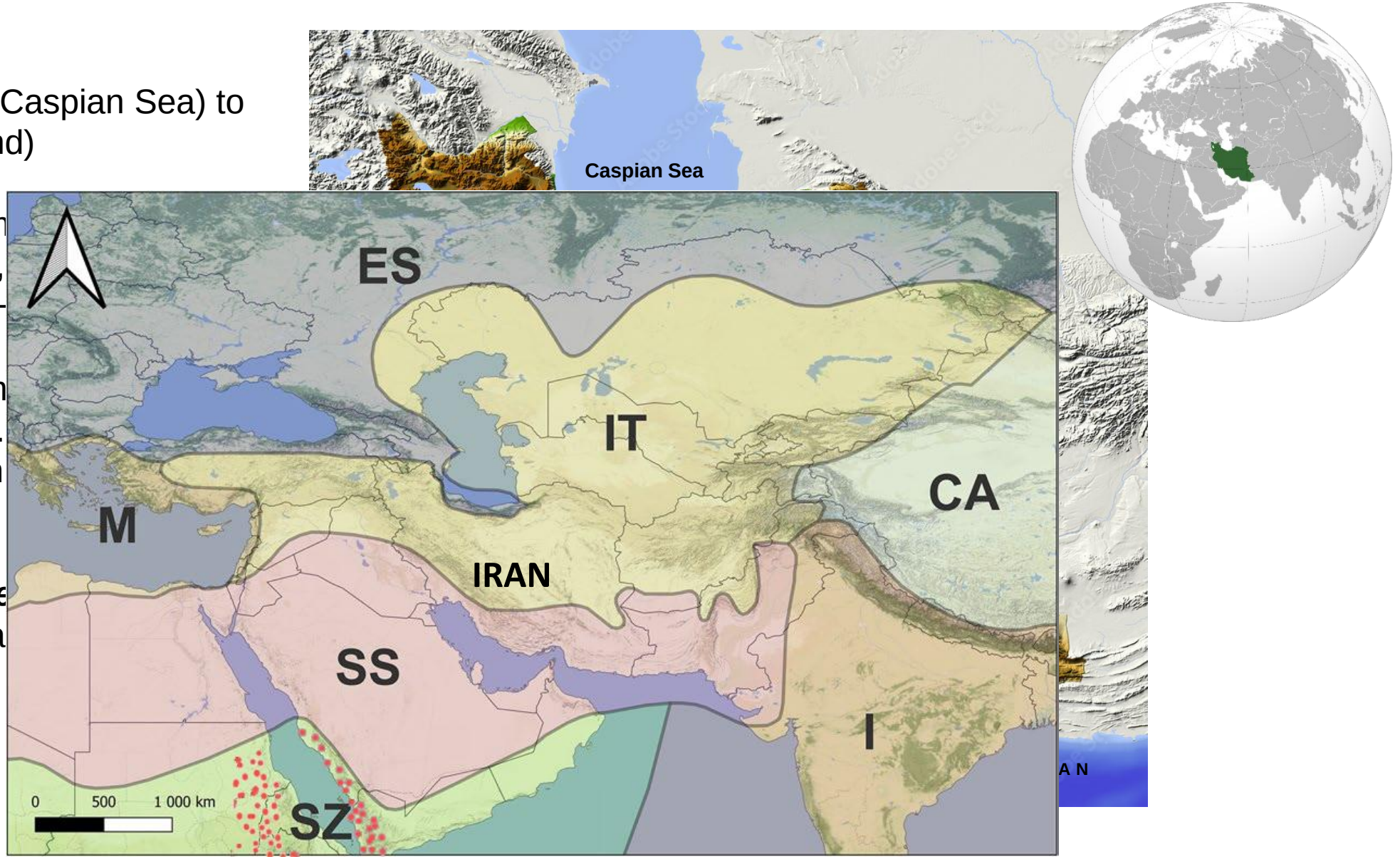
Iran is a country of contrasts and diversity in SW Asia

Elevation: 26 m b.s.l (Caspian Sea) to 5,671 m (Mt. Damavand)

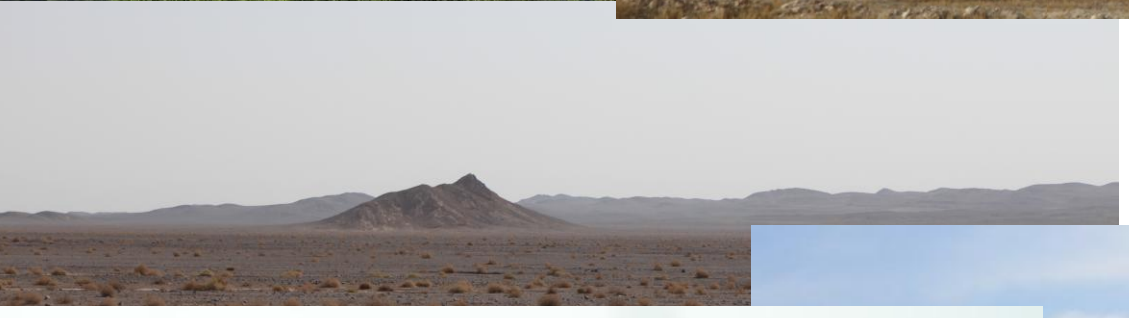
Precipitation: <50 mm deserts (Dasht-e Kavir, over 2,000 mm in the H

Temperature: Mean m temperatures from -13. Mountains to 47.5°C in deserts

Biogeographical zone Siberian, Irano-Turania Sindian regions









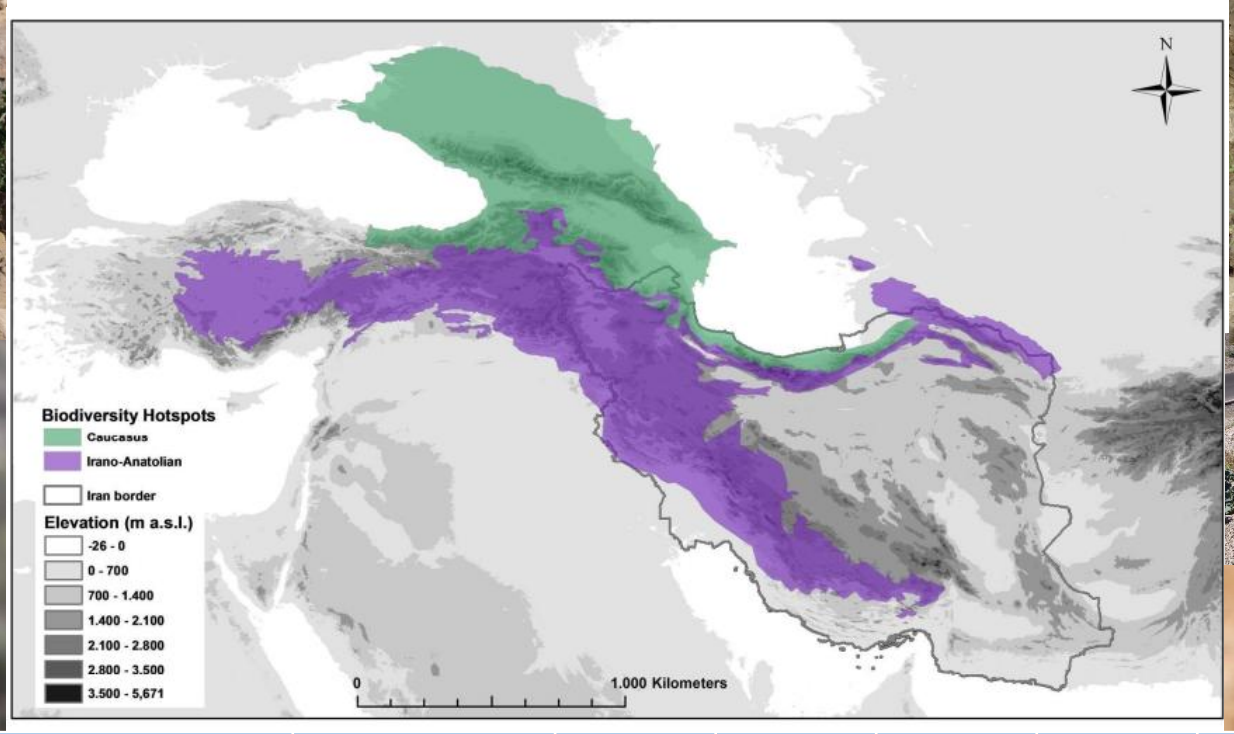
Endemism in Iran



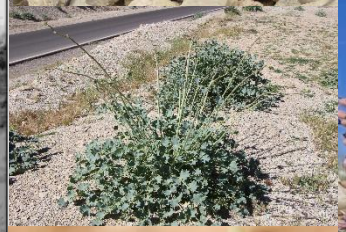




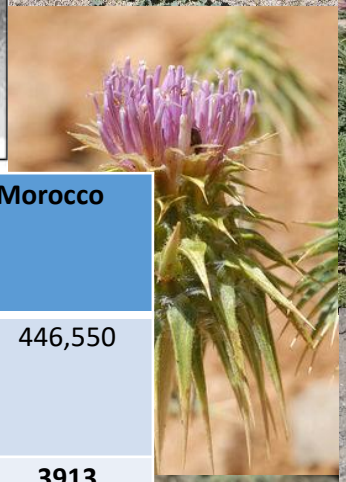
















Family	Iran	Turkey	Greece	Italy	Iberia	Morocco
Area (km2)	1,648,195	783,562	131,957	301,338	588,824	446,550
Total native species	**8112**	**8575**	**5502**	**5935**	**5537**	**3913**
Endemic species	2596 (**32%**)	2651 (**31%**)	1278 (**24%**)	1050 (**18%**)	1328 (**24%**)	640 (**16%**)



Farzaneh Jafari



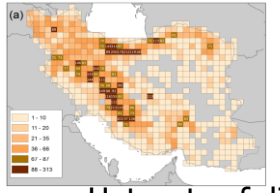
Amir Talebi



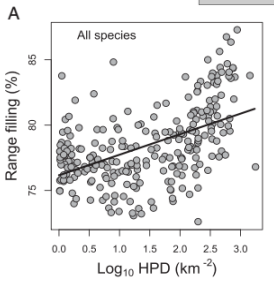
Robabeh Shahi



Fatemeh Heidari

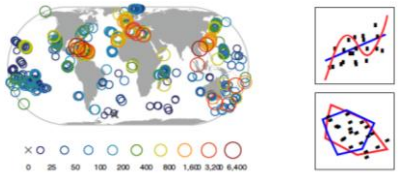


Hotspots of diversity



Phylogenetic diversity

SDMs and its application in climate change and invasive ecology



Macroecological & Biogeographical analyses

Conservation gap

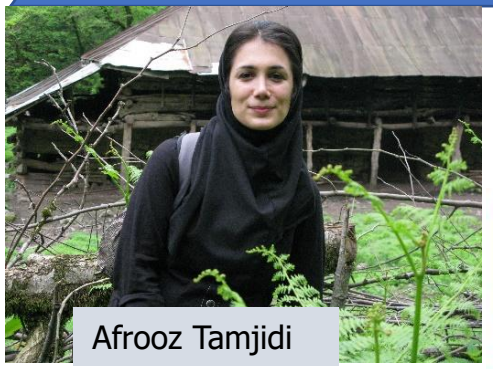
Phytogeographical delimitations

Outcomes

Distribution data and georeferencing

National checklist

Floristic data sources



Afrooz Tamjidi

President's International Fellowship Initiative
国 际 交 流 计 划



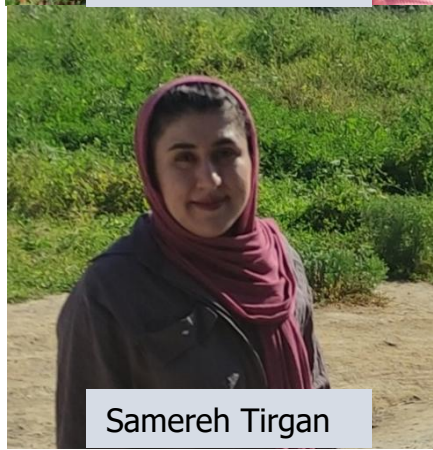
Soghra Ramzi



Hamid Gholizadeh



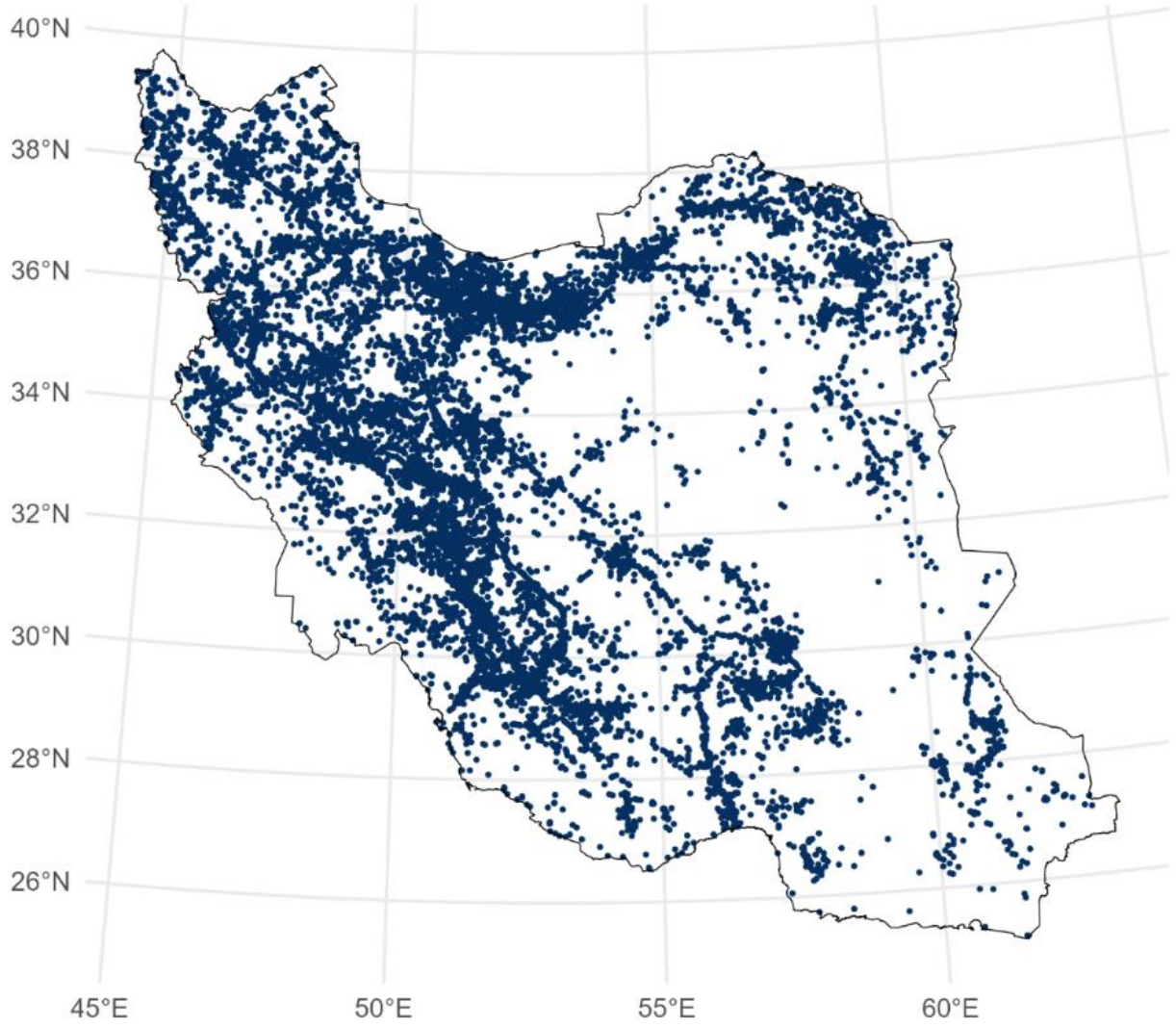
Mina Khorasani



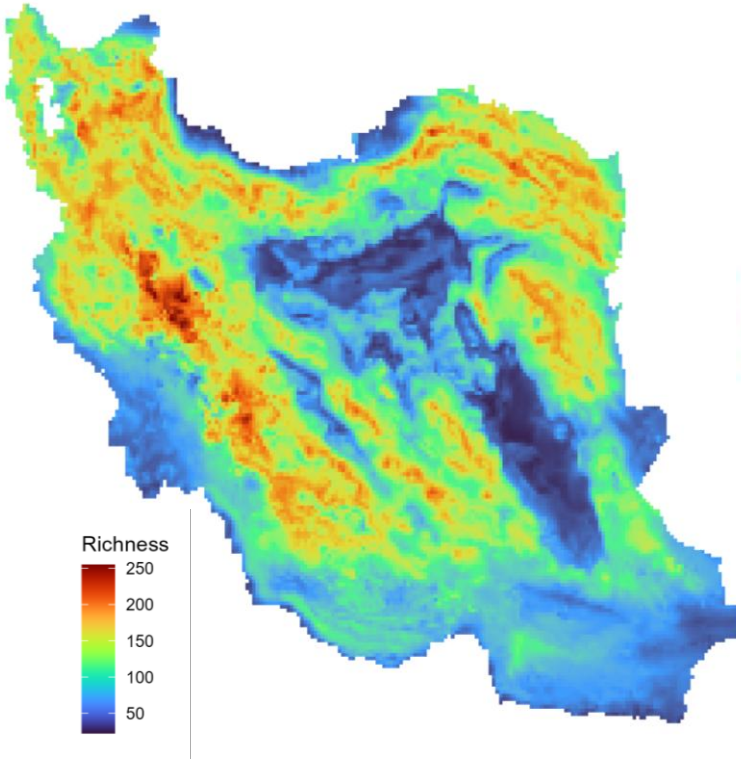
Samereh Tirgan

A model-based study:

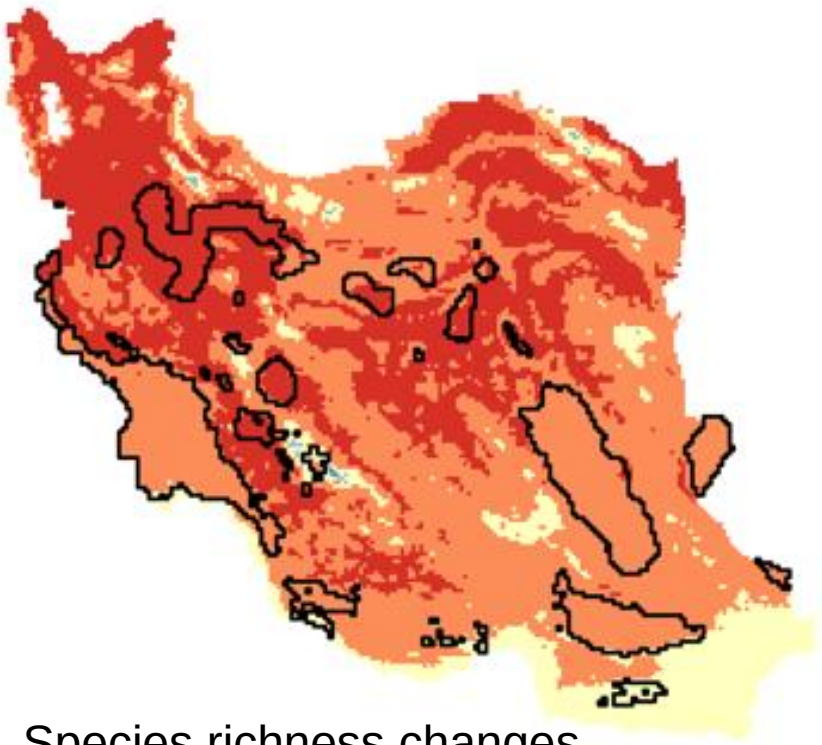
- 22514 records (2483 spp)→1091 spp
- Environmental layers (Climate, Soil and Topography)
- Multispecies SDMs with DL using community level species



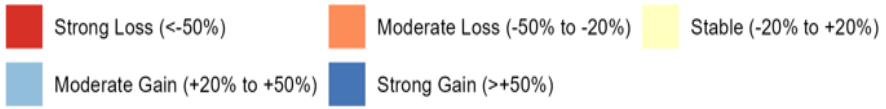
Species richness pattern in geographical space in Iran

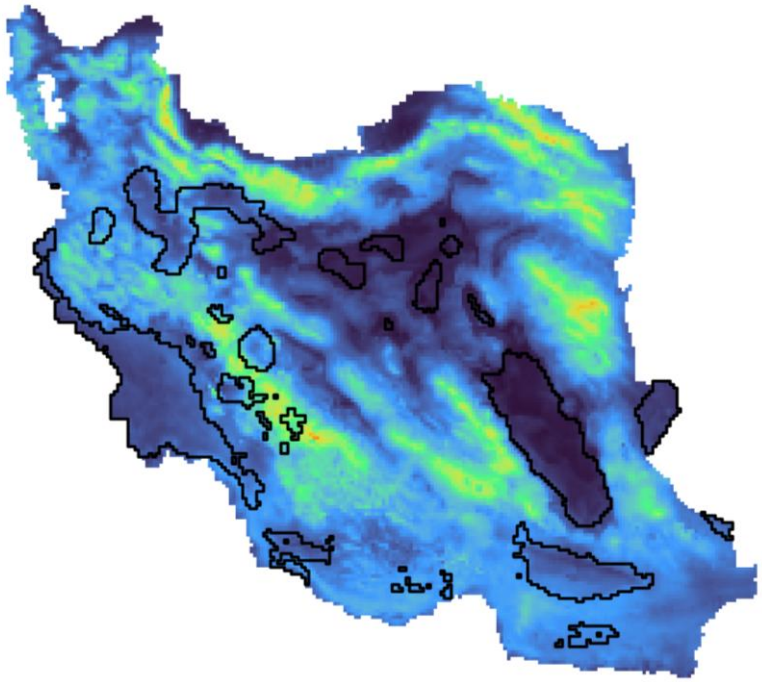


Current



Species richness changes





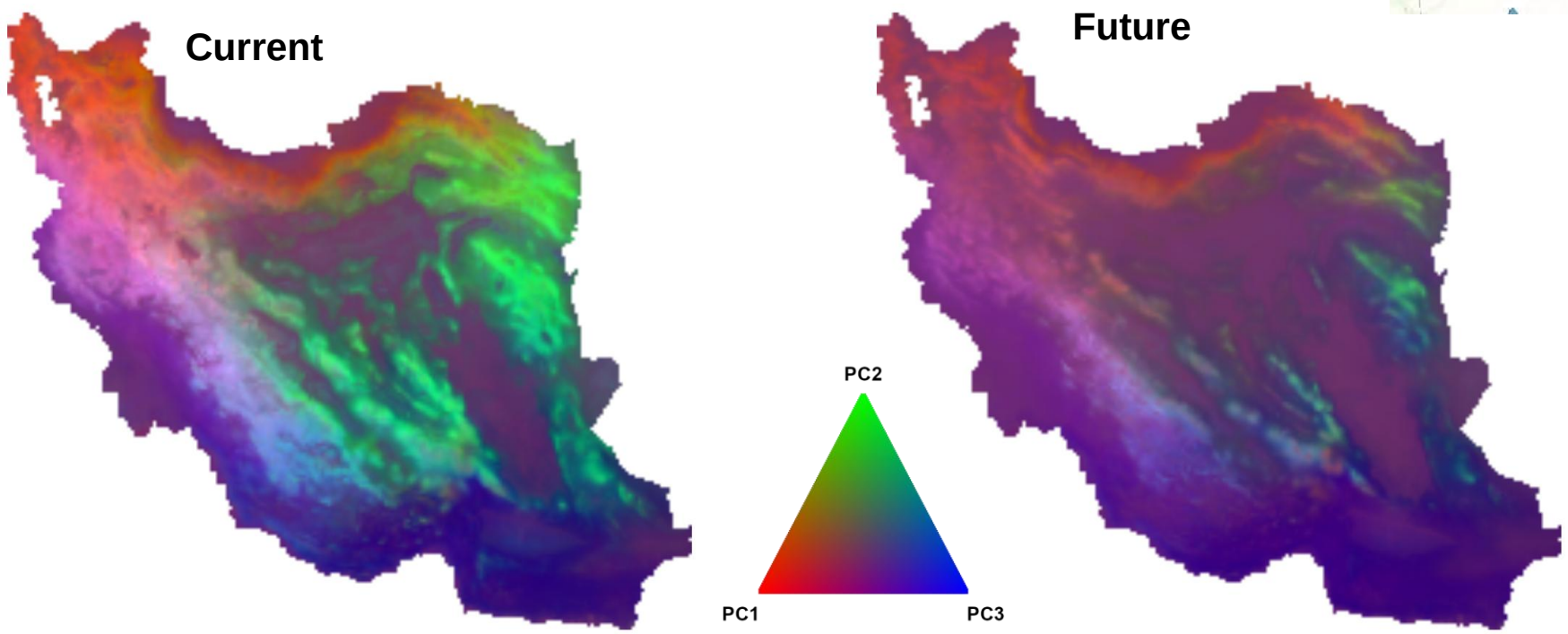
Future

What happens for species composition?

- >50% decline in spatial variance of species composition, indicating profound biotic **homogenization**

- Saharo-Sindian thermophilous, xerophytic species **expand**, while Irano-Turanian hemicryptophytes and chamaephytes **decline**





2. **Present and future perspective on vegetation database**

IranVeg: National Vegetation Database

- >15,000 phytosociological and standard relevés







VEGETATION CLASSIFICATION AND SURVEY

International Association for Vegetation Science (IAVS)

Vegetation Classification and Survey @: 1–@
doi: 10.3897/VCS.114081

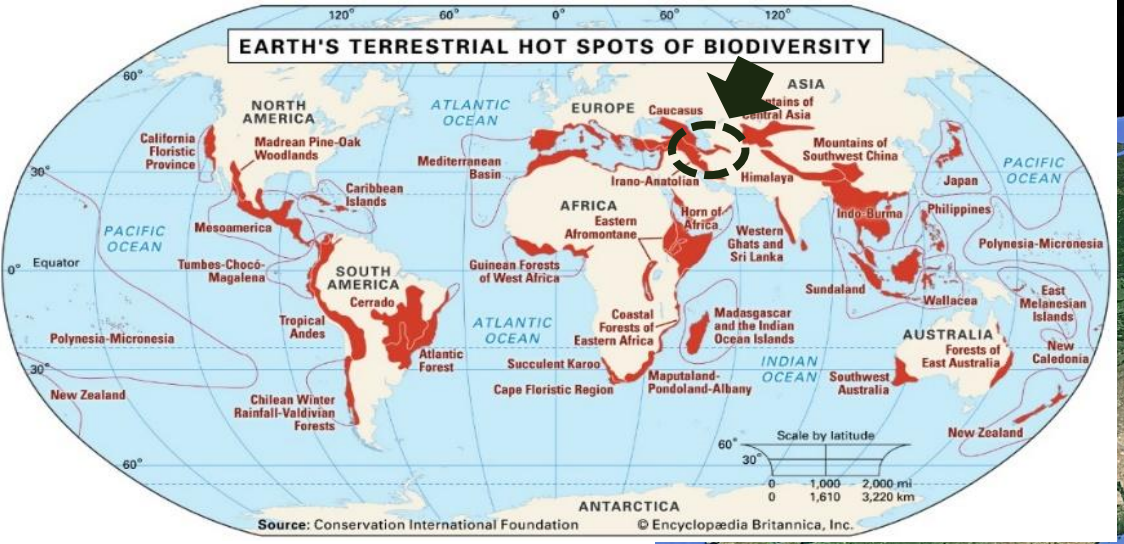
LONG DATABASE REPORT | ECOINFORMATICS

IranVeg – the Vegetation Database of Iran: current status and the way forward

Soghra Ramzi[1*], Jalil Noroozi[2], Hamid Gholizadeh[3], Behnam Hamzehee[4], Younes Asri[4], Amir Talebi[5], Halimeh Moradi[6], Parastoo Mahdavi[7], Seyed Saeedeh Tamjidi Eramsadati[1], Somayeh Zarezadeh[1], Asghar Kamrani[8], Omid Esmaeilzadeh[9], Atefeh Ghorbanalizadeh[10], Maral Bashirzadeh[1,11], Adel Jalili[4], Jaber Sharifi[12], Ayoub Moradi[13], Mahmood Bidarlord[13], Soudeh Siadati[14], Sajad Lotfi[1], Farideh Attar[15], Maedeh Mohammadpour Darzi[1], Zeynab Kazemi Gorji[14], Sharyan Ghasemi[1], Mehdi Dehghani[16], Soroor Rahmanian[17], Ali Esmailpoor[1], Anvar Sanaei[18], Sahar Ghafari[19], Parvaneh Ashouri[4], Arshad Ali[20], Abdolrahman Dehghani[1], Somayeh Hosseini[1], Hajar Hamedani[1], Samereh Tirgan[1,15], Mohaddeseh Maghsoudi[14,21], Aliakbar Daneshi[1,22], Javad Eshaghi Rad[23], Mohammadreza Eslami[1], Mahdis Ramezani[1], Zahra Mehrabi[1], Zahra Naqipour[1], Nadia Naseri[1], Hossein Bahari[1], Maryam Ashouri[14], Narges Vasefi[14,24], Seyed Abbas Seyedakhlaghi[14], Hamid Ejtehadi[21], Mohammad Farzam[11,25], Somayeh Mokhtari[1], Morteza Djamali[26], Elias Ramezani[23], Habib Zare[27], Nahid Masudian[28], Raheleh Alinejad[1], Mojdeh Kasiri[1], Mahboubeh Sadat Hosseini[1], Masoumeh Raeisi[1], Hooman Ravanbakhsh[4], Franz Essl[2], Hamid Jalilvand[29], Mehdi Abedi[9], Khadijeh Bahalkeh[9], Alireza Naqinezhad[1,30*]

1 *Department of Plant Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran*
2 *Department of Botany and Biodiversity Research, University of Vienna, Vienna, Austria*
3 *Department of Life Sciences, University of Siena, Siena, Italy*
4 *Research Institute of Forest and Rangelands, Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran*
5 *Plant Bank, Iranian Biological Resource Center (IBRC), Research Complex of ACECR (Iranian Academic Center for Education, Culture & Research),*

- IranVeg is available to all researchers worldwide by request





UNESCO

World Heritage Site

Hyrcanian Ecoregion

Refugium during the last glaciation!

Turkey

Caspian Sea

IRAN

Afghanistan

Pakistan

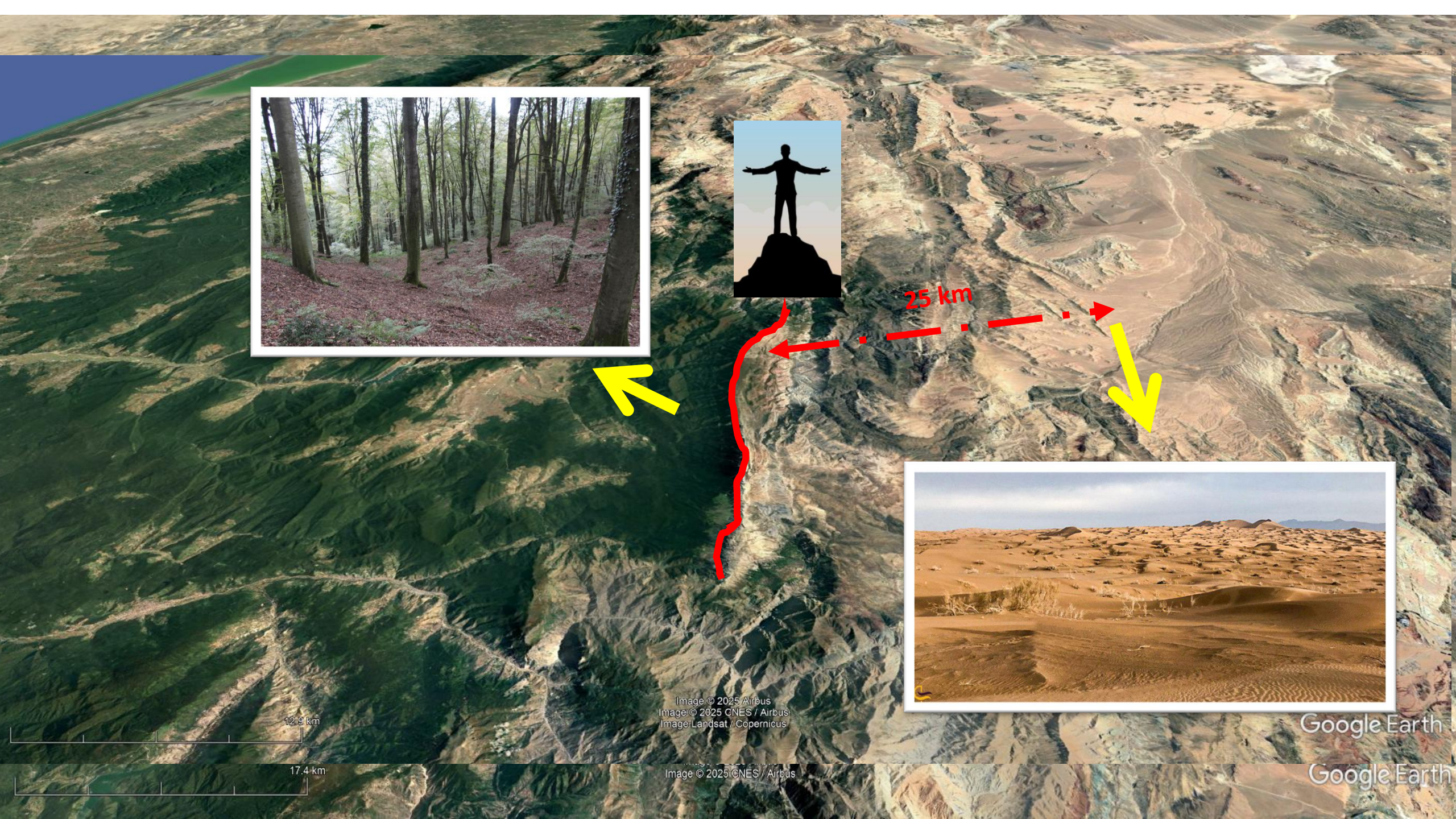
Saudi Arabia

Persian Gulf

1100 km

Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Image IBCAO


25 km
Image © 2025 Airbus
Image © 2025 CNES / Airbus
Image Landsat / Copernicus
12.9 km
17.4 km
Image © 2025 CNES / Airbus
Google Earth
Google Earth

Arcto-Tertiary flora in the Hyrcanian forests: *Parrotia persica* (Iron wood)



Persian Ironwood in Westonbirt National Arboretum, Gloucestershire







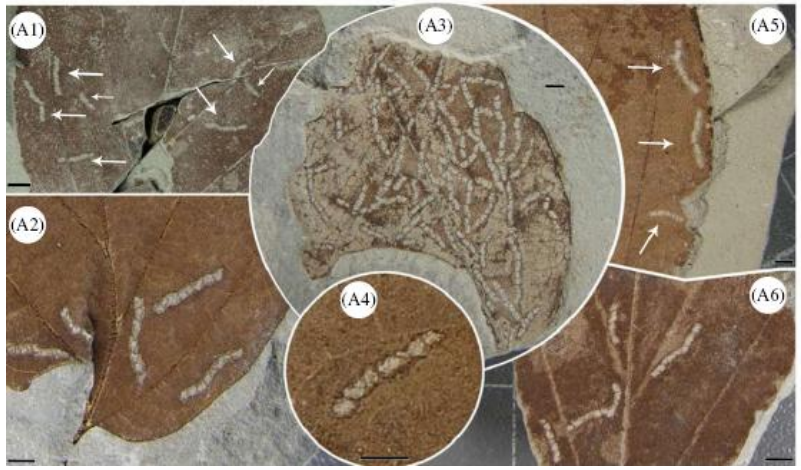


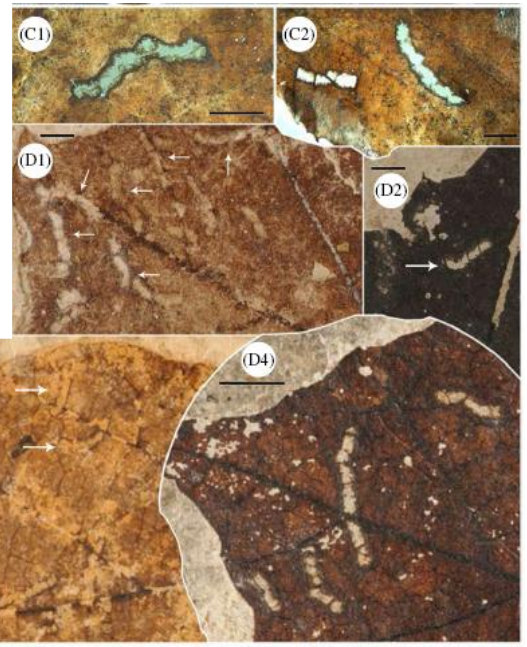


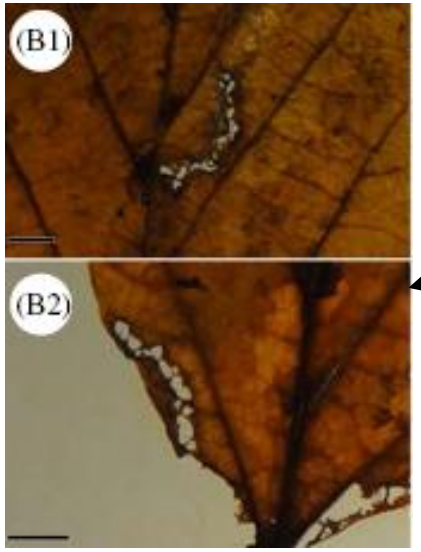


Palaeoherbivory

plant–insect interactions

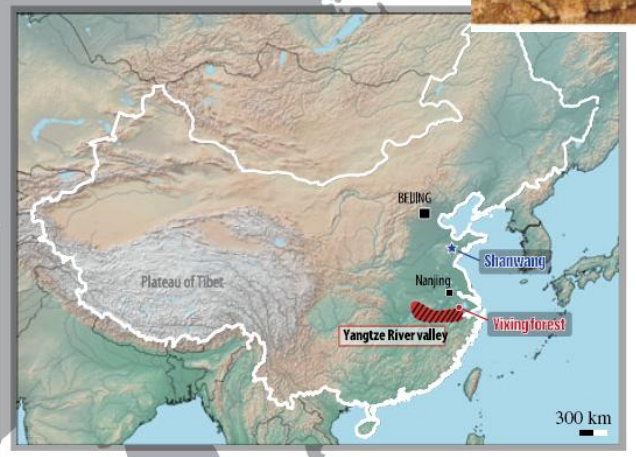


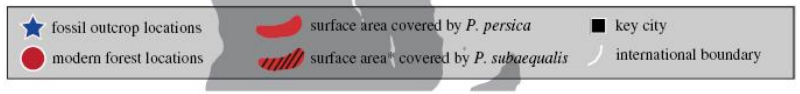










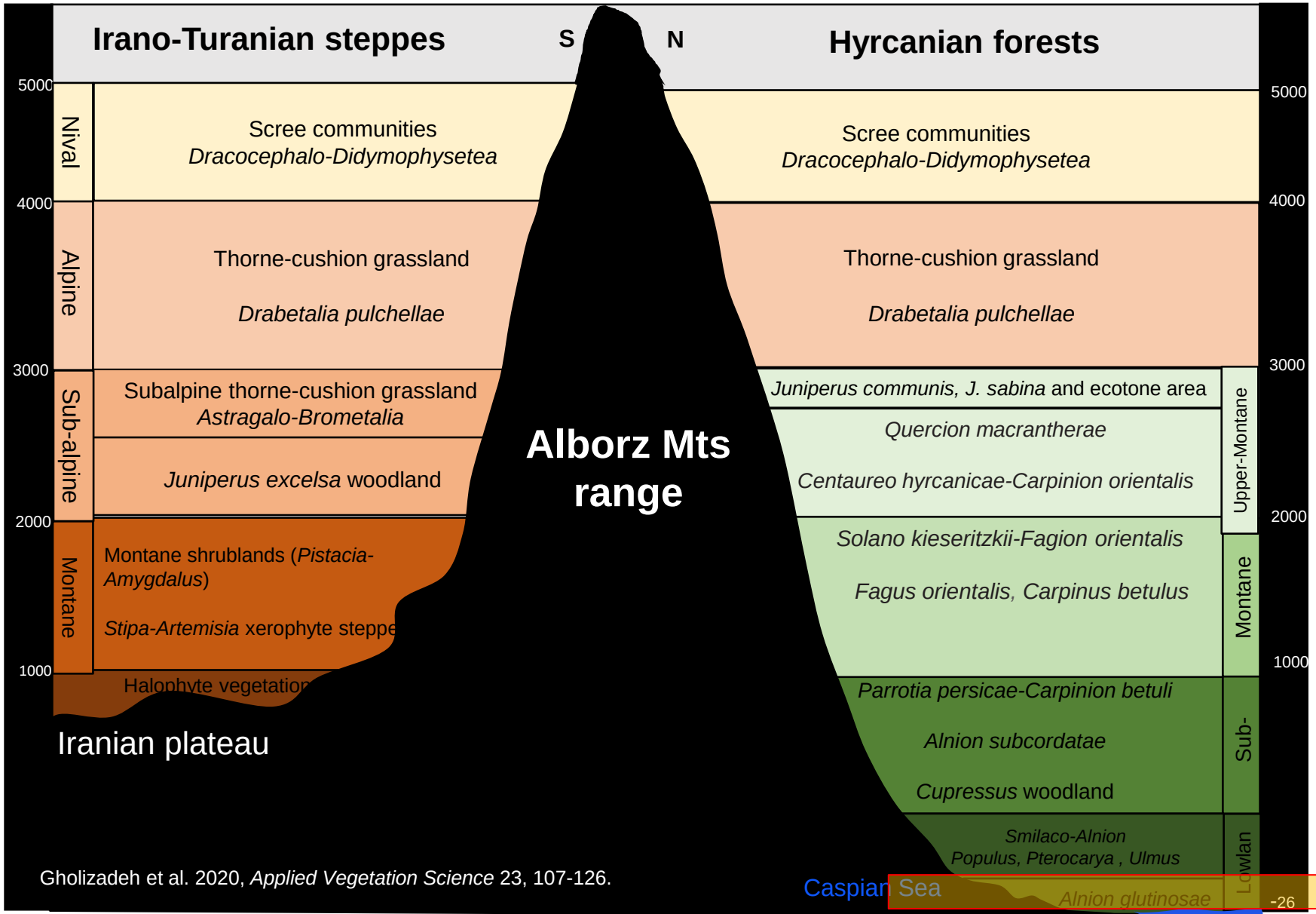


World Mercator projection

Adroit et al (2020). *Royal Society Open Science*, *7*(10), 201449.

Lowland forests (*Alnion glutinosae*)

Swampy alder forests



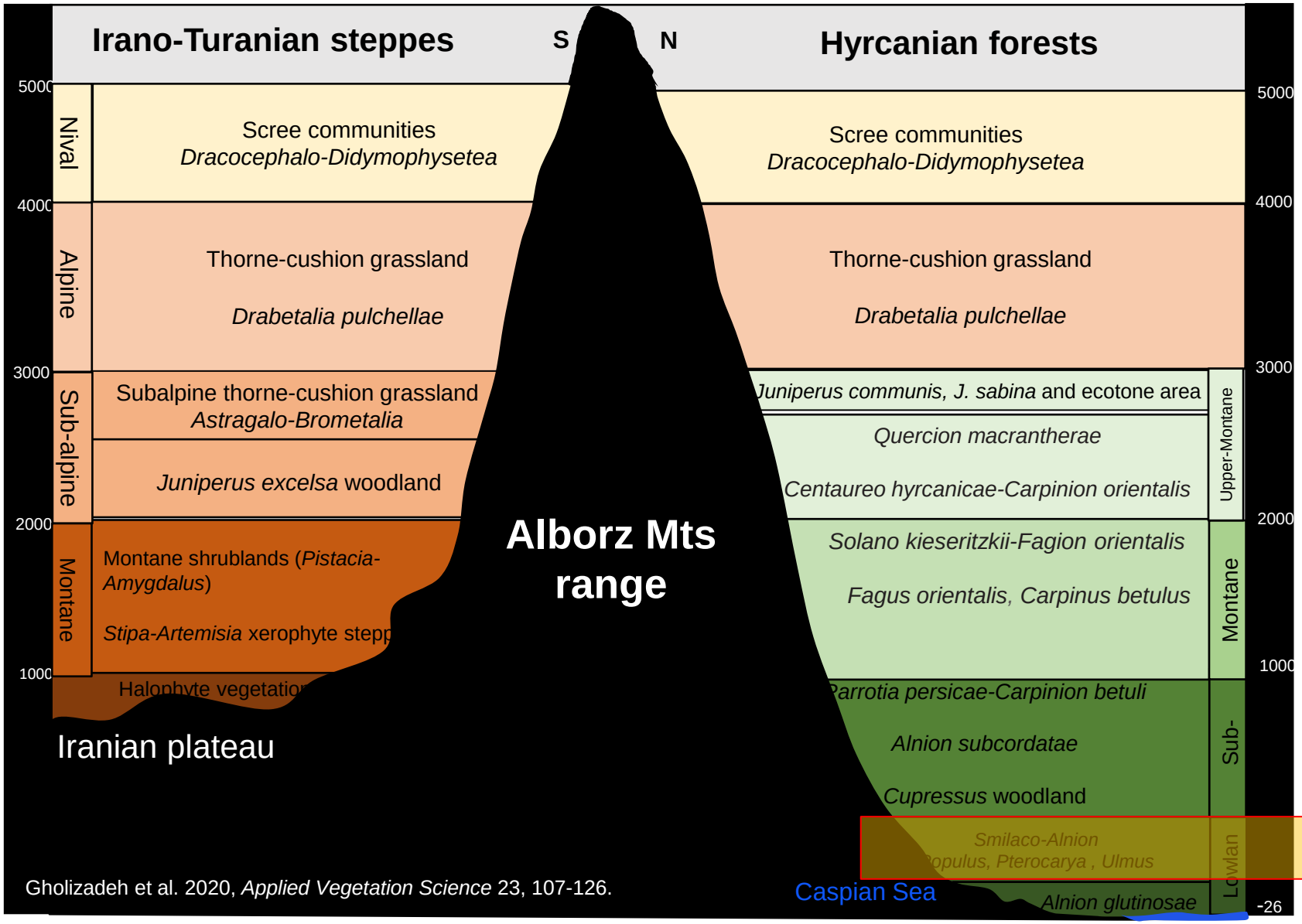
Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Lowland forests (*Smilaco excelsae-Alnion barbatae*)

Thermophilous species/liana/ species rich

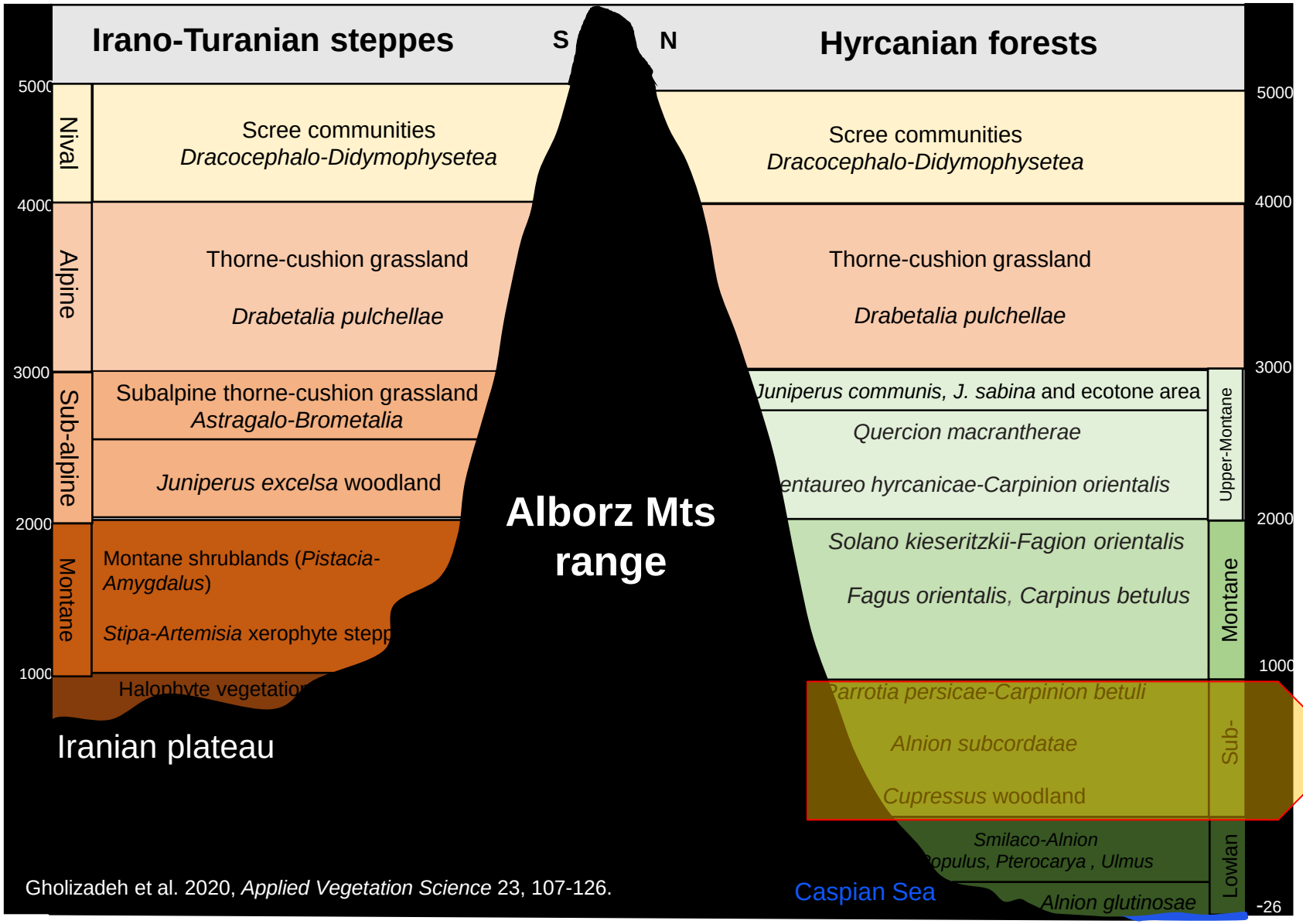


Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Submontane forests (*Parrotio persicae-Carpinion betuli*)



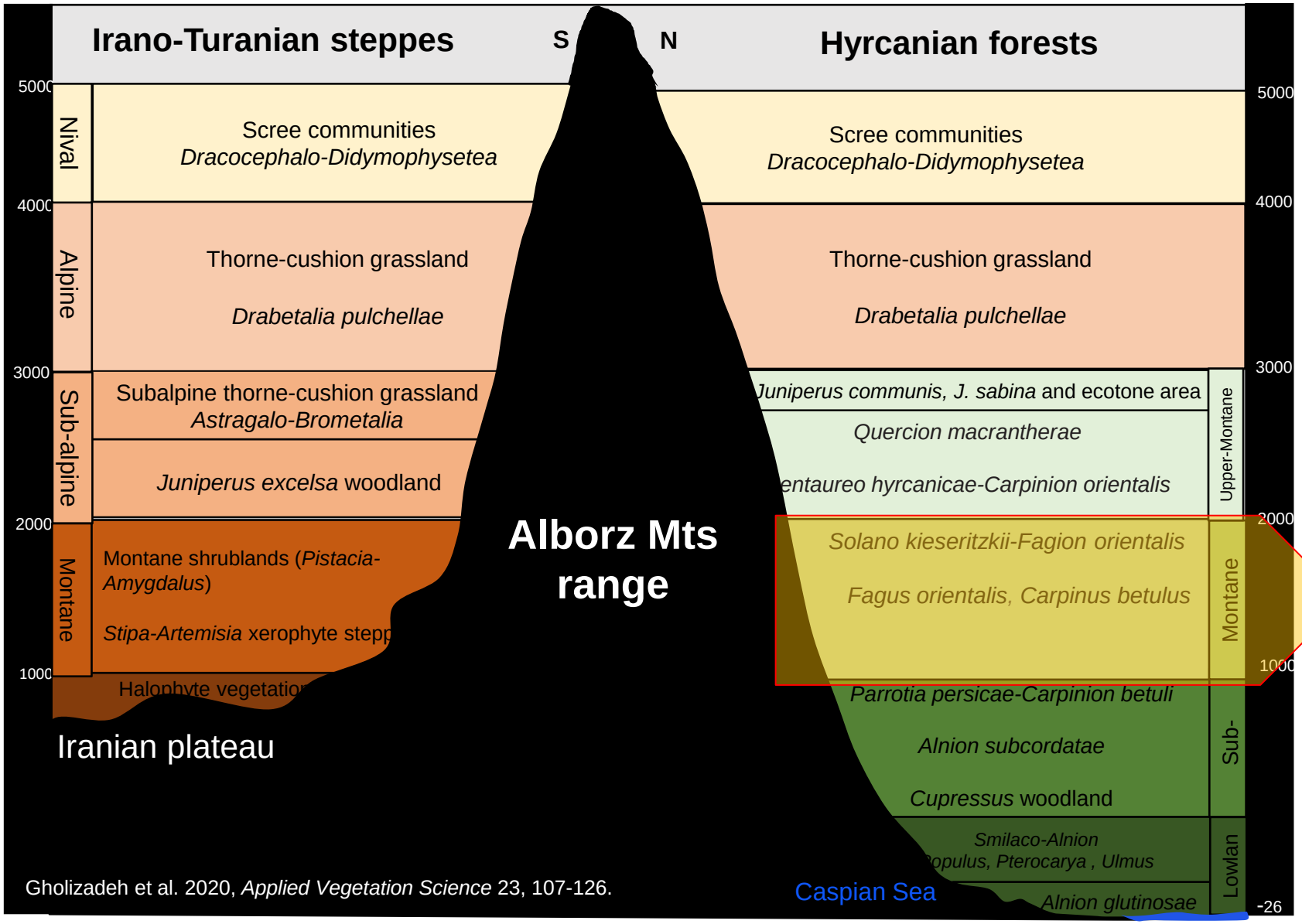
Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Montane forests (*Solano kieseritzkii-Fagion orientalis*)

Beech forests

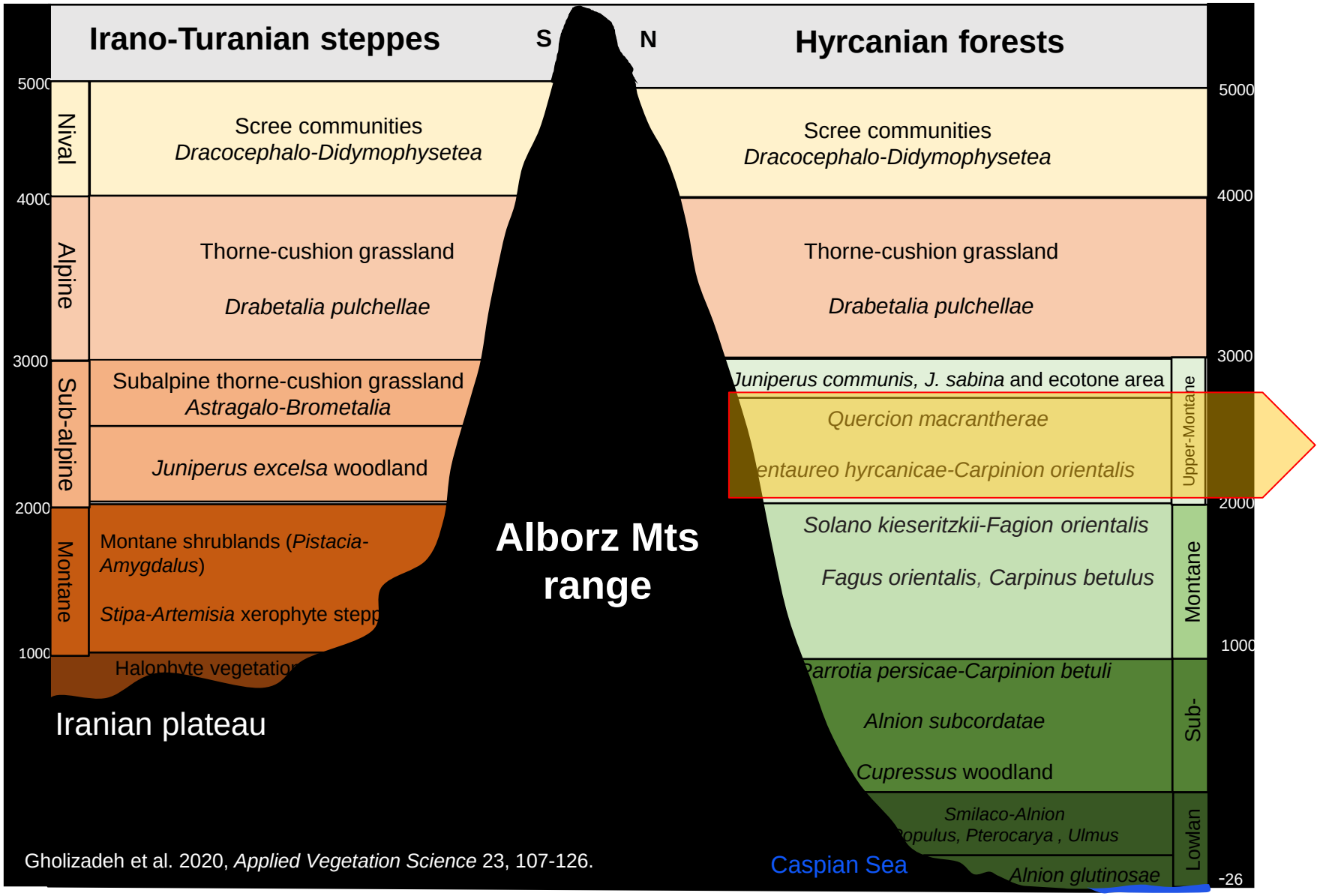


Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Upper-montane forests (*Quercion macrantherae*)

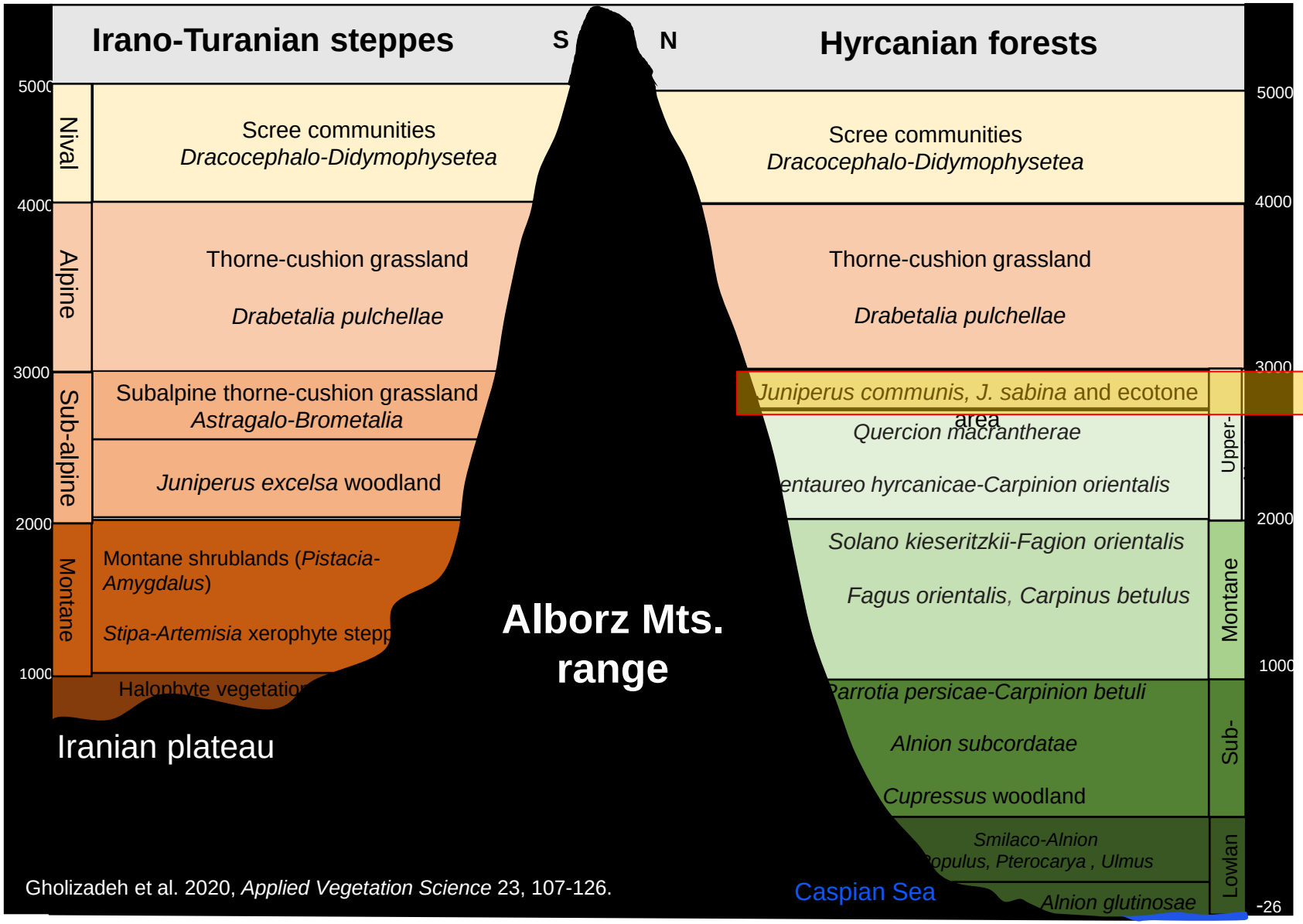


Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Ecotone area

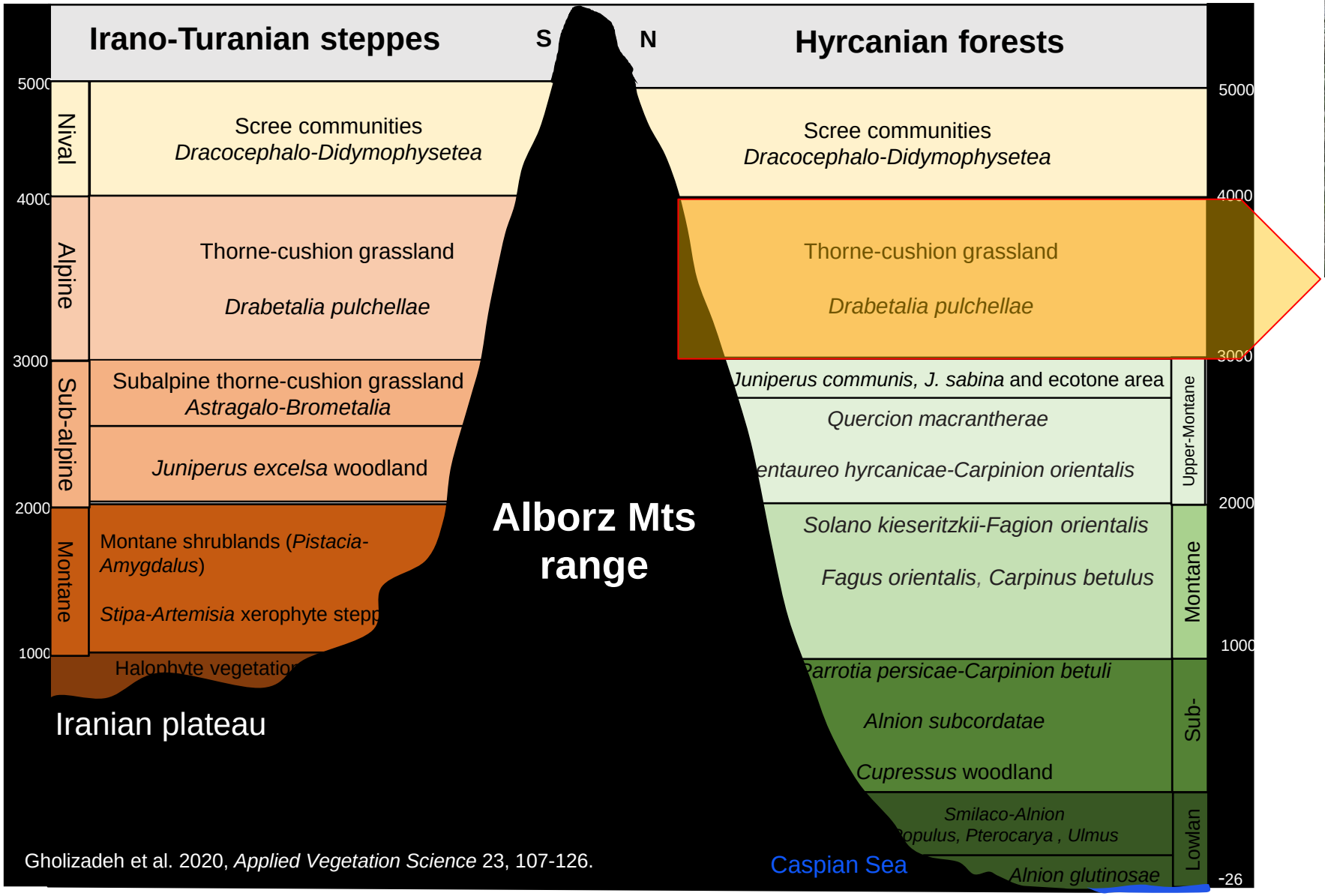


Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Subalpine thorn-Cushion steppes

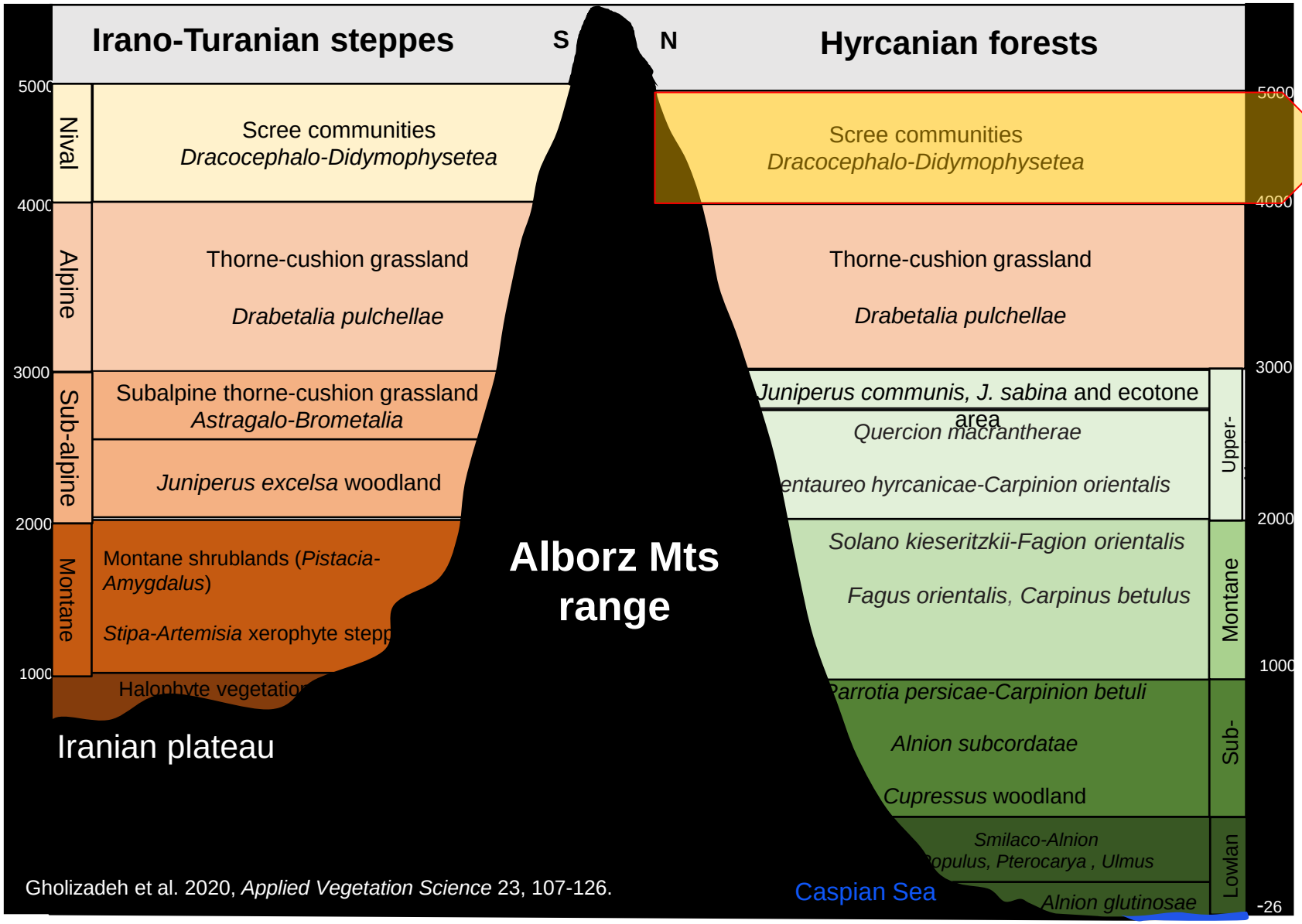


Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





Alpine and nival scree vegetation



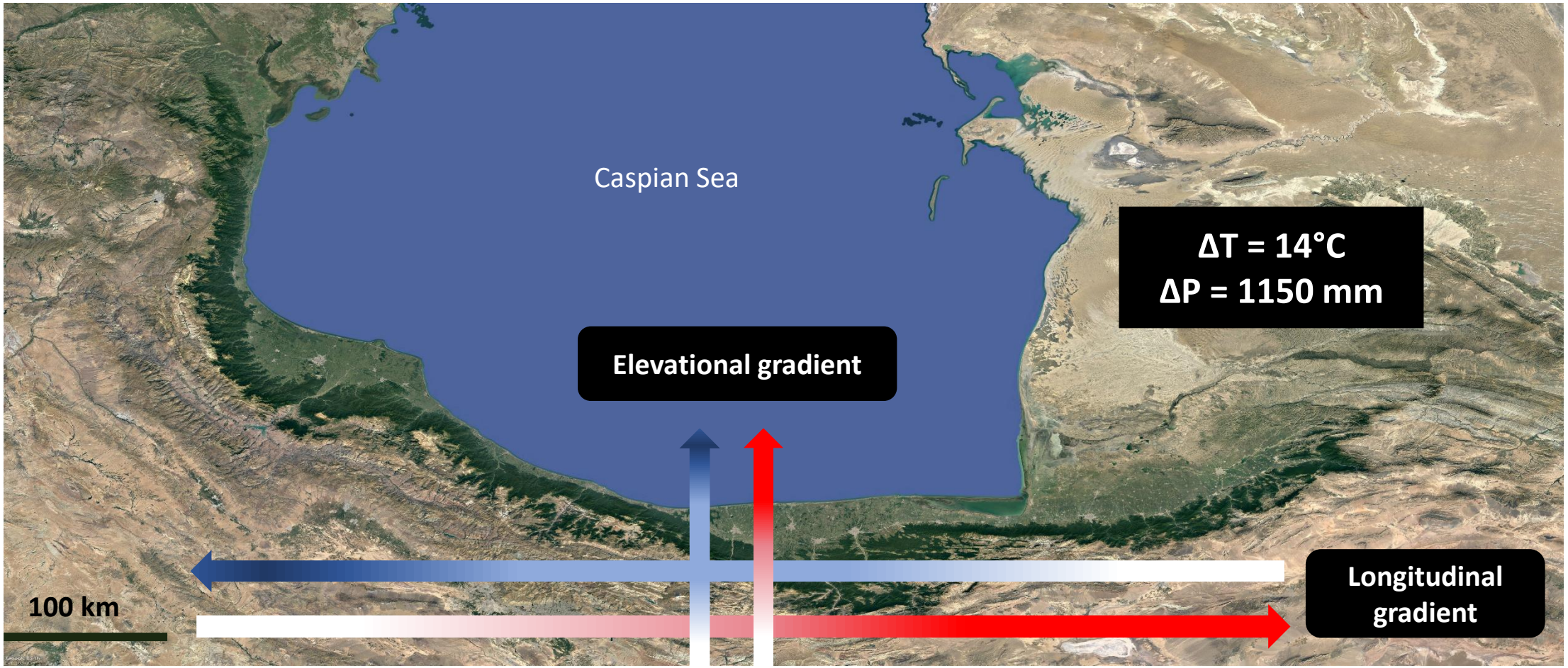
Gholizadeh et al. 2020, *Applied Vegetation Science* 23, 107-126.





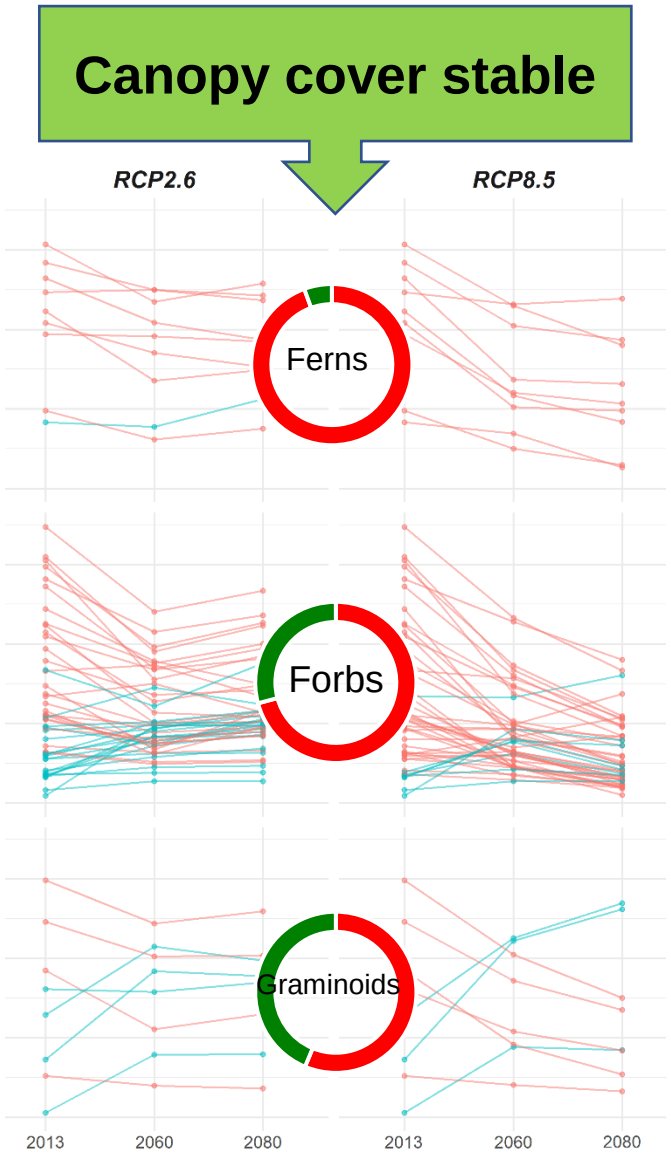
Unique site for niche modelling!

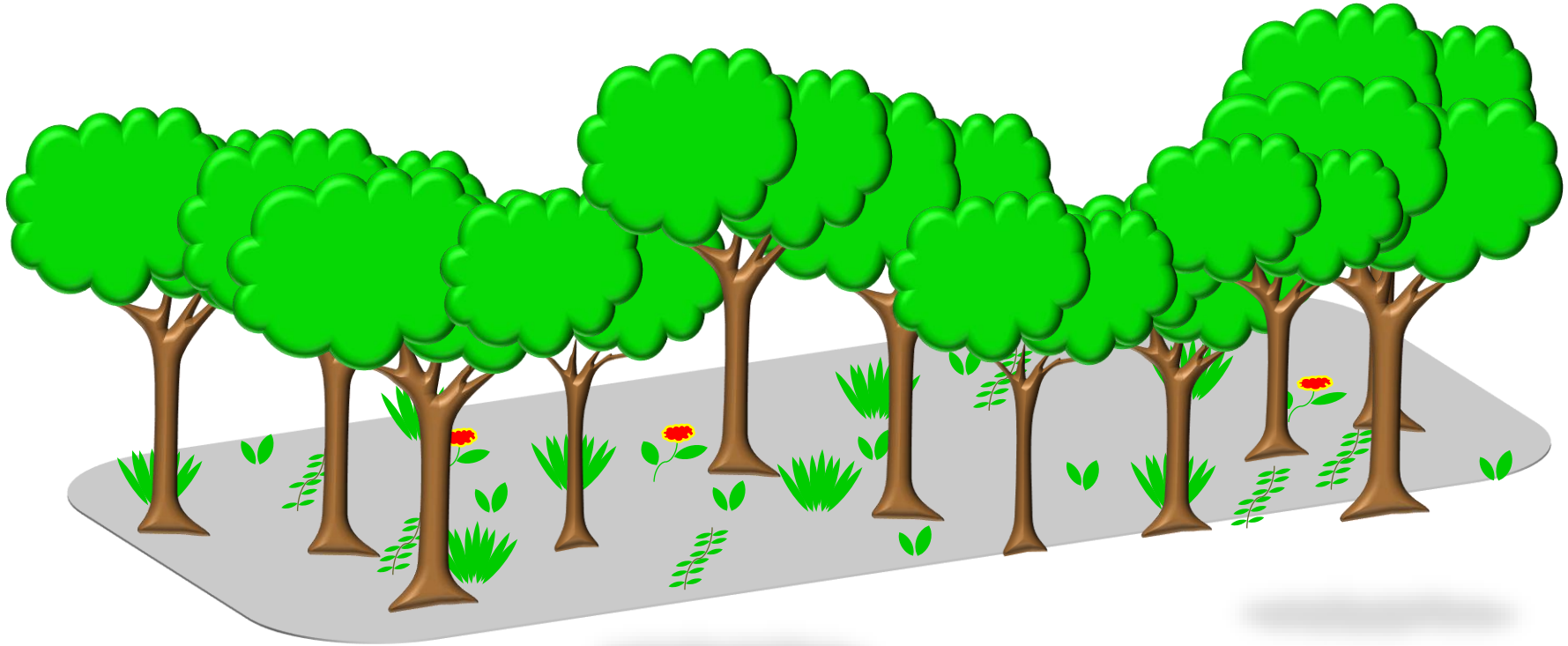
- Mountainous with broad topographical complexity over a continuous area
- Massive climatic gradient → suitable for "space for time substitution (SFTS)" studies

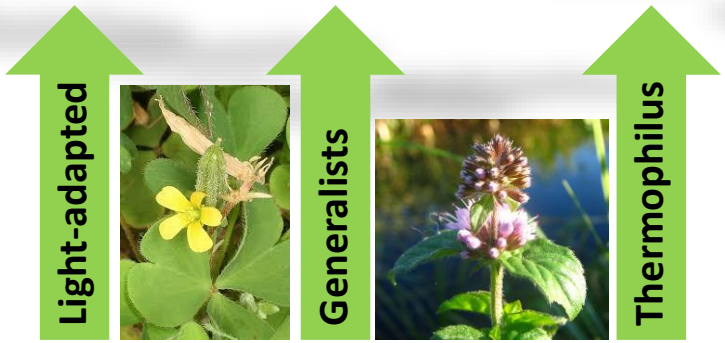


Gholizadeh et al., Applied Vegetation Science 23, 107-126 (2020)

How do combined effects of canopy and climate work in future?



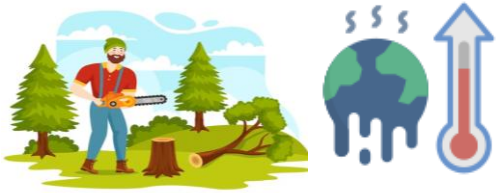






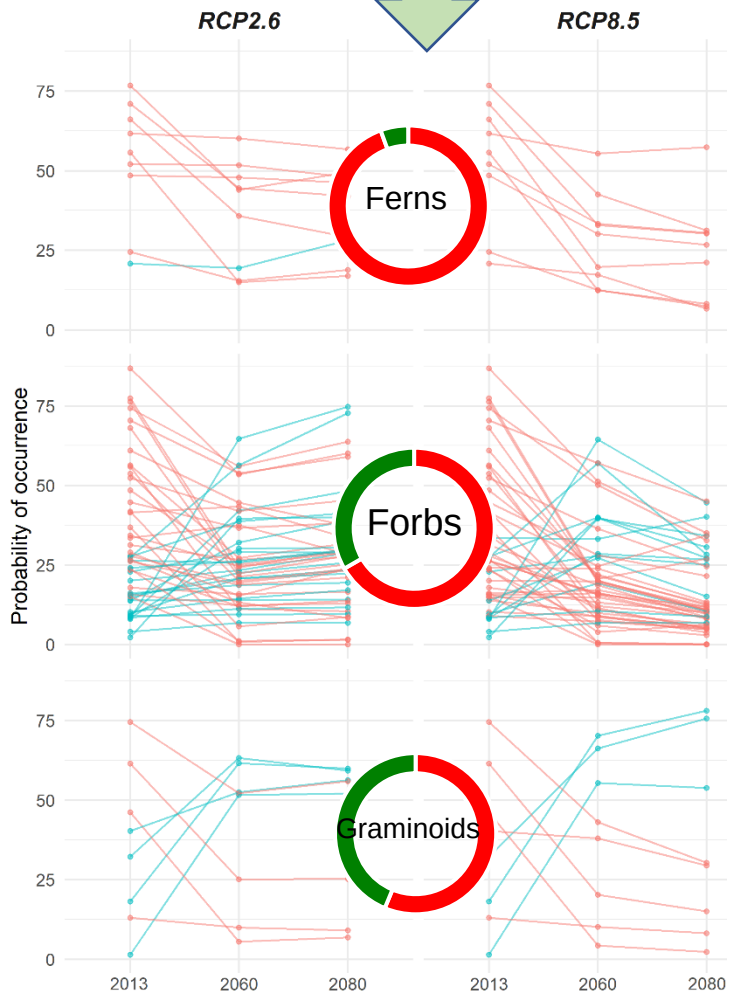
Naqinezhad, A. et al. 2022. Global Change Biology, 28(3), 1103-1118

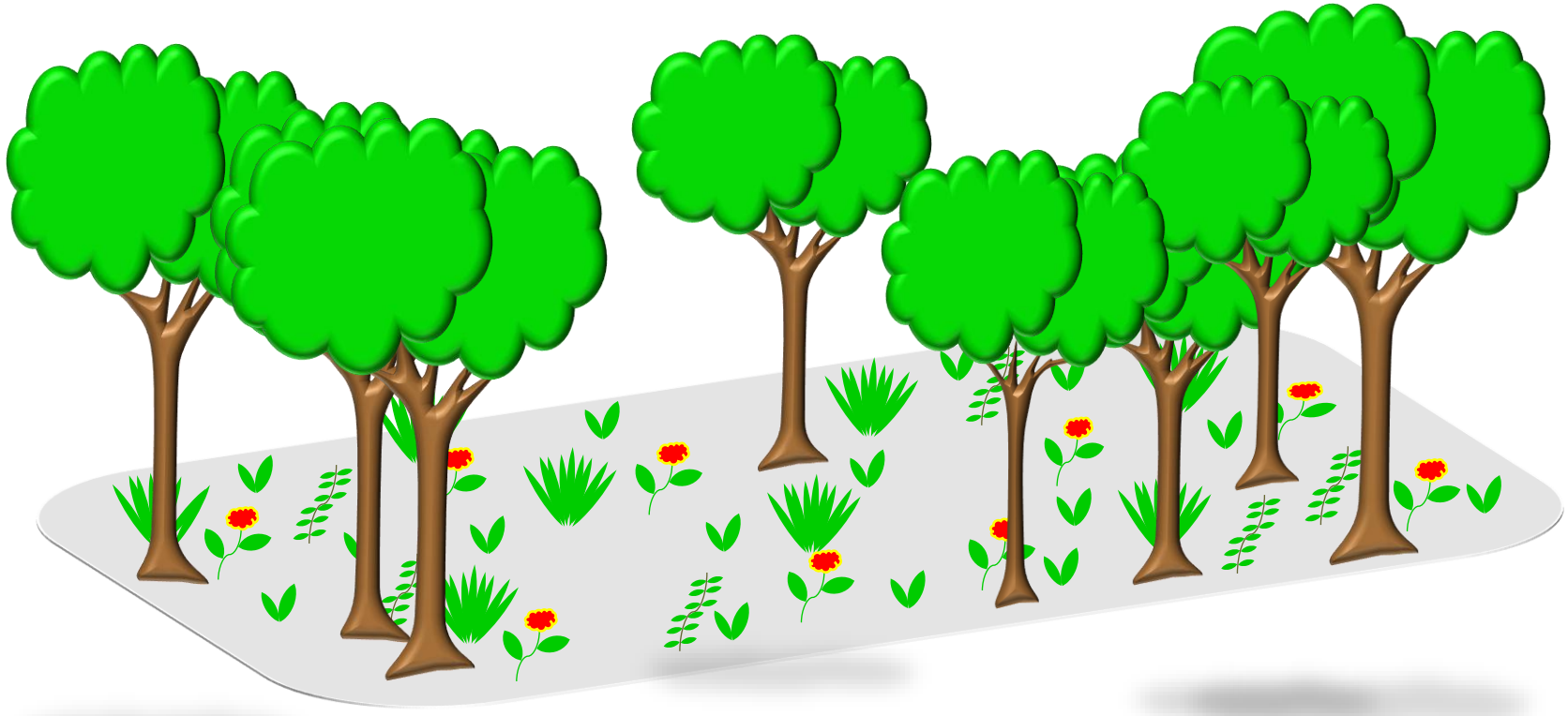
How do combined effects of canopy and climate work in future?

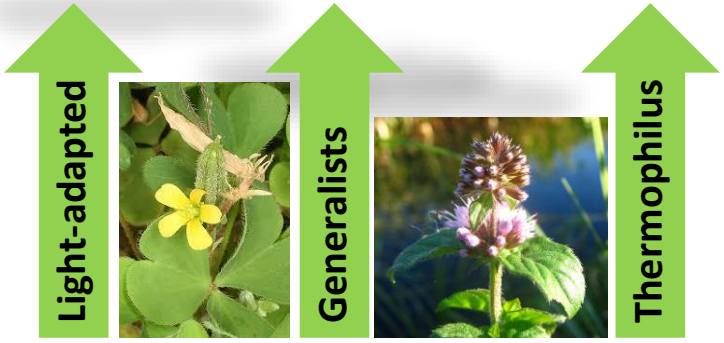


- 50 %

Canopy cover decreases (-50%) [Logging]









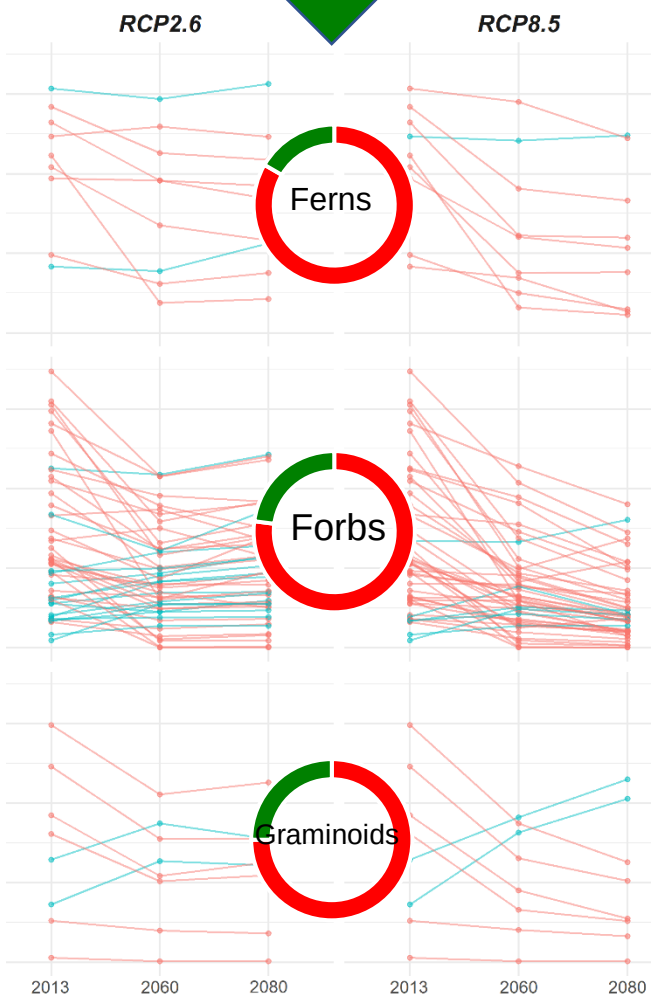
How do combined effects of canopy and climate work in future?

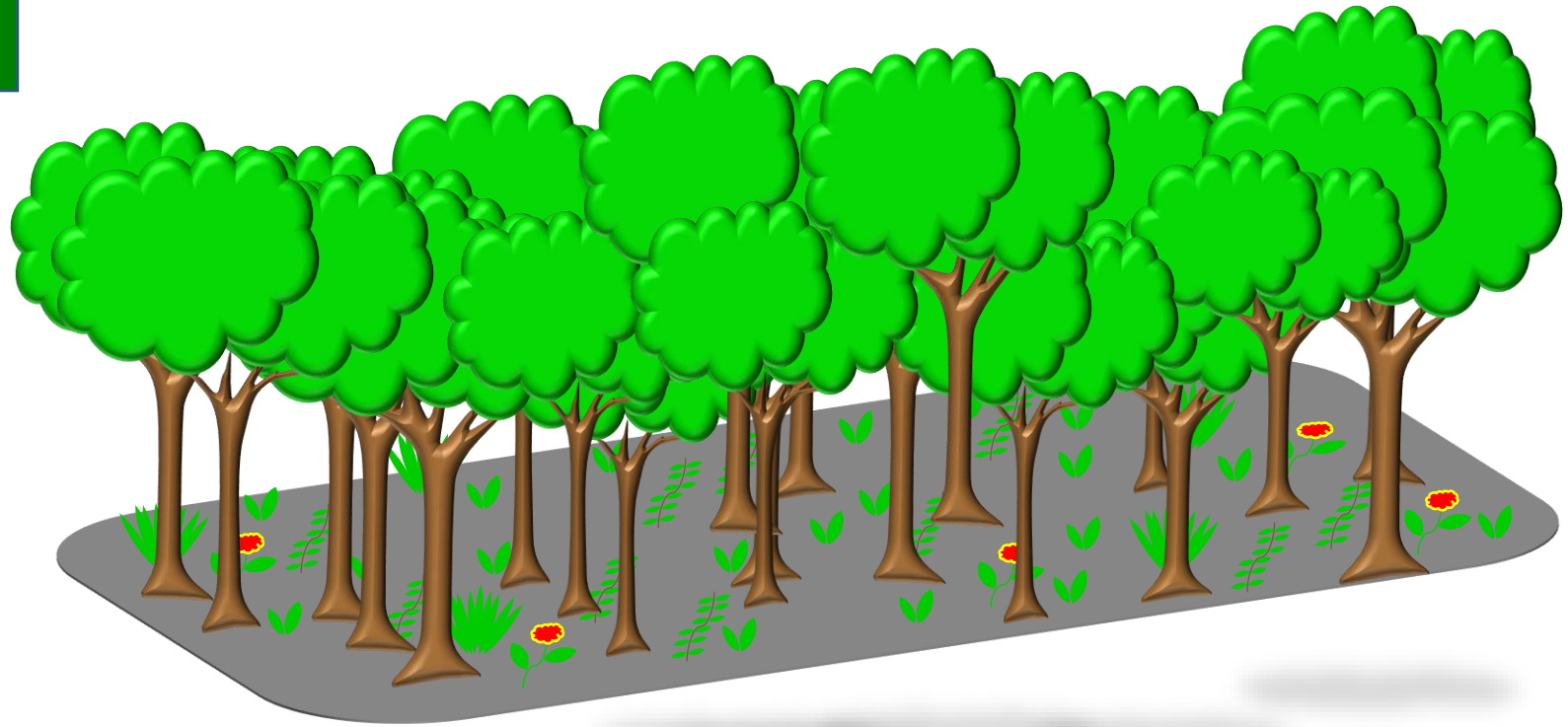




(+ 50 %)

Canopy cover increases (+50%) [Restoration]

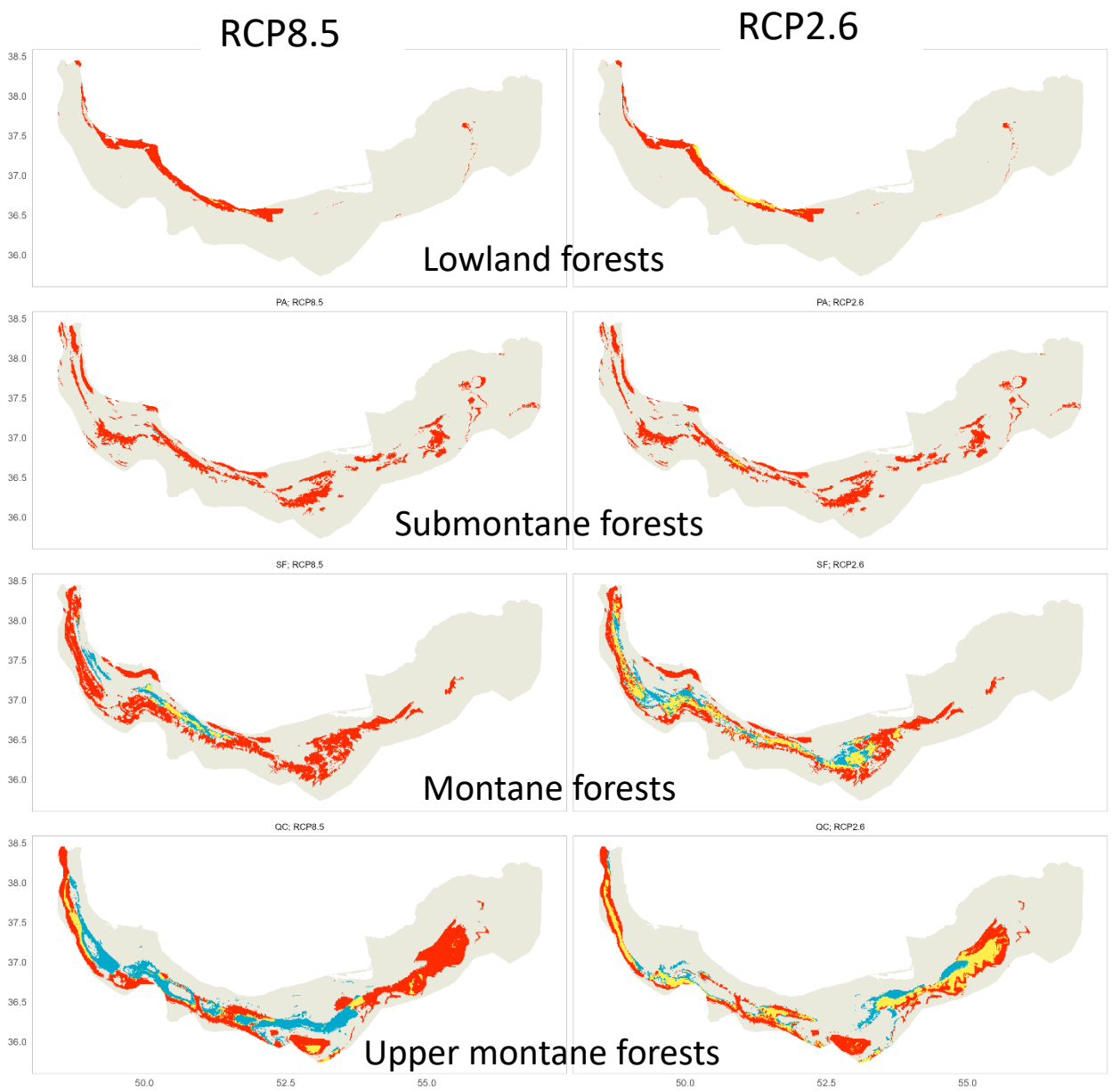








Range size changes of different Hyrcanian forest types under different climate change scenarios

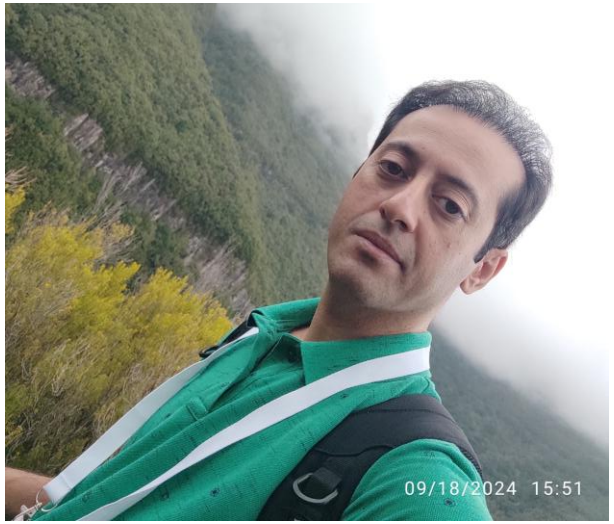


Loss

Stable

Absence

Gain



Gholizadeh et al. in preparation

3. Asian Regional Section of IAVS-a new initiative

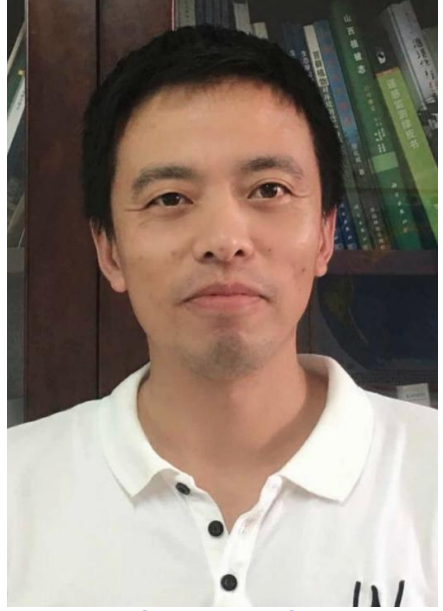


Establishment of the Asian Regional Section

- Organizing regional and international meetings and field activities to encourage the Asian vegetation scientists for more collaborations
- Motivating young scientists to actively contribute to IAVS
- Creating a data-sharing platform among Asian vegetation scientists

- In June 2022, the draft of RS Bylaws was approved by IAVS.

Steering Committee of Asia RS (2022-2026)



Jian Zhang, China
Vice-chair



Alireza Naqinezhad, Iran & UK, Chair



Arkadiusz Nowak, Poland
Membership officer



Sebastian Świerszcz, Poland
Secretary



Jalil Noroozi, Austria
Treasurer

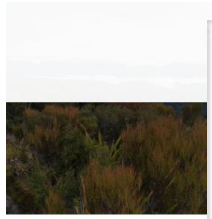


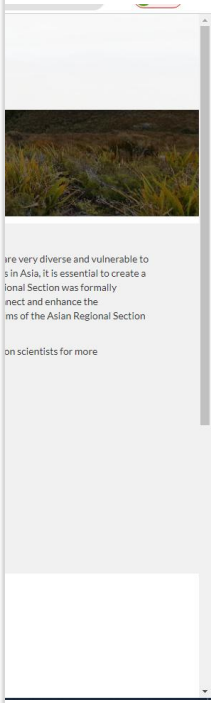
Bayrtungalag Batsaikhan, Mongolia
Event Organizer



Cheng-Tao Lin, Taiwan
Social media Officer/webmaster

Asian Regional Section website





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Google Groups

https://www.iavs.org/page/workinggroups_asiansection

Building up Asian vegetation database

- Compiling vegetation data from published and unpublished sources
- Collaborating with vegetation scientists across Southwest Asia
- **Project extended to accelerate database development and data collection**
- **Call for contributions remains open:** researchers are invited to contribute vegetation-plot data from. swasiaveg@gmail.com, anaqinezhad@gmail.com
- **Expected milestone:** first version of the database available within the next 4 months

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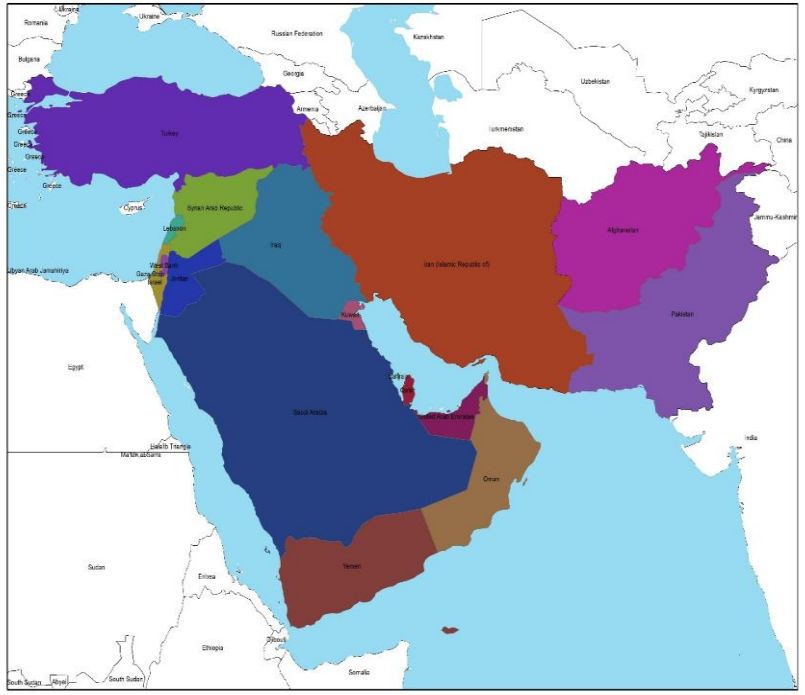
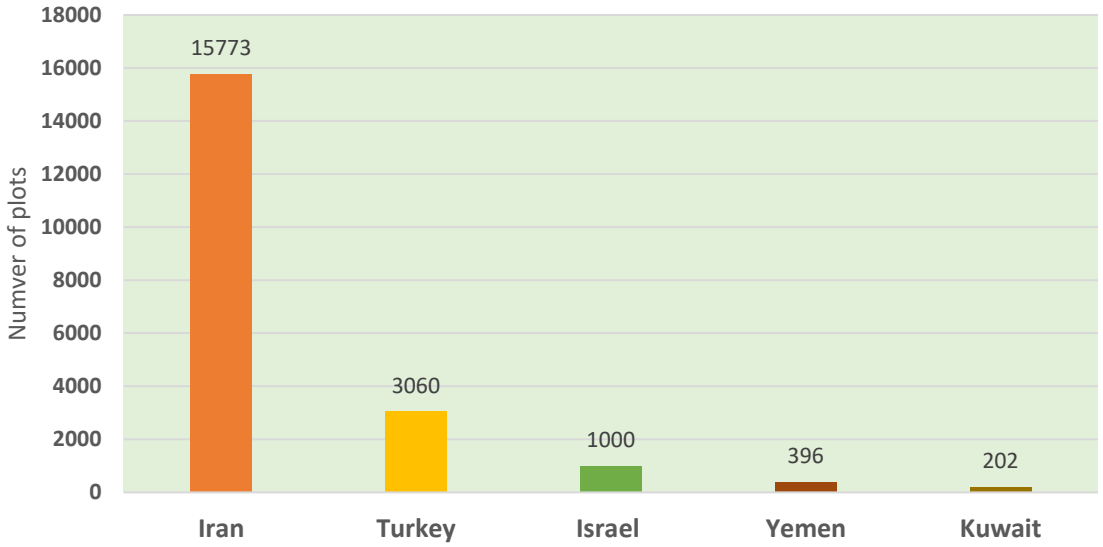
Arabian countries	Kamal Hussien Shaltout	Professor Emeritus at Tanta University, Egypt	kamal.shaltout@science.tanta.edu.eg



Compilation of Vegetation Data in SW Asia Countries



Country	GIVD code	database name	Author	No. of plots
Israel	AS-IL-001	Israel Nature and Parks Authority (INPA) Biological Databases	Linda Olsvig-Whittaker	1000
Kuwait	AS-KW-001	Kuwait Vegetation Database	Ladislav Mucina	202
Turkey	AS-TR-001	Vegetation Database of the Grassland Communities in Anatolia	Emin Ugurlu et al.	1878
Turkey	AS-TR-002	Vegetation Database of Oak Communities in Turkey	Emin Ugurlu	1182
Yemen	AS-YE-001	Socotra Vegetation Database	Fabio Attorre et al.	396
Iran	AS-IR-001	Vegetation Database of Iran (IranVeg)	Alireza Naqinezhad et al.	13411
Iran	AS-IR-005	Desert and Mountain steppe in Southern slope of Mt Alborz	Parastoo Mahdavi et al.	765
Iran	AS-IR-006	Hyrcanian Forest Vegetation Database	Hamid gholizadeh	1597

Special Collection “Grasslands of Asia”

VEGETATION CLASSIFICATION AND SURVEY

International Association for Vegetation Science (IAVS)

Vegetation Classification and Survey 6: 79–97
doi: 10.3897/VCS.151773

EDITORIAL GRASSLANDS OF ASIA

Advancing vegetation classification of grassland ecosystems across Asia: current status and way forward

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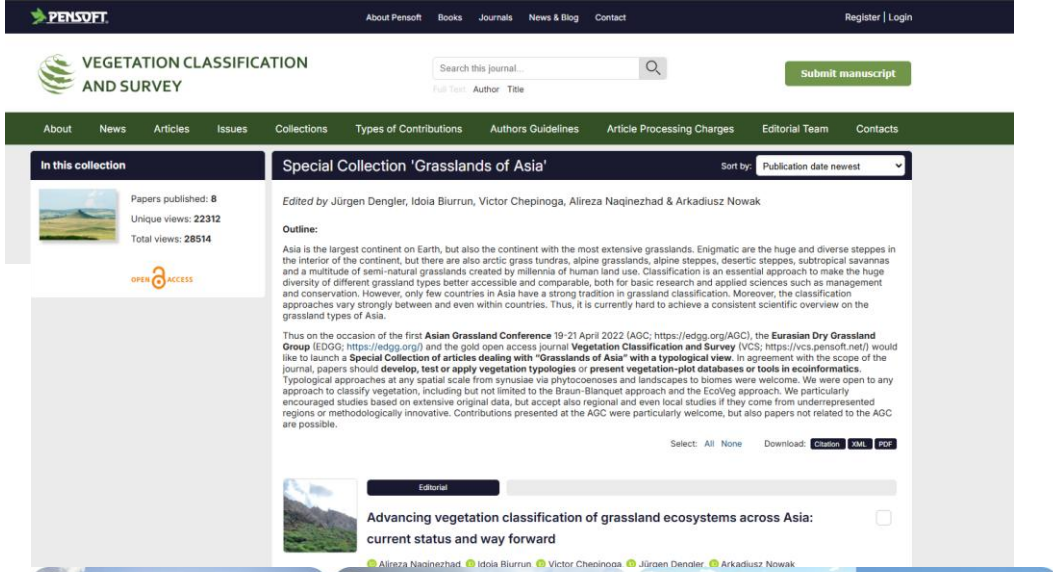
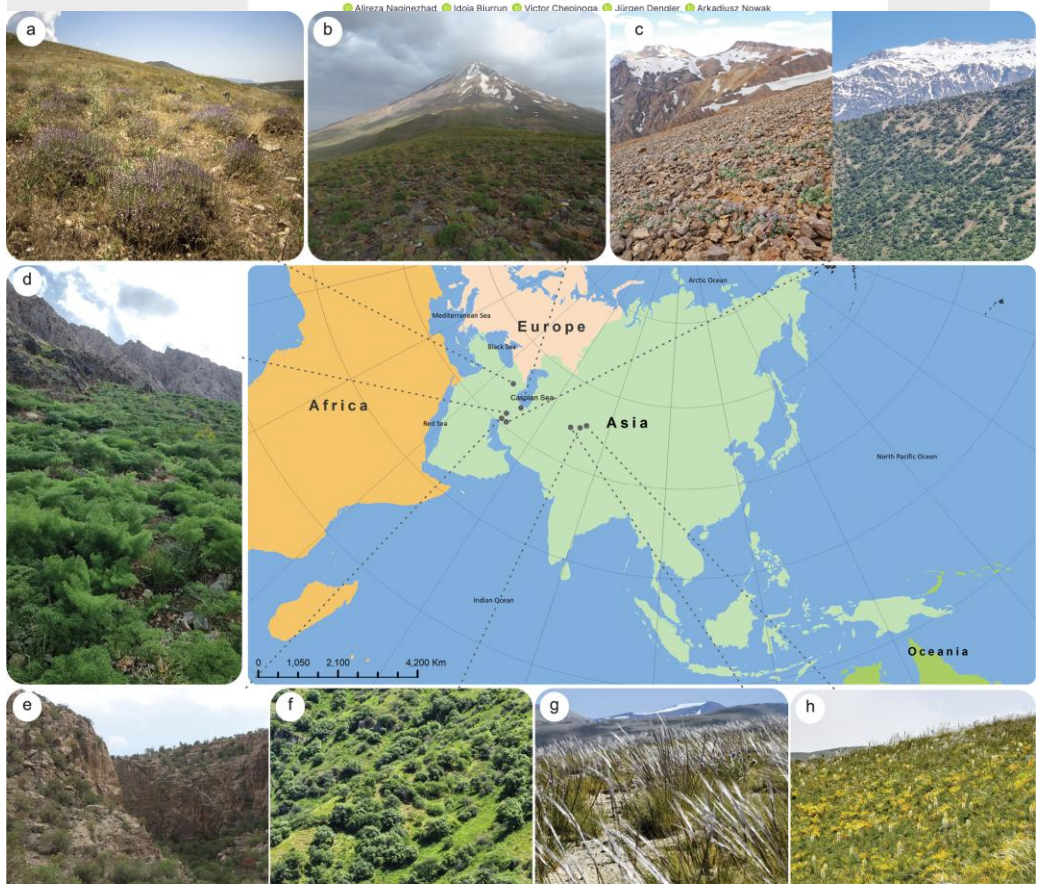
Academic editor: Wolfgang Willner ♦ **Linguistic editor:** Hallie Seiler
Received 1 March 2025 ♦ **Accepted** 6 March 2025 ♦ **Published** 14 April 2025





2026 Awardees of the Asian Regional Section Small Project Grant

Song Huang (China). Community Structure and Environmental Relationships of *Quercus chungii*, a Precious Endemic Tree Species in China.

Yani Meng (China). Testing the Effects of Plant Invasion on the Temporal Stability of Old-Field Systems in Eastern China

Soghra Ramzi (Iran). Linking Functional Traits and Species Associations in the Hyrcanian Forests Using Joint Species Distribution Models

Azamat Sultamuratov (Uzbekistan). Vegetation State Transitions and Functional Structure along Salinity-aridity Gradients in the Aralkum (dried Aral Sea bed)

Maral Bashirzadeh (Iran). Scale-dependent plant diversity in patchy wetlands of the Iranian Plateau: insights from mires and springs in dry continental landscapes.

Wenqin Tu (China). Plant Community Dynamics over Four Decades in a Subtropical Evergreen Broad-leaved Forest.

Yaoxing Wu (China). Belowground Responses of Silicon Cycling and Functional Genes to Moso Bamboo Expansion.



Long way ahead…

Thanks

- BC-CAS and Prof. Ma
- NE Forestry University-China

Thank you for your attention