

## **O 56. GEOLOGICAL APPROACH TO KAVAKLI NATURAL PROTECTION AREA**

Arif Delikan<sup>1</sup>, İsmail Sevimer<sup>2</sup>

<sup>1</sup>*Konya Technical University, Geological Engineering Department Konya-Turkey*

<sup>2</sup>*Ministry of Agriculture and Forestry, 10th Regional Directorate, Karabük-Turkey*

*E-mail: adelikan@ktun.edu.tr, ismailsevimler@gmail.com*

**ABSTRACT:** The Kavaklı Natural Protection Area (KNPA) is located just south of the Yenice-Karabük region. This region has one of Turkey's richest forest texture areas and oxygen content. The kavaklı area is also located in the wildlife protection areas.

KNPA consists of one polygon and two different types of rock community. Nature Protection area includes Early-Late Cretaceous Ulus formation. Ulus formation consists of Early-Late Cretaceous clastic sedimentary rocks. As a member of the Ulus formation, Sunduk member covers carbonate rocks. KNPA a consists mostly of carbonated rocks. Detrital sedimentary rocks are only exposed in a small area to the east of the polygon.

The region is very close to the North Anatolian Fault Zone (NAFZ). Therefore, the region is frequently influenced by active seismic movements. KNPA consists mostly of carbonaceous rocks, thus creating more stable areas against earthquakes and less danger for natural life and besides, there are many small and large caves in carbonate rocks. These karstic structures constitute important shelters and feeding areas for natural wildlife. In addition, the infrequent forest texture in carbonated rocks create the breathing areas in the forests. Limestone and clastic rocks between contacts are exposed to spring water. Spring water are important for natural life.

*Keywords: Kavaklı, Karabük, Natural Protection area, Geological approach*

### **1. INTRODUCTION**

Kavaklı Nature Protection Area (CNPA) is located in the southwest of Karabük province. Accumulation of main Tecronic of Turkey in the Pontian in the western part of the main tectonic Association (West-Pontides) is located in the Istanbul zone (Figure 1).

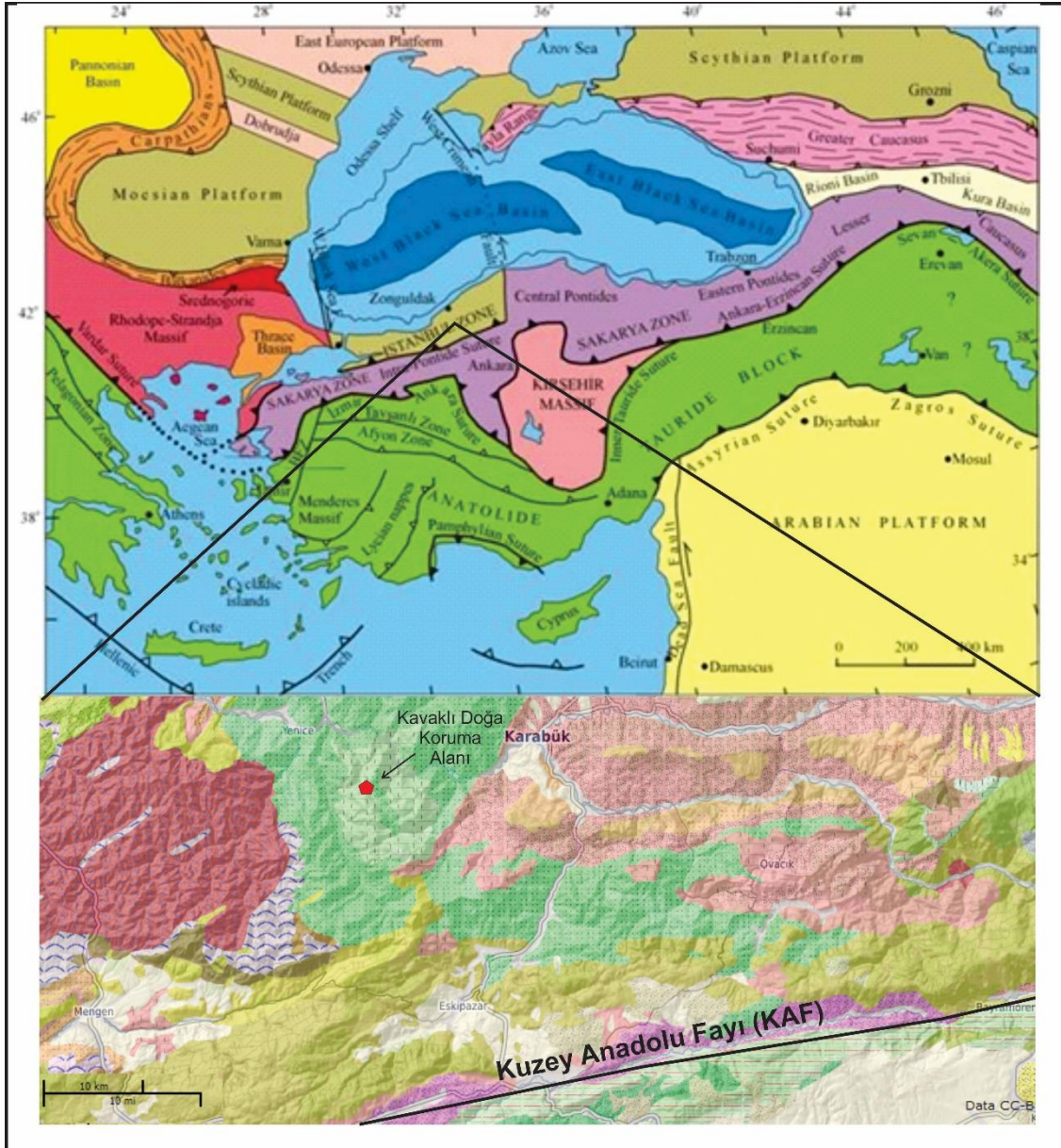
Çitdere Nature Protection Area is located in a dense forest texture as well as a very steep topography. The rock assemblages in the region are located to the north of the North Anatolian Fault (NAF) line and have a very folded and fractured internal structure (Figure 1).

### **2. MATERIAL AND METHOD**

Geological map of the study area was made. Samples were collected systematically in places where the sequence is thick. Also, random sampling was realized from different lithologies. The thin sections and acetate peels from samples were prepared for determining the petrographic and sedimentological characteristics of different facies.

### **3. GEOLOGICAL SETTING**

The Ulus formation, which is widespread in the region, contains Early and Late Cretaceous sandstone, shale, conglomerate, limestone and various types of blocks. There is a Late Cretaceous Sunduk member in the Ulus formation. The Sunduk member generally consists of late Cretaceous aged carbonated rocks.



**Figure 1.** Geo-tectonic location of Kavaklı Nature Protection Area and its surroundings (Alan and Aksay, 2002)

#### 4. RESULT

##### 4.1. Ulus Formation (Upper Cretaceous)

Kavaklı Nature Protection Area consists of a polygon. Kavaklı Nature Protection Area consists of a member of Sunduk, which is generally composed of carbonated rocks within the Ulus formation.

Early-Late Cretaceous aged sandstone-mudstone-marl and occasionally limestone intercalated sedimentary rocks. There are marble blocks at the base of the unit, which is composed of phylloid type rocks (Figure 4). Marble blocks consist of crystalline limestones (Folk 1962). There are clastic facies consisting of mudstones and sandstones on the blocky series. It consists of thick bedded sandstones and thin-medium bedded and occasionally laminated mudstones. Despite the predominance of green color, there are colored laminae in the mudstones (Figure 5). Sandstones are yellow-green colored, medium-bedded and sometimes laminated. Sandstones with quartz arenite (and greywacke composition are mostly fine grained (Dott, 1964).

Carbonated rocks in the Ulus formation should be located at the base of the block or Ulus formation since they generally reflect shallow environmental conditions.

The fossil content (Radiolari sp.) Within the Ulus formation and lithological features and its place in the literature is a sequence of flysch character (Figure 4, immediately south of the polygon). The blocky series of wild flysch character, alternation of fine clastic levels and presence of micritic limestones (deep marine) reflect a deep marine environment.

Ulus formation has a very curved and fractured appearance (Figure 5). Therefore, it presents quite thick stacking structures.

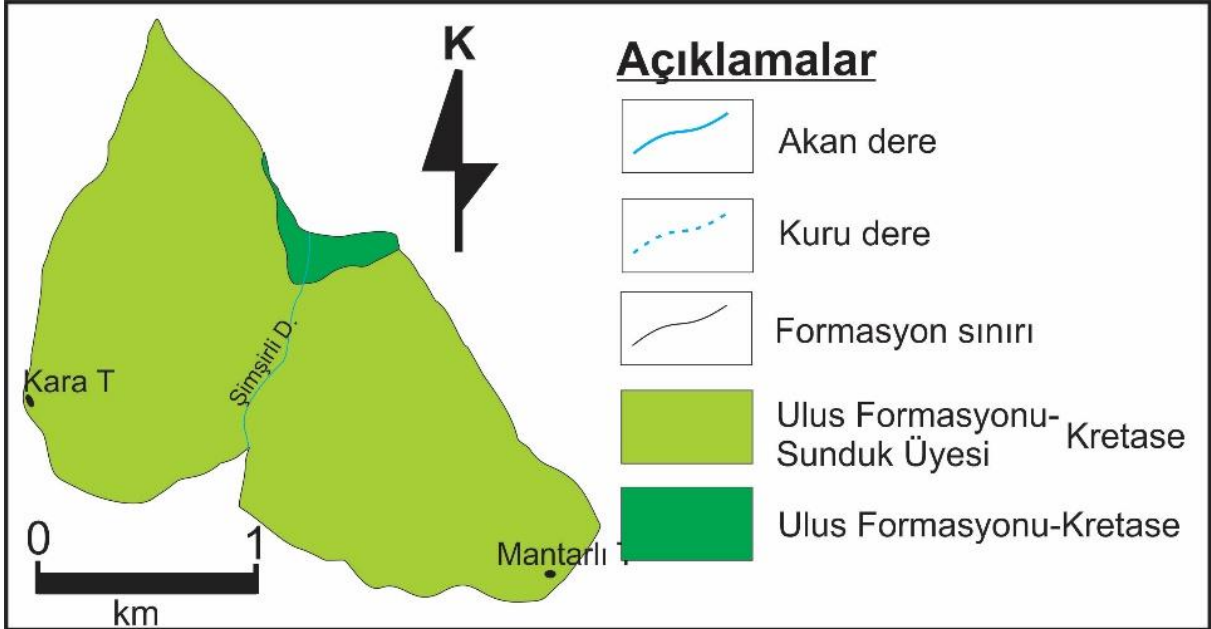


Figure 2. Geological map of Kavaklı Nature Protection Area

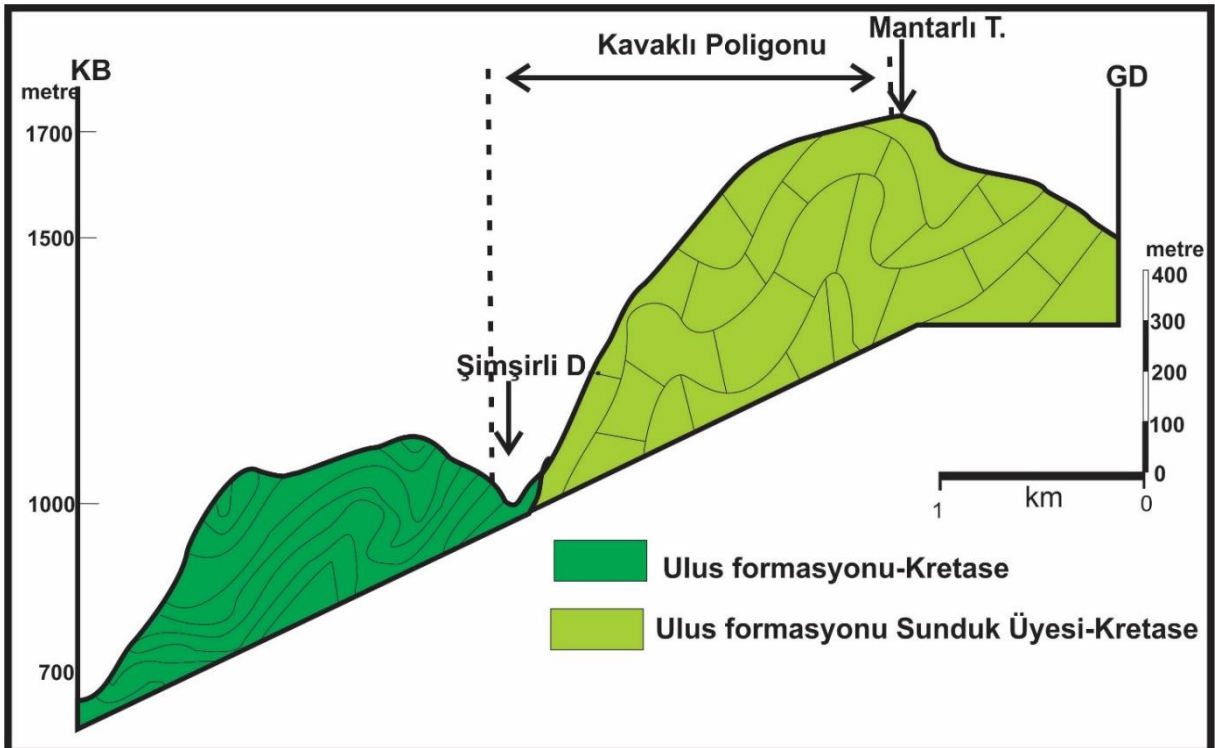


Figure 3 Geolpical cross section of Kavaklı Nature Protection Area





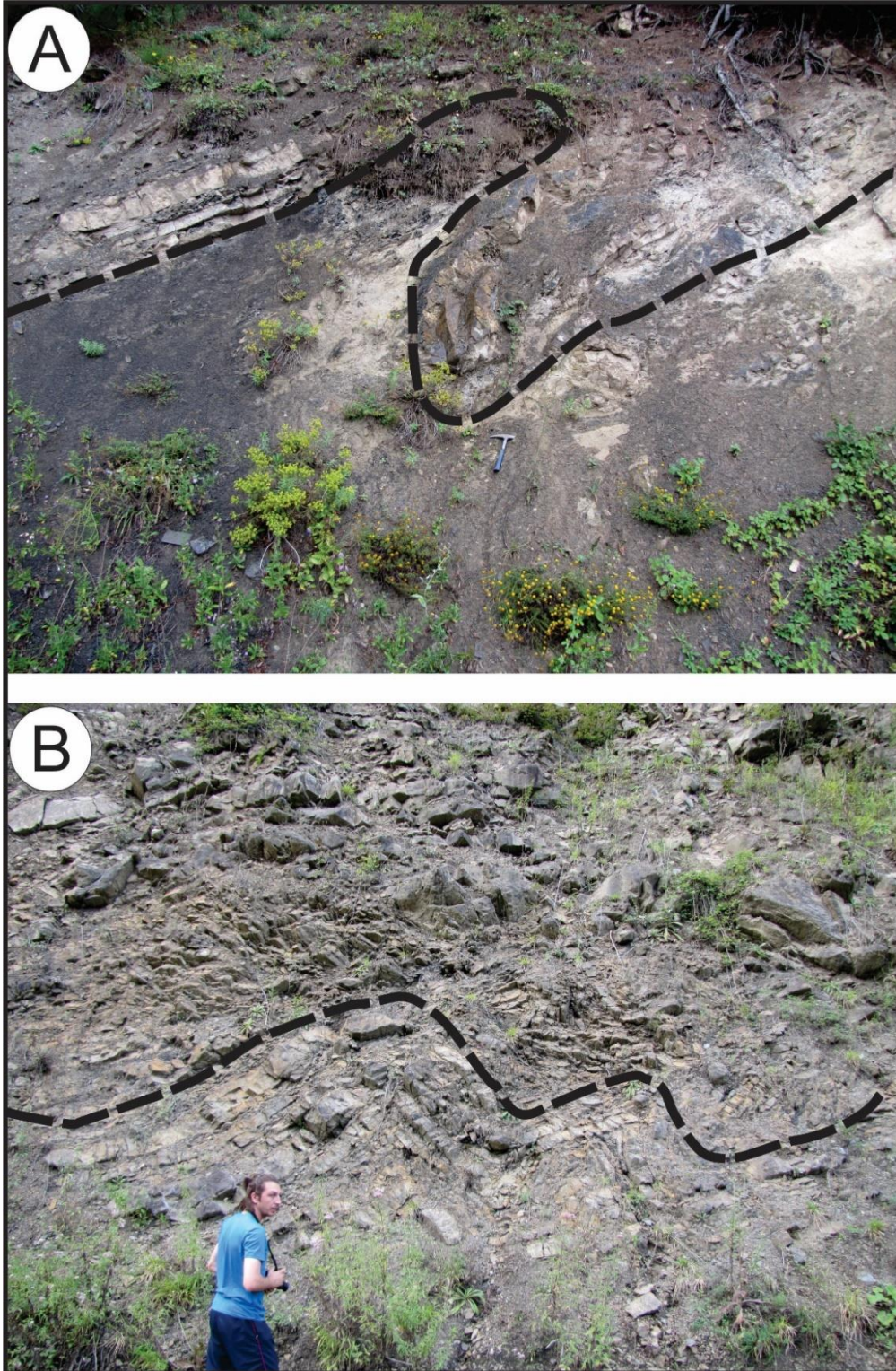
**Figure 4.** Mudstone and thick bedded sandstone alternation in the Ulus formation in Kavaklı region

#### **4.1.1. Sunduk Meber (Upper Cretaceous)**

unduk member is composed of platform type carbonated rocks such as beige colored medium-thick bedded biomicrite, oopelintra sparit, (Folk 1962) and fresh gray surface. Although the boundary relationship between the Ulus formation and the Sunduk member seems to be compatible in the study area, it is suggested by some researchers that there is a block (Figure 8). In the Sunduklu member KTKA region, almost all of them are composed of Sunduk member carbonated rocks (Figures 3 and 4).

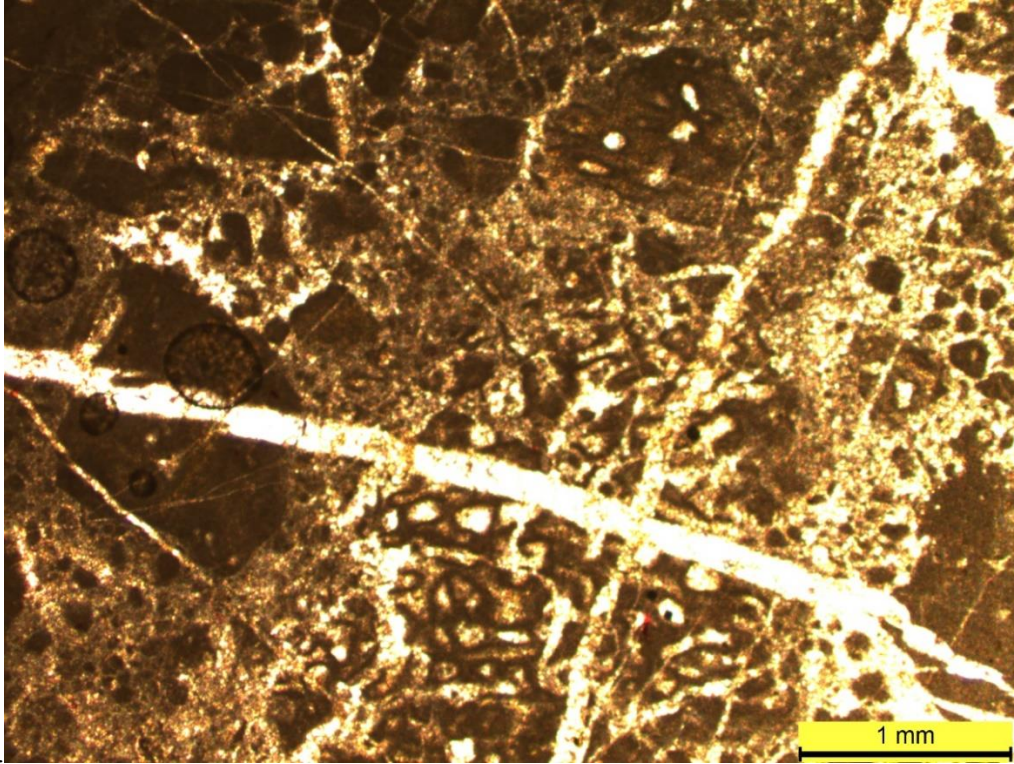
Carbonates in the region are gray-beige medium thick bedded highly resistant carbonates which are biomic and begin with very shallow platform type carbonates such as micrite (Figures 6). In the upper parts, deeper inner shelf type continues with abundant fossiliferous red algae carbonates (Figure 6).





**Figure 5 .** Deformational tectonic structures due to compression in Ulus formation, A. isoclinal fold structure, B. Similar fold structure





**Figure 6.** Bio-micrite, observed in Sunduk member, red algae carbonates deposited in deep shelf environment

## 5. CONCLUSIONS AND DISCUSSION

1. As it is known, the region is an important conservation area in terms of wildlife. The fact that the forest is very frequent, the topography is highly variable, the rock characteristics in the region and the climate are among the main factors in terms of wildlife
2. Geological features of rocks are important in terms of maintaining the lives of wild animals of animals. The area is almost entirely composed of carbonated rocks, which can dissolve with groundwater and surface water to form caves.
3. In addition, the gaps between the layers of carbonate rocks are important for the housing and feeding of many small size animals. It is very important for the continuity of wildlife in the caves in the region.
4. While carbonate rocks are more resistant to erosion, clastic rocks of Ulus formation may be less resistant. In addition, since the region is seismically mobile, wild animals nesting in carbonated rocks will be safer.
5. In addition, clastic rocks in the region appear to be very fragmented due to deformation and faulting. On steep slopes, such features can cause stone fall and collapse. It is also possible in landscapes rich with mudstones
6. The fact that Kavaklı Nature Conservation Area has a rugged topographic structure allows different views and species that need different climatic conditions at close distances. Due to the fact that there are deep valleys and steep slopes make it difficult to access the area, there are many trees in the region that can carry the characteristics of monumental trees.

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