

# ANALYSIS OF THE ENVIRONMENTAL IMPACT ASSESSMENT FROM THE MILITARY TRAINING GROUND IN KRIVOLAK AND ITS MANAGEMENT

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# Background

- The study about the environmental values (in particular biodiversity) in the national defense sector has never been performed in the Republic of Macedonia so far.
- Elaboration of such intersectoral studies was set up as priority action in the National Biodiversity Strategy.
- Intersectoral approach toward environmental (biodiversity in particular) conservation was proposed as priority in NEAP 2



# Legal basis

## National legislation

- The law on Nature Protection (67/04)
- Biodiversity Strategy and Action Plan
- NEAP 2 (draft)
- Draft Law on Environment

## International legislation

- EC Directive on EIA 85/337/EEC



# Background

In connection to the future development of the Krivolak Military Training Polygon (mainly to serve to NATO forces...) the need of elaboration of the environmental concerns is inevitable

Beside the polygon itself, the possible impacts of access roads and railway terminal should be assessed



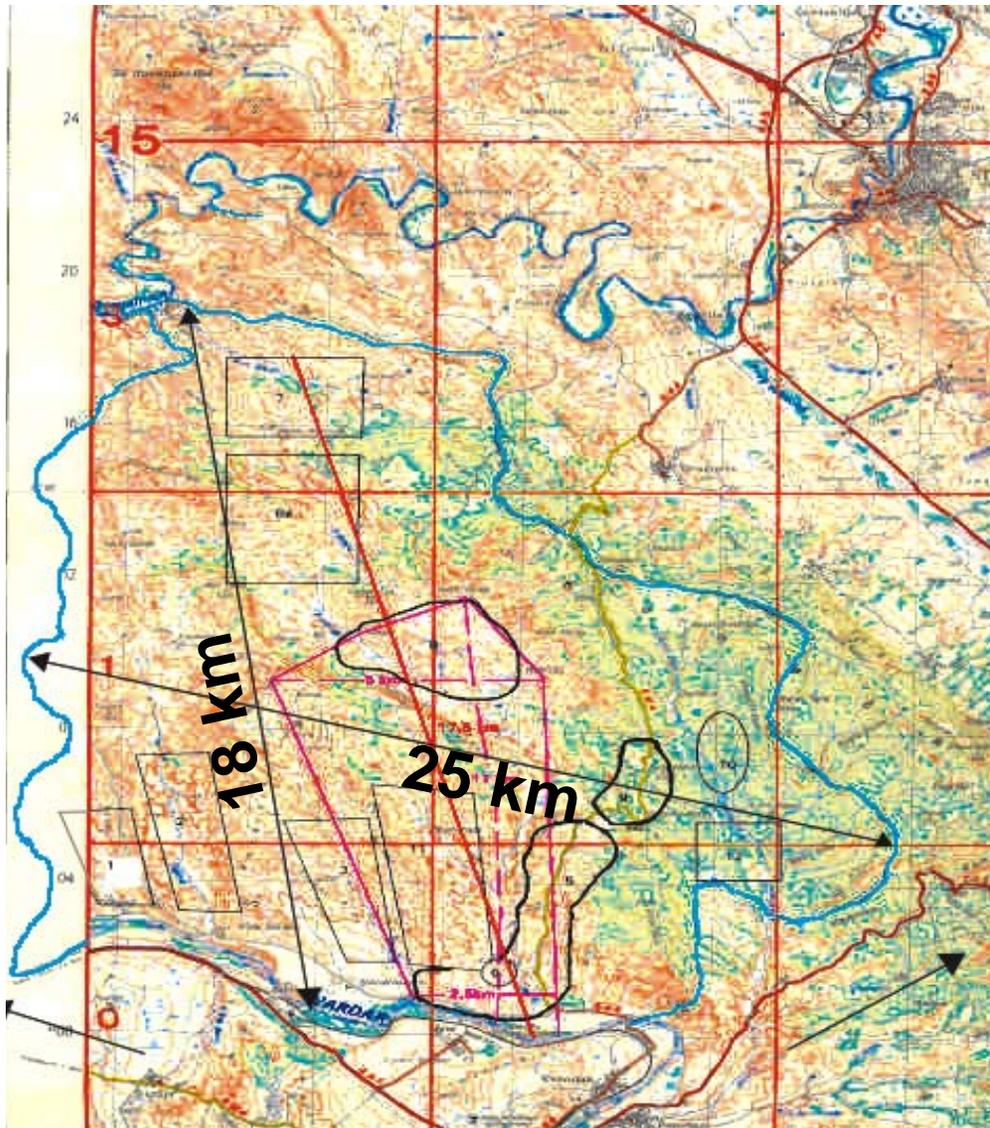
# Position of Krivolak training polygon in the Republic of Macedonia

The pink circle shows the position of the Military Training Polygon Krivolak

Shaded areas represent protected areas in Macedonia



# Military training polygon “KRIVOLAK”



## Legend:

1. Areas for aiming with infantry arms (weapons) and TELF (tactical exercise life firing)
  2. Artirelli-rocket polygon for first band aiming
  3. Polygon for testing the airforce
  4. Area of basic positions of artirely
  5. Areas of basic positions of armour units indirect aimings
  6. Areas of basic positions of Artirely rocket units and airdefence
  7. Areas of targets of artirely and airforce
  8. Areas of targets for artirely and armour units for indirect aimings
  9. Areas of basic positions for mortars (82 mm and 120 mm)
  10. Areas of targets for mortars (82 mm and 120 mm)
  11. Room for accomplishing of TELF for company and battalion
  12. Chemical poligon
  13. Trening center “Pepeliste”
  16. Technical working room
  17. Signal center
  18. Camp “Wintry - 1”
  19. Shooting polygon
  20. Camp “Arrow”
  22. Camp “Fire”
  24. Camp “Meadow”
  25. Camp “ Wintry - 2”
- A - Polygon Head quarters  
B - Ingeneering polygon

# Natural characteristics

## ■ Geography

- The area of interest is situated in the central part of the Republic of Macedonia. The broader region where the town Negotino and the village Pepelishte (together with the town Kavadarci) are situated, is known as Tikvesh region.
- Adjacent rivers are Vardar (on west and south) and Bregalnica (on the north-east and northern part of the area of interest)
- The relief is predominately hilly with small peaks cut by many small valleys and dales.
- The region is very poor with surface waters.



# Natural characteristics

## ■ Climate:

- Dominant climate type is submediterranean with influence of eastern-continental climate
- Pronounced characteristics of steppe climate
- The triangle Veles-Krivolak-Stip is the driest part in Macedonia (less than 500 mm per year)
- Average annual temperature is 13,5 °C; absolute annual amplitude is high: 65 °C.



# Natural characteristics

## Nature protection status of Krivolak area

- The region of Krivolak is unique in the Republic of Macedonia concerning its biodiversity characteristics and deserves special attention
  - semi-desert characteristics
  - steppic elements
- Some adjacent regions (Orlovo Brdo) were proposed as protected areas



# Natural characteristics

## ■ Vegetation and habitats

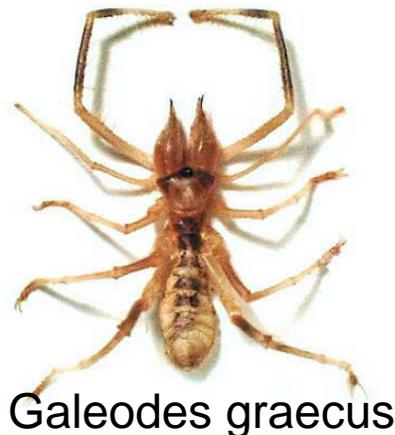
- Representative forest community is the climazonal forest association: *Querco-Carpinetum orientalis*
- Dry grassland associations on hill pastures are dominating the landscape (priority habitat types-EU Habitat Directive, Bern Convention)
- Steppe-like vegetation on eroded soils (regosols)



# Natural characteristics

## ■ Flora and fauna

- Mediterranean and submediterranean species
- Endemic species
- Endangered species



Galeodes graecus



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Latrodectus 13-guttatus

## Other important species

### Fauna

*Saga natoliae*

*Carabus graecus*

*Glyphothemthis heldreichi*

*Bradyporus dasypus*

### Flora

*Astragalus cernjavskii*

*Asrtagalus parnassii*



Tulipa mariannae



Iris reichenbachii

# Scope of the Study

- The Study should cover the wider area of the training polygon including access roads, terminals etc., paying attention especially to:
  - Biodiversity
  - Special accent should be put on the accommodation facilities (air pollution, waste, waste-waters, noise)
  - Risk assessment (fuel, ammunition...)



# Scope of the Study

- Legal basis
- Climate
- Geography, geology, pedology and hydrology
- Biogeography and landscape
- Data on inputs during construction and operation
- Data on outputs
- Biodiversity
  - Habitats
  - Plant associations
  - Flora
  - Fauna
  - Biodiversity
- State of the environment
  - air
  - soil
  - water (surface and underground)



# Scope of the Study

- Social aspects
  - Settlements
  - Infrastructure
  - Agriculture
  - Live-stock breeding
- Land use
- Mapping of habitats
- Sensitivity of ecosystems
- Impacts
  - Operation of training polygon
  - Upgrade of access roads
- Mitigation measures
  - Operation of training polygon
  - Upgrade of access roads
- Monitoring
- Recommendations for future activities

