

Lesson plan – Black storks – Worksheet

Introduction

Barcs – a small town of ten thousand inhabitants – is situated on the Hungarian-Croatian border river, the Drava. The Drava river was behind the Iron Curtain, so the natural beauty and the environmental value of this area remained almost untouched. As a consequence, in 1996 it was announced that the Drava river and its floodplains were to be part of the Danube-Drava National Park.

One of the most important protected species of the National Park is the Black Stork which builds a stick nest high in trees. This is a shy and wary species, unlike the closely related White Stork. Due to the protective measures of the National Park more and more Black Storks are nesting around Barcs.

Description of the exercise:

In this exercise you can compare the habitats of White and Black Storks. By visualizing the nests of these two species you will see if there is a significant difference between their lifestyle.

You need a detailed map of the area and the coordinates of the nests. Then you will create two event files for the two species, showing the locations of the nests. For this, you need to add real XY coordinates to your map.

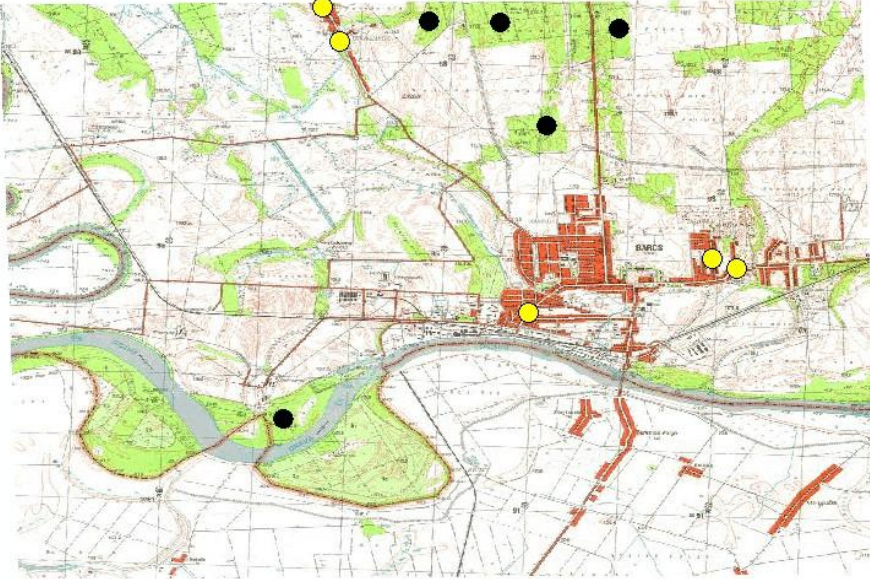
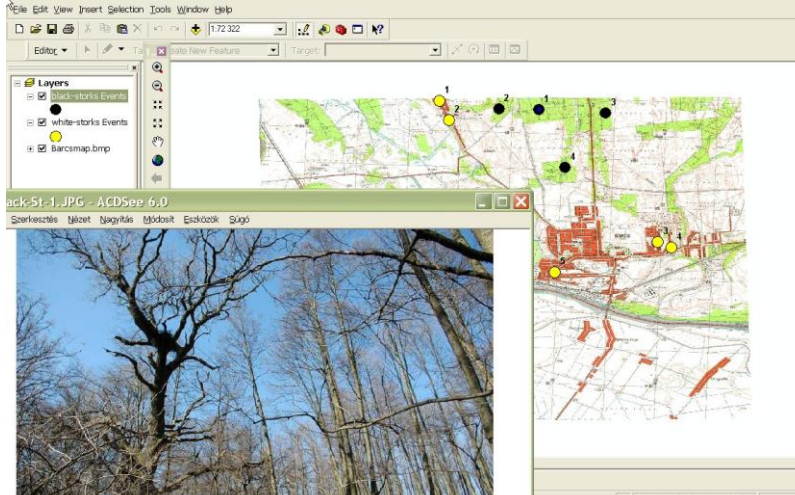
Once you have entered the data, you will be able to visually present the information from the database table on the map. Then you can easily analyze the habitats of these birds.



| <i>number</i> | <i>Instruction</i> | <i>iNotes</i> | <i>Teachers' / Trainers' activity</i> | <i>Pupils' / participants' activity</i> |
|---------------|---|---------------|---------------------------------------|---|
| | First, we will open a map of Barcs. | | | |
| 1 | Open ArcMap from the MS Windows start menu | | <input type="checkbox"/> | x |
| 2 | Add the raster map " <i>Barcsmap.tif</i> " | 1 | <input type="checkbox"/> | x |
| | Now we will generate dBase Tables in which we can enter information about the nest locations. | | | |
| 3 | Generating two dBase Tables in ArcCatalog: Open ArcCatalog and generate two new dBase Tables. Save one dBase Table as " <i>white storks</i> ", and another one as " <i>black storks</i> " | 25 | <input type="checkbox"/> | x |
| 4 | Add both dBase Tables in ArcMap | 1 | <input type="checkbox"/> | x |
| 5 | In ArcMap, create the following fields in both dBase Tables: Right-click in the table of contents to open attribute table – Add Field <ul style="list-style-type: none"> • "<i>X</i>" (for X coordinate, choose 'double' as data type) • "<i>Y</i>" (for Y coordinate choose 'double' as data type) • "<i>Place</i>" (for indicating the place of the nest, as tree, or electric pylon, or chimney, etc. choose 'text' as data type) | 7 | <input type="checkbox"/> | x |

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| | Now that we have created the dBase Tables, it is time to fill them with data about the nests | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|--|-----------|--------------------------|---|--|---|---|---|-----------|-----------|---|-----------|-----------|---|-----------|-----------|---|-----------|-----------|---|-----------|-----------|----|--------------------------|---|
| 6 | <p>Fill in the information about the nest locations in the attribute table of 'black storks':</p> <table border="1"> <thead> <tr> <th>Field 1</th> <th colspan="2">black storks</th> </tr> <tr> <td></td> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>17,444757</td> <td>45,995320</td> </tr> <tr> <td>2</td> <td>17,434812</td> <td>45,995407</td> </tr> <tr> <td>3</td> <td>17,461605</td> <td>45,994381</td> </tr> <tr> <td>4</td> <td>17,451435</td> <td>45,980886</td> </tr> <tr> <td>5</td> <td>17,414306</td> <td>45,939725</td> </tr> </tbody> </table> | Field 1 | black storks | | | X | Y | 1 | 17,444757 | 45,995320 | 2 | 17,434812 | 45,995407 | 3 | 17,461605 | 45,994381 | 4 | 17,451435 | 45,980886 | 5 | 17,414306 | 45,939725 | 30 | <input type="checkbox"/> | x |
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| 5 | 17,414306 | 45,939725 | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>Fill in the information about the nest locations in the attribute table of 'white storks':</p> <table border="1"> <thead> <tr> <th>Field 1</th> <th colspan="2">white storks</th> </tr> <tr> <td></td> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>17,419845</td> <td>45,997539</td> </tr> <tr> <td>2</td> <td>17,422305</td> <td>45,992759</td> </tr> <tr> <td>3</td> <td>17,474670</td> <td>45,962174</td> </tr> <tr> <td>4</td> <td>17,478102</td> <td>45,960871</td> </tr> <tr> <td>5</td> <td>17,448792</td> <td>45,954610</td> </tr> </tbody> </table> | Field 1 | white storks | | | X | Y | 1 | 17,419845 | 45,997539 | 2 | 17,422305 | 45,992759 | 3 | 17,474670 | 45,962174 | 4 | 17,478102 | 45,960871 | 5 | 17,448792 | 45,954610 | 30 | | |
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| | Now that all data is entered, we are ready to visualize the nest locations on the map | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | <p>Draw the locations of the white stork nests, and the locations of the black storks on the map by using the tool "add XY data".</p> <p><i>You will create two new layers: 'white stork Event' and 'black stork Event'.</i></p> | 24 | x | x | | | | | | | | | | | | | | | | | | | | | |
| 8 | Change the point symbols of the "white" and "black" storks Event layer : they should be significantly different | 13 | <input type="checkbox"/> | x | | | | | | | | | | | | | | | | | | | | | |
| 9 | Zoom in on each nests on the raster map to analyze the habitats | 11 | <input type="checkbox"/> | x | | | | | | | | | | | | | | | | | | | | | |
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|----|---|----|----------------------------|
| |  | | |
| | <p>If the sequence of the nests are displayed on the map, it is easier to distinguish them. Therefore we will label them.</p> | | |
| 10 | Show the labels of the points on the nest | 26 | |
| | <p>You can also add hyperlinks (photos) to the nesting points</p> | | |
| 11 | Add a hyperlink to the “white storks” and “black storks” nesting locations. You can find the pictures in the folder of this exercise. | 14 | <input type="checkbox"/> x |
| | <p>Now it is time to finally finish the data table by entering the last data about the nesting locations.</p> | | |
| |  | | |
| 12 | <p>Looking at the photos of nests you can type into the attribute (data) table the place of the nests (tree, chimney, or electric pylon)</p> <p>Open Attribute table of ‘white stork Event’ layer and enter the place of the nest.</p> <p>Open Attribute table of ‘black stork Event’ layers and enter the place of the nest.</p> | 30 | <input type="checkbox"/> x |

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| | | | | |
|----|---|----|--------------------------|---|
| 13 | Export your map showing the nesting points as Blackstorks $yourname$.pdf and save it in your portfolio on Moodle. | 42 | <input type="checkbox"/> | x |
| | Analysis | | | |
| | Where do the white storks and black storks live? If you look at your map can you see significant difference in their lifestyles? What do you think about protecting the forests in the Danube-Drava National Park? | | | |

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