

MonSTERS Wars

Episode MMXVII-III-XXIII

The Separation of the Crowns

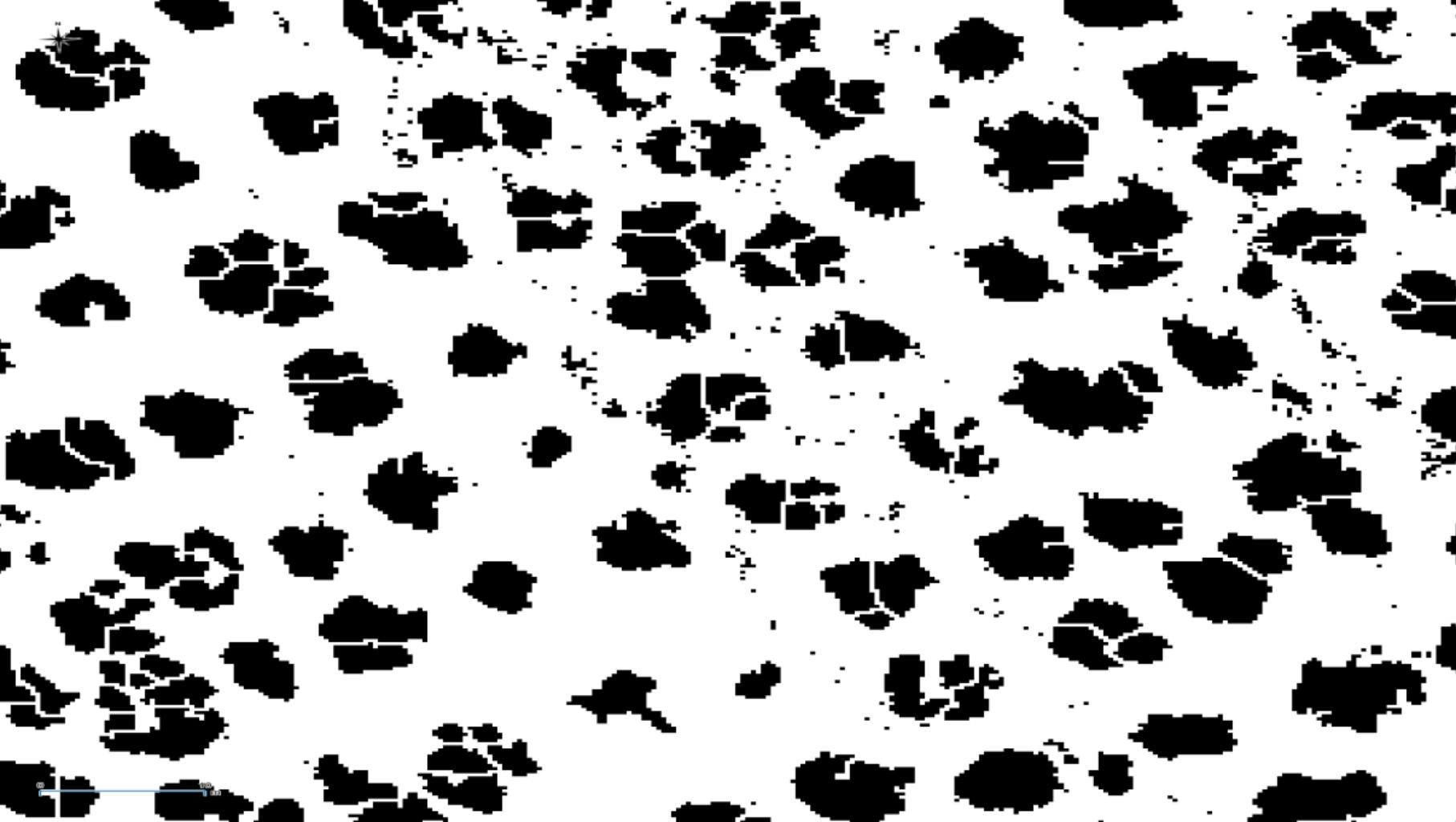
Counting trees in Puglia

- ① Fiji watershed processing
- ② Coalescing crowns
- ③ Estimating Center of crowns
- ④ Merging centers
- ⑤ Fused Crowns patches separation
- ⑥ Merging 4&5: Final count



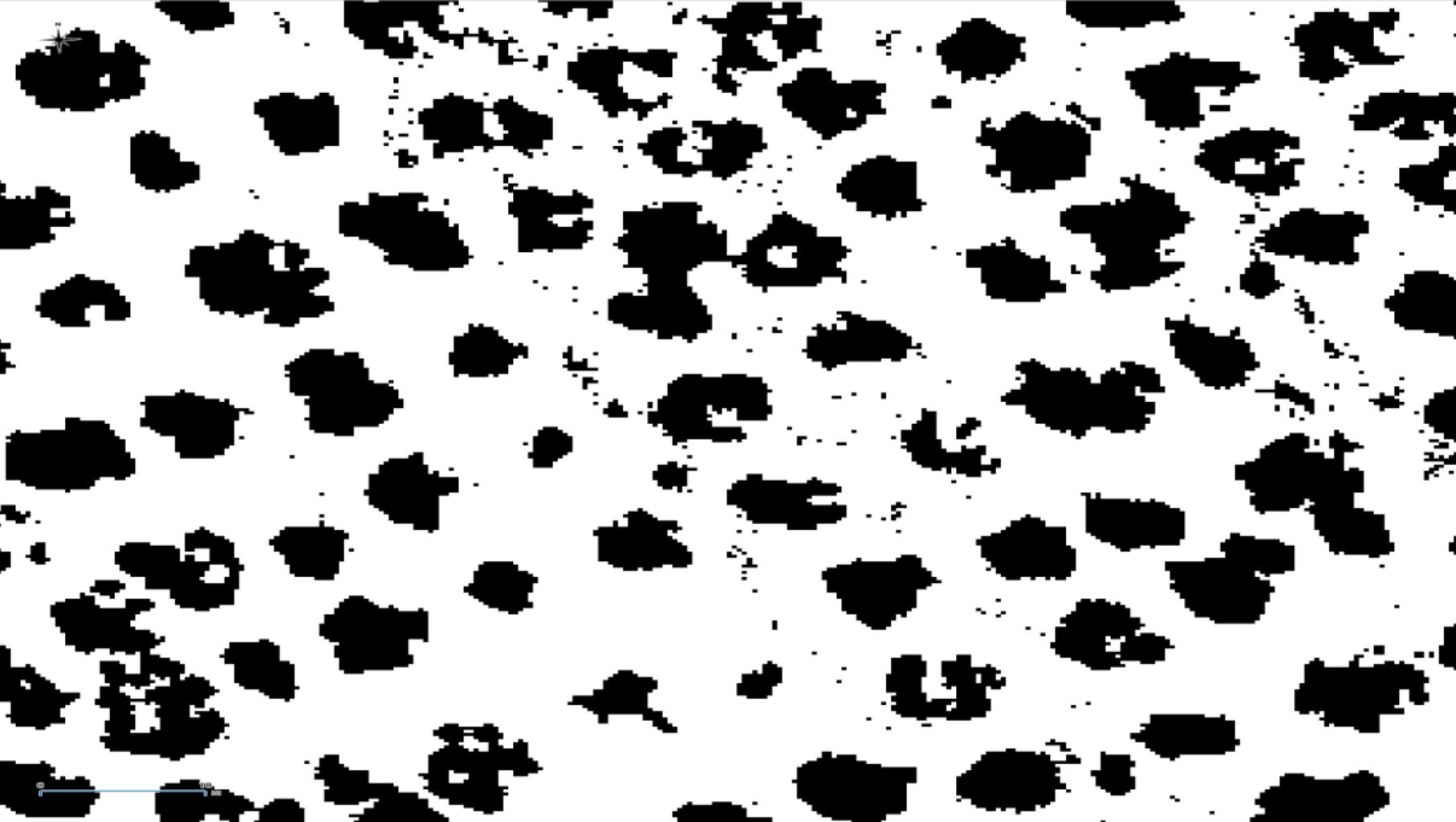
1 - Fiji Watershed processing

- Pablo's work
- Standard processing from previous work
- Returns a binary map
- Crowns are often in clusters



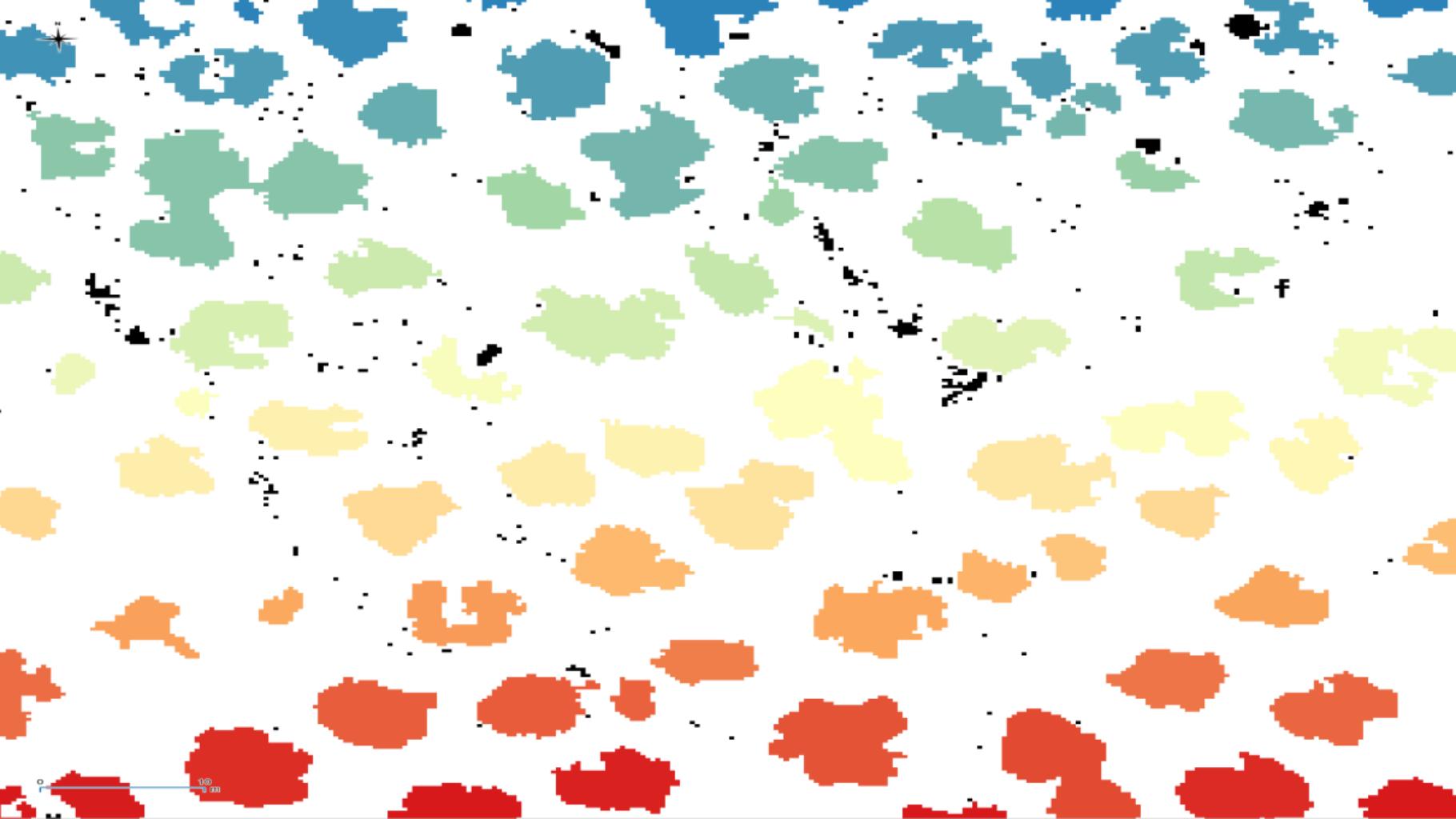
2 - Fill crowns

- Conservative merging of crowns
- tries to limit possibilities of crown merging
- H & V pass



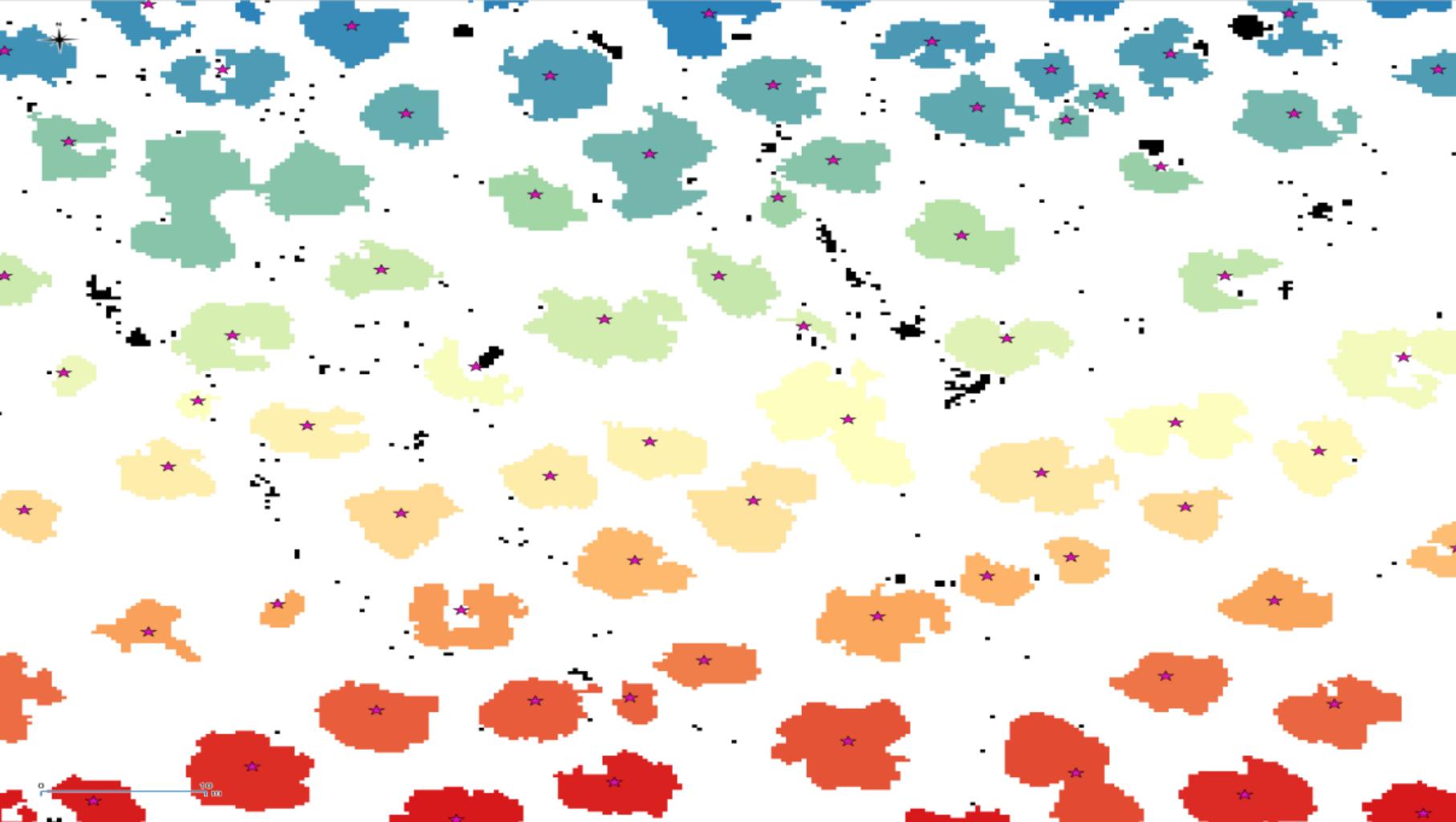
3 - GRASS numbering & cleaning

- Set of GRASS modules
- Numbering *r.clump*
- Area thresholding *r.area*
- ... other manipulations to clean up stuff



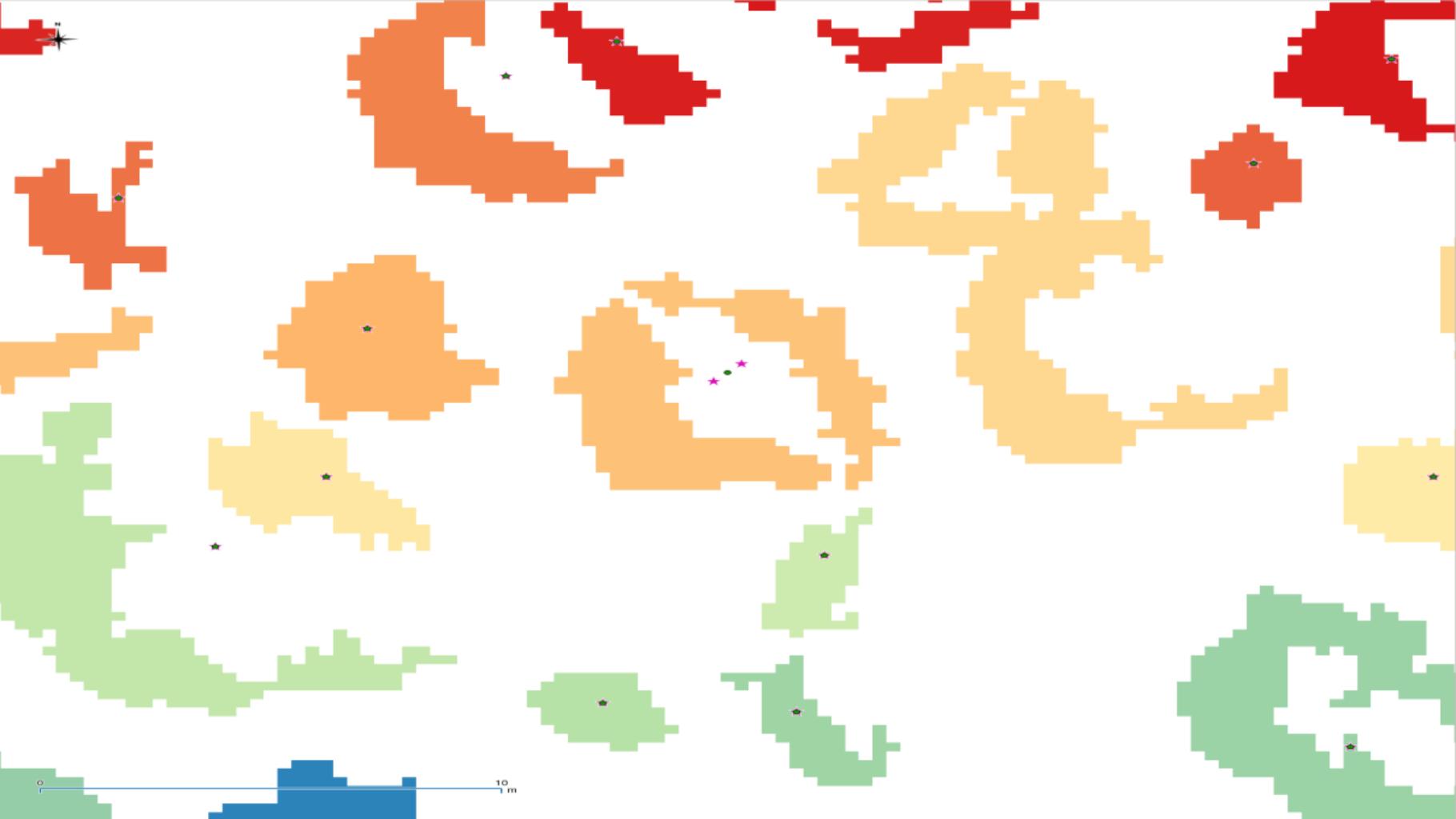
4 - Shape center detection

- 3 points to circle method
- Extensively used for all boundary members of a shape
- Sorting of most common center found
- Used in crater manual mapping (Moon, Ceres, etc.)



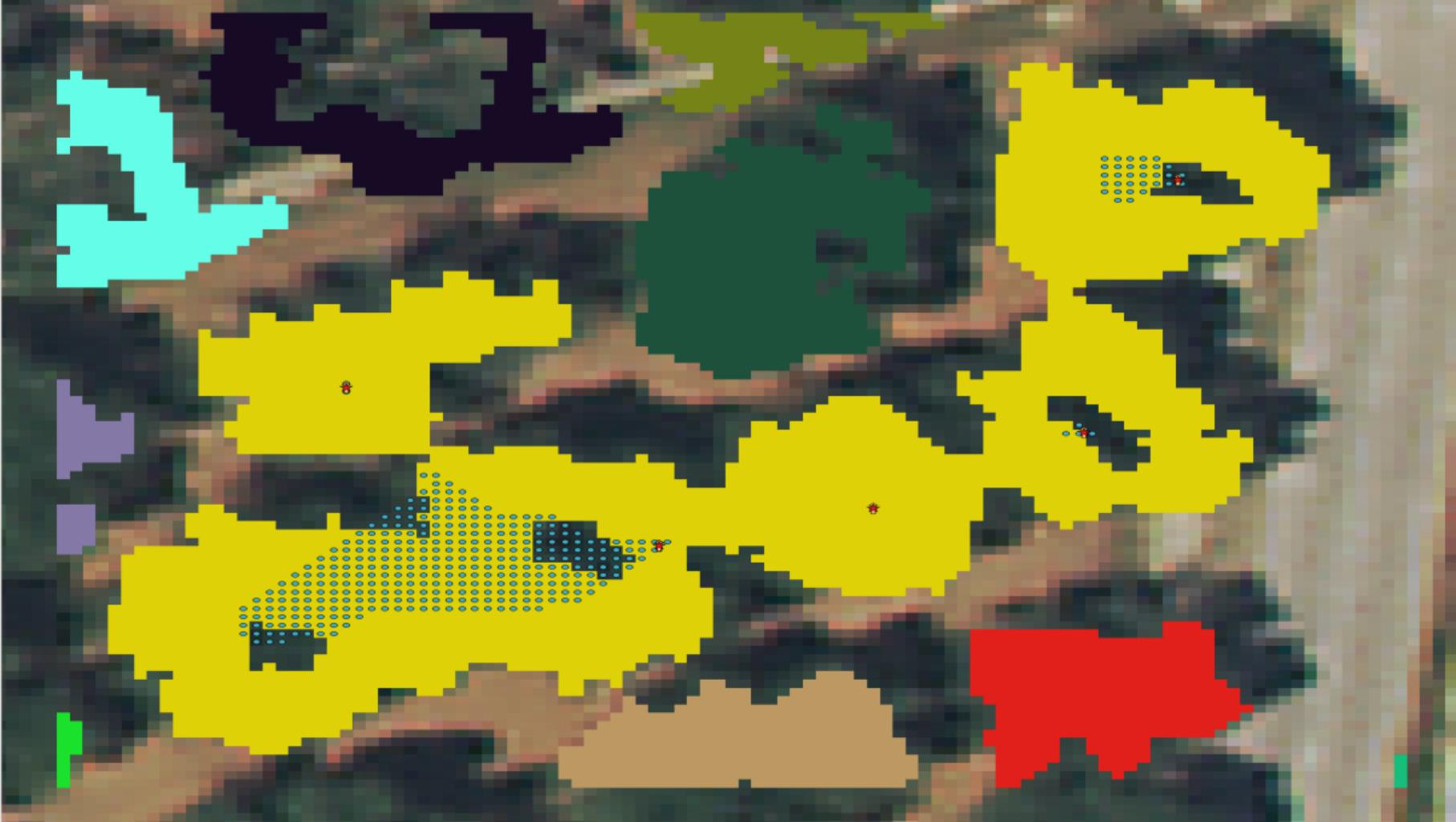
5 - Merge detected centers

- Euclidian distance between centers
- User defined threshold (i.e. 2m)



6 - Separate crowns

- No Center for clump > 200 pixels
- double crowns to multiple crowns
- No processing above 2000 pixels
- (Considered field/farmland)
- Mathematical Morphology
- Dilate, Erode, Close, Open
- Detect Centers
- Merge multiple neighbour centers



7 - Merge results, counting

- Two sources
- main: regular trees crowns
- Secondary: Separated tree crowns
- Concatenate both .csv files into one
- Count lines in resulting file = tree count

An aerial photograph showing a large agricultural area. The land is divided into several rectangular plots, each featuring a distinct pattern of circular crops, likely sunflowers, arranged in a grid-like fashion. A single-lane road runs diagonally across the upper portion of the image, with a few small buildings visible along its side. The surrounding terrain is a mix of brown earth and green vegetation.

Thank you