

An application of mobile mapping to agricultural landscape information development for selected farming regions of northern Ontario - 2013

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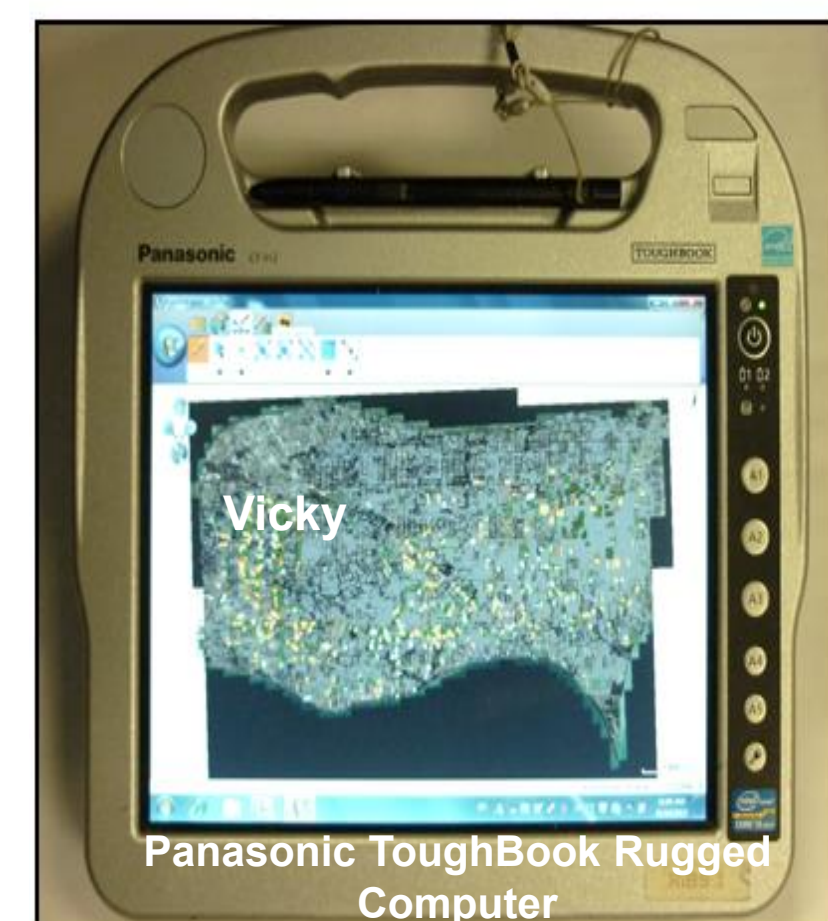


Agriculture is flourishing and has a range of crop diversity in several northern Ontario locations. A mapping reconnaissance project was designed and conducted in October 2013 with the aim of using mobile mapping technology to record observations about the agricultural landscapes of four of northern Ontario's farming areas on a field-specific basis. The combined total area of these study areas was approximately 82,000 hectares (Figure 1). They include: Temiskaming Shores (Thornloe, Earleton, Engelhart area; over 63,000 ha); Chelmsford (about 8,400 ha); Sturgeon Falls (about 6,500 ha); and Powassan (about 4,400 ha).

This October 2013 Ontario AgRI field mapping campaign in the four selected northern Ontario study areas was made possible and quite successful because of the interagency provincial collaboration to obtain quality imagery products and to share geomatics ideas and technology innovation information. Plans to follow up with additional northern Ontario agricultural landscape mapping work in the 2014 cropping season are being made.

The Forest Resource Inventory (FRI) imagery investment by the province was used to good advantage in this project. Mike Robertson and Aneitha Mohammed of OMNR-Peterborough provided it to our team. Coarsened overlay mosaics were developed from it for use with the Ontario Agricultural Resource Inventory (AgRI) mobile mapping ArcPad 10 script. GPS-enabled Panasonic ToughBook computers were used to record all field observations. Cropping system and pasture information were the main agricultural landscape attributes captured for this project. At this time, the detailed farm field-by-field polygon framework of the Ontario AgRI has not been constructed for these study regions. Consequently, all data were collected in point mode for this project. In the future, if an investment in detailed orthoimagery (20-30 cm imagery) for this region is made, the Ontario AgRI polygon framework can be developed and these point data can be assigned to their corresponding farm field polygons.

The Ontario AgRI ground-truth mobile mapping results for the Chelmsford, Sturgeon Falls, Powassan and Temiskaming Shores study areas are presented in Figures 2, 3, 4 and 5. The colour scheme for the Ontario AgRI legend is shown in Figure 6. A cluster of corn crops were mapped in the western end of the Chelmsford area (Figure 2). Potatoes (in the vegetable legend group) were observed across this entire area. A significant number of fields in this region were "not farmed" (purple dots) in 2013. Grain, forage crops and canola were observed to be prominent in the Sturgeon Falls map area (Figure 3). Some clusters of corn production (yellow dots) were noted. The Powassan area was observed to be dominated by pastures and forage cropland in 2013 (Figure 4). Beef cattle were noted to be the most prominent livestock commodity. Canola, grain and forage crops were prominent in the Temiskaming Shores map area (Figure 5). Clusters of corn and soybean production were also observed.



Mobile mapping was accomplished with several Global Positioning System (GPS)-enabled Panasonic ToughBook rugged computer units. An ArcPad 10 script was used to capture the farm landscape observations throughout the 2013 field mapping campaign.

CROP

- Canola
- Corn
- Edible Beans
- Fallow
- Farmstead
- Forages
- Fruit
- Grain
- Not Farmed
- Other
- Pasture
- Soybeans
- Speciality Crops
- Spring Cereal
- Unknown Agriculture
- Vegetable
- Winter Wheat

Figure 6. Part of the Ontario AgRI crop mapping legend colour scheme. It applies to the maps in Figures 2, 3, 4 and 5.

Ontario Agricultural Resource Inventory (AgRI): northern Ontario 2013 Crops

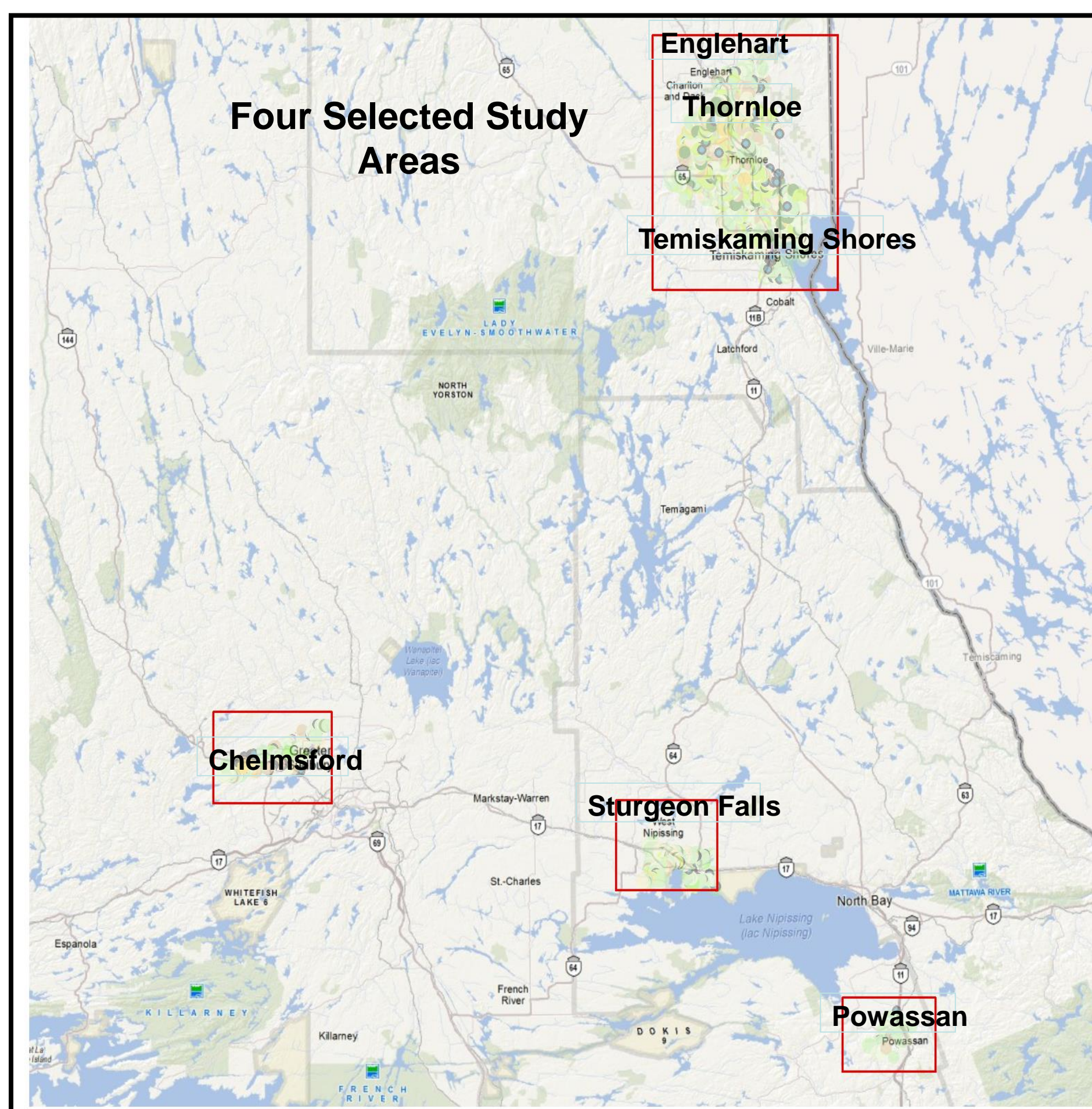


Figure 1. The four selected study areas for this project.

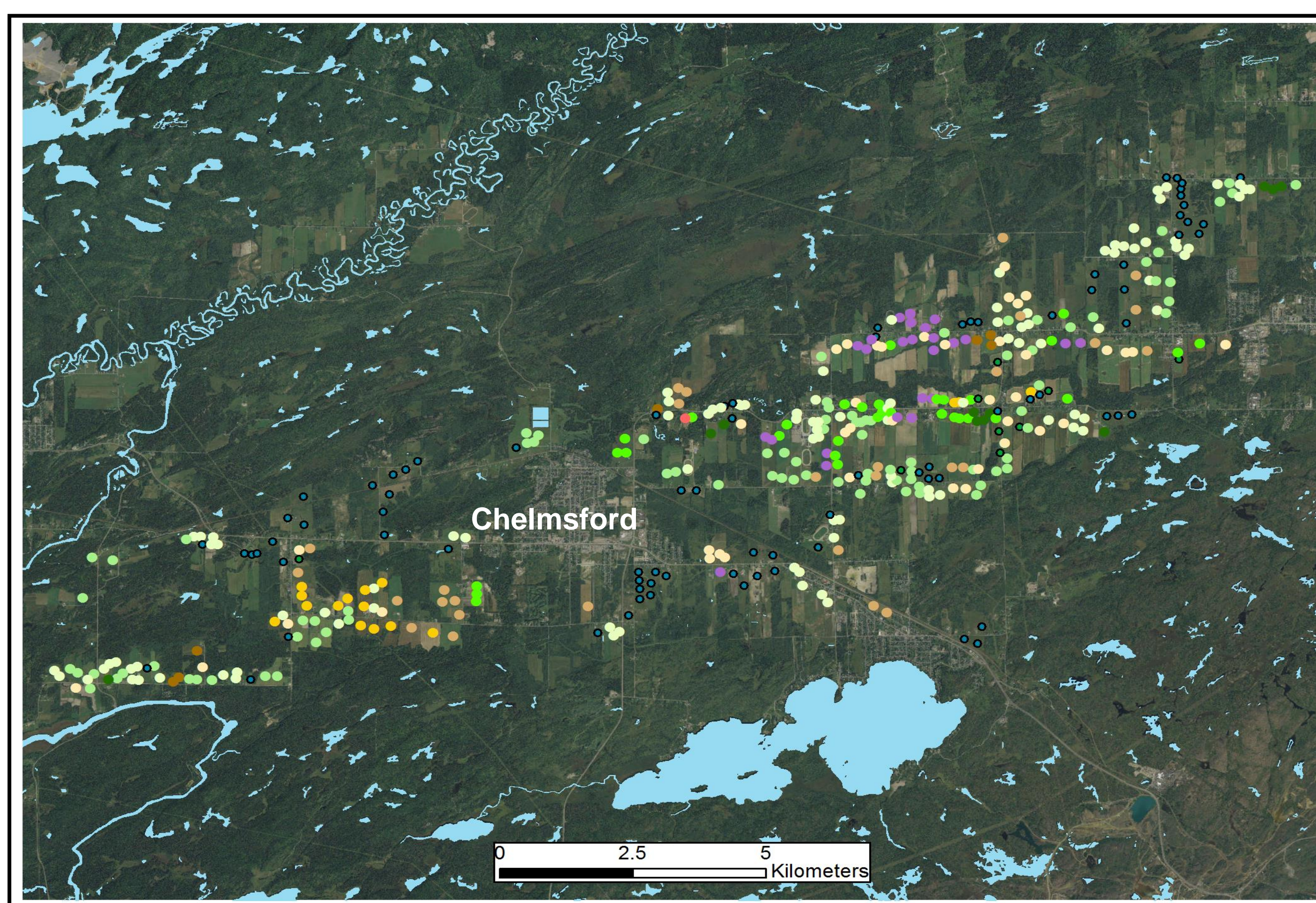


Figure 2. Mobile mapping results for the Chelmsford area in October 2013 (map by Vicky Vanthof, October 2013).

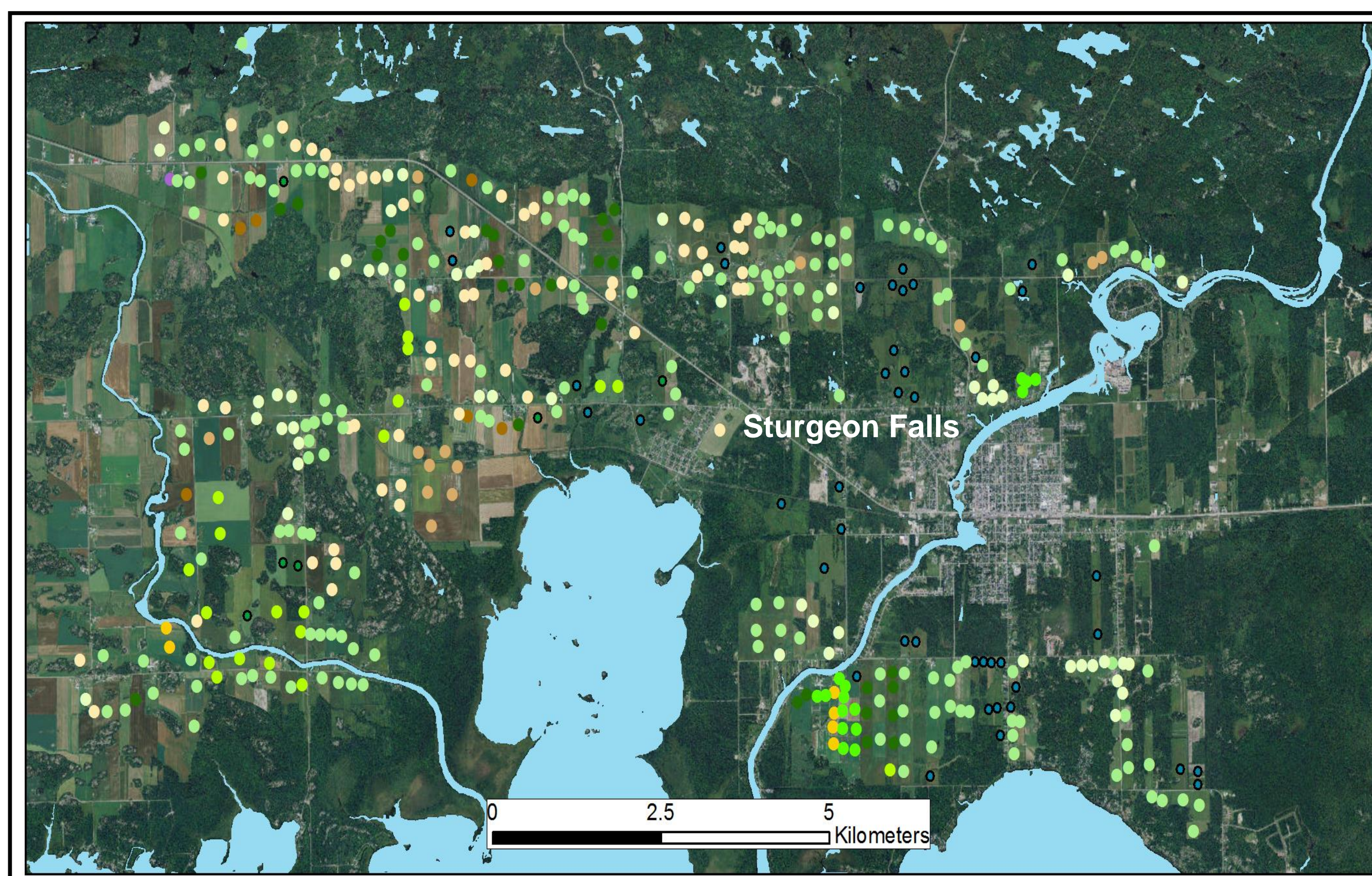


Figure 3. Crops of 2013 in the Sturgeon Falls area. This map reflects ground-truth mapping results only (map by Vicky Vanthof, October 2013).

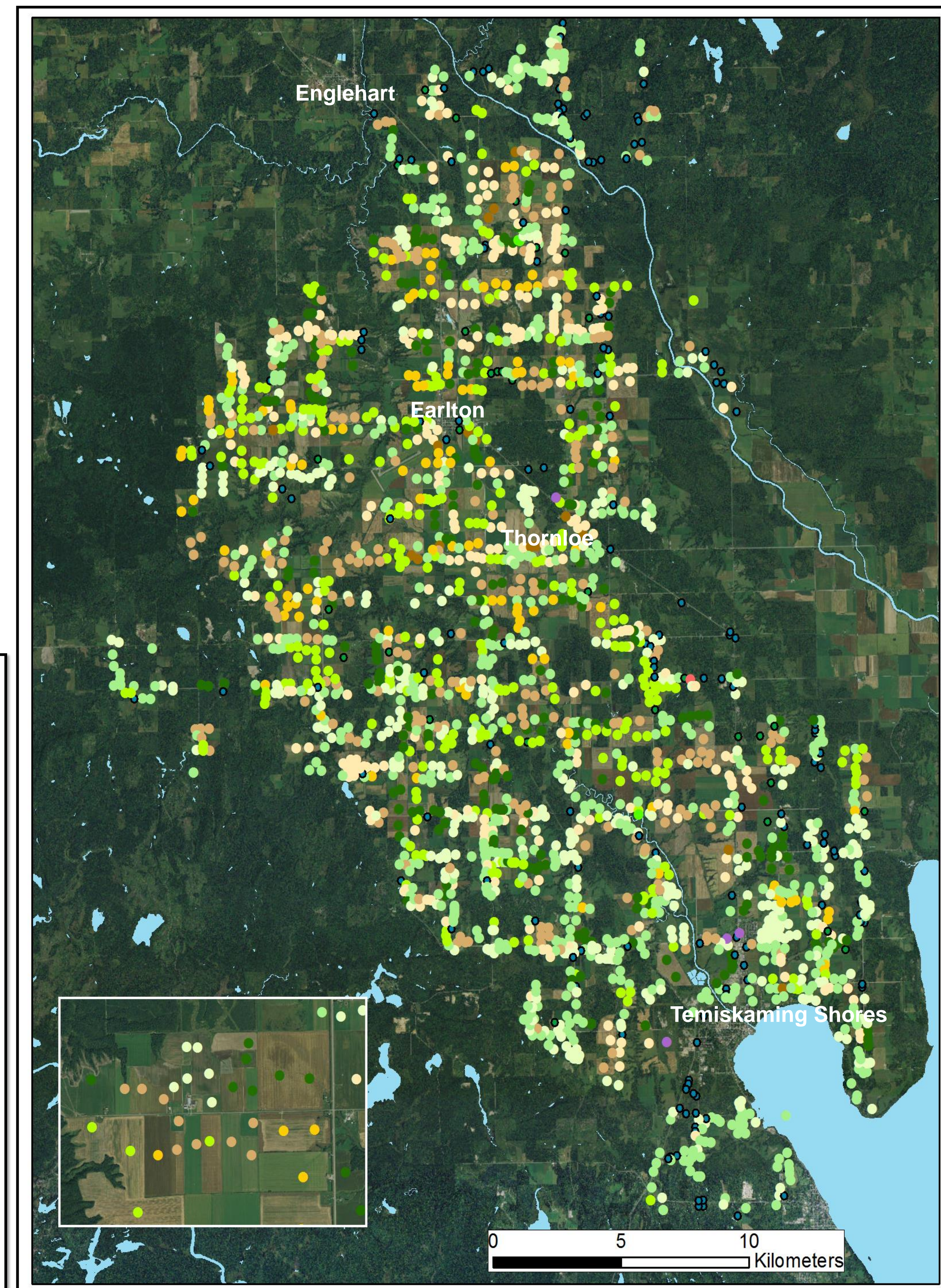


Figure 5. Mobile mapping results for the Temiskaming Shores area in October 2013 (map by Vicky Vanthof, October 2013).

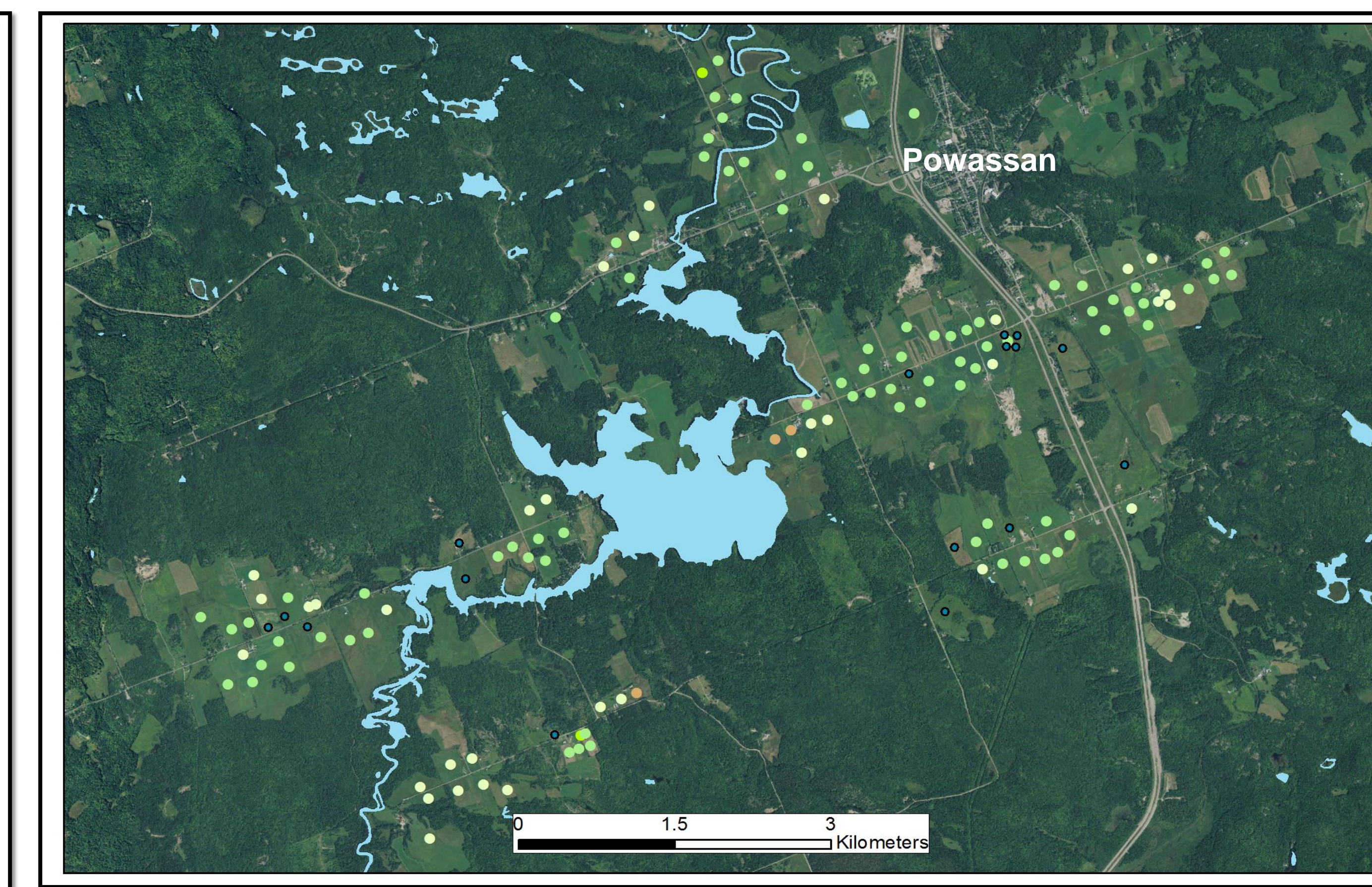


Figure 4. Powassan area agricultural landscape mapping results for 2013 (map by Vicky Vanthof, October 2013).