

Using Multispectral Airborne Imagery to Inventory and Assess Rural Water Bodies

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Multispectral satellite imagery is commonly used to map water bodies and vegetation conditions, but the coarse spatial and temporal resolution often make it less than ideal for certain projects. To address this issue, a multispectral airborne imaging system was developed around a DuncanTech MS3100 digital camera that can provide sub meter data when and where researchers need it. The system acquires data from the blue, red, and near infra-red portions of the spectrum while a log file records the GPS location of each picture allowing for easy geo-referencing.

The imaging system was recently utilized to inventory and assess the conditions of the numerous small rural ponds that are scattered across Kansas. Airborne imagery was acquired over 100 experimental ponds at the University of Kansas and approximately 56 square miles in Lyon County. Researchers analyzed spectral patterns against field observations and documentation about the ponds history. Special emphasis was placed on identifying shoreline vegetation conditions and the succession stage of the pond. It was found that the imagery could distinguish a variety of pond shoreline conditions and was also useful for assessing water turbidity levels (indication of sedimentation rate). Using the imaging system, researchers were able to obtain information about a much larger area for the same time and cost than would have been possible using traditional field sampling.

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