

# Iowa Aquatic Gap Analysis Project

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## Goals and Objectives:

- To classify stream reaches in terms of habitat quality for aquatic species using information available in IRIS.
  - To define range extent and habitat affinity of aquatic species using existing collection data.
  - To develop models predicting presence of aquatic species.
  - To generate predicted distributions of aquatic species state-wide using models and IRIS data.
  - To guide conservation planning by evaluating regions of predicted species occurrence in relation to riparian land use and stewardship.
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## Progress:

The biological collection database has been completed and professionally reviewed. It contains 10,993 community fish samples dating from 1884-2002, with a total of 97,790 species occurrence records. Using this data, statewide distribution maps for each species were generated on a watershed by watershed basis, using 8-digit, 10-digit and 12-digit hydrologic units. Models predicting fish species presence were also developed for each species. Statistical decision tree predictive models were developed using SPSS AnswerTree software. Those species' models that could not be developed using the statistical software, were developed using information gathered from existing species location data, such as presence in a specific Mississippi River pool, or from habitat affinity literature data. For a few rare and extirpated species, no model could be developed. The models were then used to generate predicted distributions of the fish species at the level of stream reach. Documented fish species richness and predicted fish species richness were calculated by watershed (8, 10 and 12 HUC) and by stream reach. Individual atlas pages for each fish species were created that includes specific information about the species, predictive models for that species, final predicted distribution map, sources of species' sampling data, and literature references. The final report was delivered in June, 2005. The final report can be viewed at: [http://www.cfwru.iastate.edu/IAGAP\\_final\\_report.pdf](http://www.cfwru.iastate.edu/IAGAP_final_report.pdf).

## Conclusions and Recommendations:

Our analysis of land stewardship identified an alarmingly low level of protection. Roughly 99% of stream reaches in Iowa lack irrevocable easements or other mandates to prevent conversion of natural habitat types to anthropogenic habitat types. The IAGAP report clearly outlined the major impediments to conservation of aquatic biodiversity in Iowa, and suggested solutions that a variety of stakeholder agencies will use. In addition to the broad impact of guiding conservation of aquatic biodiversity, the IAGAP project provided several significant intermediate products, including the Iowa Stream Reach Database, the Iowa Species Occurrence Database, and the Iowa Stream Fish Atlas. The Iowa Species Occurrence Database is noteworthy because prior to this project, there was no central depository for stream fish survey information in Iowa. Now anyone with a computer and internet access can view every stream fish survey recorded in Iowa going back to the mid 1800s.