

Establishing Minimum Flows for the Upper Peace River, Florida

Authors

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ABSTRACT

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Florida water management districts are required to establish minimum flows and levels at which further withdrawals would be "significantly harmful" for state waters. Historic modifications (e.g., dams) must also be considered, and are important to the Peace River, which has undergone substantial declines in flows since the 1960s.

The purpose of this study was to evaluate vegetation, soils, elevation, and hydrologic conditions in wetlands along the upper Peace River and use this information in identifying criteria for establishing minimum flows for the river. Species composition, soil characteristics, and elevations were measured and evaluated at 15 transects along the upper Peace River. Hydrologic analyses were used to evaluate periods of inundation.

Results. Three distinct plant communities were identified: swamps (semi-permanently flooded), lower floodplains (seasonally flooded), and upper floodplains (intermittently flooded). Vegetation transitioned downstream from semi-permanently flooded to temporarily flooded, and swamp communities were limited to upstream portions of the study corridor. Wetland vegetation was generally consistent with the occurrence of hydric soils and lower elevations.

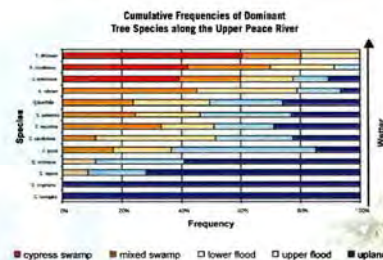
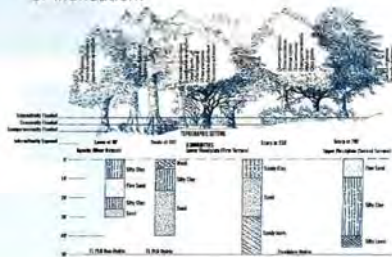
Swamp and lower floodplains were characterized by hydric soils. Upper floodplains, especially those below Ft. Meade, indicated flooding, but were generally not hydric.

Historic median flows (1940-1956), total days of inundation, and consecutive days of

inundation, were greater than more recent flows (1987-1999) for all vegetation communities. Hydrology was site specific: flows were greater upriver, and were affected by smaller events. Flows required to inundate floodplain communities were greater than existing flows. Predicted inundations requirements, based on vegetation distribution, were similar to those described for other river floodplains.

Conclusion. Floodplain vegetation along the upper Peace River reflects a variety of environmental conditions, including historic flooding, micro-topography, soils, rainfall, and runoff, in addition to flooding. Floodplain forests also respond very slowly to changes in hydrologic regime. Based on the results of this study, the extent of floodplain vegetation alone cannot be used as the criterion on which to base minimum flows in the Peace River.

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Technical paper award for excellence for a presentation about the evaluation of the inundation of floodplain habitats as part of the determination of minimum flows for the Upper Peace River, presented by Latham et al. at the 2002 Annual Conference of the Society Wetland Scientists - Wetland Linkages - A Watershed Approach