USE OF SNOOK THERMAL REFUGE CRITERIA FOR MINIMUM FLOWS DEVELOPMENT IN COASTAL SPRINGS

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The Southwest Florida Water Management District (District) is required by state law to establish minimum flows for flowing waters within its boundary, which is from Charlotte County to southern Levy County along the Florida Gulf Coast and includes notable coastal springs systems, such as the Weeki Wachee River, Chassahowitzka River, Homosassa River, and Kings Bay/Crystal River Systems. Minimum flows are defined by Florida Statutes as "the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area" and are used for water supply planning and water use permitting.

The District's approach for developing minimum flows is habitat based. For the minimum flows re-evaluations for the Chassahowitzka River and Homosassa River Systems, the protection of thermal refuge habitat for Common Snook (*Centropomus undecimalis*) was identified as a key ecological resource to consider; this was the first time this criterion was used for minimum flows development or re-evaluation. Changes in temperature-based habitat as a result of flow reductions were evaluated using a hydrodynamic model and were considered specifically to avoid Common Snook stress, which was defined as temperatures dropping below 15° C for $\geq$24 hours. The current minimum flows for both systems are based on protecting snook thermal refuge habitat, defined as no more than a 15% reduction in area of suitable habitat (>15° C) compared to unimpacted flows during the coldest 24 hours.

Using acoustic telemetry, the District recently began a collaborative project to collect detailed Common Snook movement data in the Kings Bay/Crystal River System. The results will provide important information in support of protecting snook thermal refuge habitat when the Kings Bay/Crystal River System minimum flows are re-evaluated. The continued availability of winter thermal refugia in the District's coastal springs systems is an important factor affecting the sustainability of area snook populations.

PRESENTER BIO: Ms. Rouse Holzwart is a senior environmental scientist with more than 35 years of experience as an aquatic ecologist designing, managing, and participating in an extensive variety of projects in both the regulatory and research arenas. The majority of her project work has been on aquatic ecosystems in Florida.