• *Submerged Aquatic Vegetation (SAV)*

Workshop held October 15, 1998, in conjunction with the FAU Seagrass Workshop in Ft. Myers, FL.

Co-Chairs:

Dr. Paul Carlson	FDEP, Florida Marine Research Institute; St. Petersburg, FL
Dr. Penny Hall	FDEP, Florida Marine Research Institute; St. Petersburg, FL

Core Group:

Dr. Steve Bortone	University of West Florida; Pensacola, FL
John Burns	St. Johns River Water Management District; Palatka, FL
Roger Johansson	City of Tampa, Bay Study Group; Tampa, FL
Dr. Kent Smith	FDEP, Bureau of Marine Resources; Tallahassee, FL
Dr. Dave Tomasko	Southwest Florida Water Management District; Venice, FL
Dr. Bob Virnstein	St. Johns River Water Management District; Palatka, FL

Attendees:

Vicki Whiting	FDEP, Bureau of Laboratories; Tallahassee, FL
Steve Wolfe	FDEP, Bureau of Laboratories; Tallahassee, FL

Evaluation Criteria for Seagrass/SAV Bioindicators- Assign a value of High, Medium, or Low for each criterion. We will assign a value of 3 for a High criterion value, 2 for Medium scores, and 1 for Low scores. We can then sum scores for all criteria to calculate an aggregate summary score for each proposed indicator or parameter. Parameters with high summary scores would be considered for implementation before parameters with low summary scores.

Keep in mind that current assessment protocols usually involve comparing discharge sites with nearby reference sites.

Response- Does the parameter exhibit a graduated, preferably linear, response to stress? High= strong response of indicator parameter to stress gradients.

Power- What are statistical and inferential power and QA/QC constraints of each method? High= Assign a high score for parameters which have low background variability and permit statistically significant comparisons between stressed and unstressed sites.

Temporal Variability- Does the candidate parameter exhibit diurnal or seasonal variability which would complicate interpretation? High= low variability (so we can sum criterion scores for each parameter).

Readiness- Is the method ready for implementation or does it need additional testing? High= ready for use.

Ease- self explanatory. High= easy.

Cost- self explanatory. High=cheap.

Summary- Scores for all criteria will be added to calculate an aggregate summary score for each proposed indicator or parameter. Parameters with high summary scores would be considered for implementation before parameters with low summary scores.

RAPID ASSESSMENT TECHNIQUES AND PARAMETERS FOR SAV AND SEAGRASS BEDS- Compiled from a workshop held October 15, 1998, Fort Myers, FL.

1. SEAGRASS/SAV BED CHARACTERISTICS	RESPONSE	POWER	TEMPORAL VARIABILITY	READINESS	EASE	COST	SUMMARY
A. Seagrass/SAV presence/absence							
B. Areal extent compared to historical distribution							
C. Depth of deep bed edge							
D. Species composition							
E. Nuisance macroalgal abundance							
F. Shoot density							
G. Canopy Height							
H. Cover estimates (% or Braun-Blanquet)							
I. Aboveground biomass							
J. Belowground biomass							
2. SEAGRASS/SAV MORPHOLOGICAL, DEMOGRAPHIC CHARACTERISTICS							
A. Leaf width, length, and length:width ratio							
B. Epiphytic algal loads on shoots							
C. Gross lesions							
D. Flowering, fruiting, seedling production							
E. Shoot age distribution							
F. Rhizome apex density							

3. SEAGRASS/SAV PHYSIOLOGICAL CHARACTERISTICS							
	RESPONSE	POWER	TEMPORAL VARIABILITY	READINESS	EASE	COST	SUMMARY
A. Elemental (C:N:P) ratios of leaf tissue							
B. Stable isotope ratios of SAV leaf tissue							
C. Chlorophyll a:b ratios of SAV leaf tissue							
D. Seagrass rhizome carbohydrate concentrations							
5. WATER COLUMN CHARACTERISTICS							
A. Secchi depth							
B. Chlorophyll concentration							
C. Water column nutrients-instantaneous samples							
D. Water column nutrients- historical data							
6. SEDIMENT CHARACTERISTICS							
A. Sediment nutrient concentrations							
B. Sediment sulfide concentration							
C. Sediment metals, contaminants							
7. FAUNAL COMMUNITY STRUCTURE							
A. Indicator species presence, absence, abundance							
B. Faunal diversity							
C. Trophic state index							

Summary of results from FDEP SAV workshop survey

GRP	ITEM	NAME	RESP	POW	VAR	RED	EAS	COS	SUM	RANK
1	**A**	Seagrass/SAV Presence/Absence	**2.40**	**2.60**	**2.20**	**3.00**	**2.80**	**2.80**	**15.50**	**1**
1	**B**	Historical areal gains/losses	**2.60**	**2.80**	**2.20**	**2.80**	**2.00**	**1.80**	**14.00**	**1**
1	**C**	Depth of deep bed edge	**2.20**	**2.20**	**2.40**	**2.60**	**2.60**	**2.60**	**14.50**	**1**
1	**D**	Species composition	**1.80**	**1.80**	**2.80**	**3.00**	**2.80**	**2.80**	**14.33**	**1**
1	E	Nuisance Macroalgal abundance	2.00	1.40	1.00	2.40	2.20	2.40	**11.83**	
1	**F**	Shoot density	**2.60**	**2.40**	**2.20**	**3.00**	**2.40**	**2.60**	**15.33**	**1**
1	**G**	Canopy height	**1.67**	**1.67**	**2.00**	**3.00**	**3.00**	**2.67**	**14.00**	**1**
1	**H**	Cover- % or Braun-Blanquet	**2.33**	**2.00**	**2.00**	**3.00**	**3.00**	**2.67**	**15.00**	**1**
1	I	Aboveground biomass	2.33	2.00	2.00	3.00	1.67	1.67	**12.67**	
1	J	Belowground biomass	2.00	2.00	2.00	3.00	1.00	1.67	**11.67**	
2	**A**	Leaf width, length, morphology	**2.40**	**2.20**	**1.60**	**3.00**	**2.80**	**2.40**	**14.33**	**1**
2	B	Epiphytic algal loads	2.40	1.60	1.60	2.20	1.80	1.80	**12.17**	
2	C	Gross lesions, disease	2.33	1.00	1.00	2.00	2.00	2.00	**11.50**	
2	D	Flowering, fruiting, seedling prod	2.20	1.80	1.40	2.60	2.20	2.40	**12.50**	
2	E	Shoot age distribution	1.75	1.75	1.75	1.50	1.60	1.60	**9.17**	
2	F	Rhizome apex density	2.40	2.20	2.20	2.60	1.60	1.80	**13.17**	
3	A	CNP ratios of leaf tissue	2.25	2.00	2.00	2.75	1.75	1.50	**12.40**	
3	B	Stable isotope ratios of leaf tissue	2.67	1.67	2.00	2.67	1.33	1.00	**12.00**	
3	C	Leaf chlorophyll a, b, ratio	2.00	1.67	2.00	3.00	1.67	1.67	**12.00**	
3	D	Rhizome carbohydrate content	2.00	1.67	1.67	2.67	1.67	1.67	**11.50**	
4	**A**	Secchi depth	**2.20**	**2.40**	**1.20**	**3.00**	**3.00**	**3.00**	**15.00**	**1**
4	B	Water column chlorophyll	2.20	2.20	1.80	3.00	2.40	2.20	**13.83**	
4	C	Water column nutrients	1.60	1.80	1.20	3.00	2.20	1.80	**11.67**	
4	D	Historical nutrient data	2.20	2.00	1.60	2.40	1.40	1.40	**11.83**	
5	A	Sediment nutrient content	2.00	2.00	2.60	2.60	1.20	1.20	**11.83**	
5	B	Sediment sulfide content	2.00	2.00	2.40	2.80	1.40	1.60	**12.17**	
5	C	Sediment metals, contaminants	2.00	2.00	3.00	2.40	1.00	1.00	**11.67**	
6	A	Indicator species	2.00	1.60	1.40	2.00	2.00	2.20	**11.67**	
6	B	Faunal diversity	2.00	2.00	1.40	2.40	1.40	1.40	**10.83**	
6	C	Trophic state index	1.80	1.60	1.80	1.40	1.80	1.60	**10.67**	