January 10, 2007

SAVE THE MANATEE CLUB'S COMMENTS ON THE DRAFT MANATEE MANAGEMENT PLAN

GENERAL COMMENTS

Save the Manatee Club (SMC), in general, finds the draft Manatee Management Plan (Plan) woefully deficient and misleading. We contest the fast-tracking of the Plan, especially since it does not ensure protection of manatees and their habitat for the long term. SMC cannot support a Plan that manages for population **decline NOT growth**. Under no circumstance should a 30% decline in the manatee population be considered a success. Such a management goal is both federally illegal and will likely contribute to further declines from which the population may never biologically recover. SMC is outraged that the state would sanction a Plan which would accommodate such a catastrophic loss in the manatee population and then pass it off as "progress toward species recovery." SMC strongly urges the Florida Fish & Wildlife Conservation Commission (FWC) to revisit its imperiled species listing/delisting criteria once again and revise it such that Florida's at-risk species and their habitats can be fully protected and not end up as remnant populations inhabiting fragmented ecosystems that cannot sustain their biological needs.

The Plan does not define its Conservation Goal, "A healthy, viable Florida manatee population with sustainable habitat throughout its range," nor is recovery defined per se. This places the burden of what constitutes recovery on the Measurable Biological Goals (MBGs). Therefore, these MBGs do not simply "evaluate progress toward recovery." The MBG's allow for a catastrophic loss in the manatee population and in habitats such warm-water carrying capacity. These "acceptable declines" are in direct conflict with the conservation goals of the Marine Mammal Protection Act (MMPA) of 1973, which dictates that depleted stocks of marine mammals be conserved and restored to their optimum sustainable population levels (OSP). The MMPA defines OSP as "a range of population sizes between the maximum net productivity level (MNPL) and the carrying capacity of the environment under conditions of no harvest." The MNPL is defined as "the population level producing the greatest net annual increment in population numbers or biomass resulting from additions to the population due to reproduction and/or growth less losses due to natural mortality. **The MBGs, therefore, contravene the provisions of the MMPA.**

The Plan sets MBGs for recovery so low that manatees could theoretically be considered recovered if both regional adult survival rates and regional warm-water carrying capacity are sufficient to avoid predicted declines of greater than 30% over three generations.

Because the MBGs set such low standards for recovery, the extent to which the Plan's Management Actions and protection measures are implemented could be greatly minimized and still meet the MBG's requirements. For instance, although the Plan sets forth Management Actions and timelines to protect both natural and man-made warm-

water habitat, an acceptable decline of 30% in the population also lowers the bar for warm-water habitat protection because minimum flow levels at essential spring sites can be set low enough so that the adopted flow levels merely avoid a population decline greater than 30%, but do nothing to achieve OSP. Additionally, artificial warmwater carrying capacity could be lost and large die-offs of manatees occur but still not exceed the 30% threshold. Using these MBG's as recovery goals will only exacerbate the political clout of those who have already been lobbying for further weakening in state laws to protect manatees and obstruct passage of new legislative authority needed to adequately implement alternatives to the impending loss of artificial warm water sites.

The Plan, as written, does not fulfill the provisions of the MMPA, which requires that depleted stocks of marine mammals must not be allowed to fall below their OSP. Even though the OSP level is not officially known for manatees, it is not likely being achieved. Yet, without knowing what OSP for manatees is, the Plan sets MBGs that infer that declines of 30% or less in regional adult survival rates and regional warm-water carrying capacity are acceptable and could constitute recovery.

The Plan's MBGs allow "take" of manatees by allowing such precipitous population declines. This is illegal according to the Dept. of Interior's Record of Decision (ROD) on the Proposed Rulemaking for the Incidental Take of Small Numbers of Florida Manatees (*Trichechus manatus latirostris)* Resulting from Government Programs Related to Watercraft Operation and Watercraft Access in the State of Florida. The ROD states: "Uncertainties about our standards, new information, and analytic methodologies raise questions about our initial assumptions and prevent us from being able to find that incidental take will have a negligible impact on the Upper St. Johns, Northwest, Atlantic, and/or Southwest stocks of Florida manatee. Because we cannot find that incidental take resulting from authorization or regulation of watercraft operation and watercraft access facilities will have a negligible impact on any of the four stocks of Florida manatee under the MMPA, we are unable to authorize incidental take. This inability to meet the statutory condition renders identifying and considering the action alternatives, and discussing the practicability of adopting means to avoid or minimize environmental harm in this Record of Decision (ROD) meaningless (40 C.F.R 1505.2(b) and (c))." This is certainly at odds with managing for a 30% population decline.

Additionally, the potential biological removal level (PBR) of manatees is currently well below the actual unauthorized level of take from human-related causes. Therefore, effectively sanctioning a decline in regional adult survival levels of 30% by managing the population to simply avoid a greater than 30% decline violates the MMPA at its very core because the manatee is a strategic stock under this law and the level of direct human-caused mortality already exceeds the PBR.

The Florida Legislature in 2004 required the FWC to develop MBGs that "define manatee recovery, assist in the development of management plans and in the evaluation of existing and proposed manatee protection rules." Because the MBGs set the bar so low for manatee recovery, Management Actions (protection measures) could, ostensibly, be rolled back because a goal of the Plan is merely to avoid a decline that is not greater than

30%. The implementation of the Management Actions, when viewed in the context of the MBGs, could be significantly minimized as compared to FWC managing the population to achieve OSP.

The FWC plans to manage the manatee population to avoid a greater than 30% loss in regional adult survival rates, which, SMC contends, is actually managing the population as a Species of Special Concern. The Plan states, "For the manatee, classification…is based on a *projected* decline." A 50% loss in the population within three generations is only a prediction, but FWC will actually manage the population so as to avoid a greater than 30% loss. If a greater than 30% loss is avoided, the manatee's status can be lowered yet again. "Our models suggest that one way of moving manatees toward recovery is to ensure that there are no predicted significant population declines." (Plan at page 45)

The example cited above illustrates precisely why the FWC's listing/delisting rule criteria are flawed and why SMC so vehemently opposed the agency's adoption of the rule language with its misuse of the IUCN's criteria. Clearly, the rule criteria and the Manatee Management Plan written to conform to it, have resulted in strategies to measure and manage for an acceptable level of decline, not to replenish the species as mandated by the MMPA.

Commenting on the Plan has proven to be an unparalleled challenge because of the lack of lack of access to information that was used to substantiate the basis for the MBGs and the prioritization of Management Actions. Before this plan is rushed forward, the FWC should stop and reconsider the federal Manatee Recovery Plan for guidance. Those tasks for which FWC is the lead should be the starting point, and then additional management and research tasks can be added if they are not found in the Recovery Plan.

The stated conservation goal of FWC's Plan is: "A healthy, viable Florida manatee population with sustainable habitat throughout its range." No where are the terms "healthy" "viable" or "sustainable habitat" defined per se. Only the MBGs offer an explanation of these terms. Therefore, we must conclude that a 30% decline in the population would constitute "a healthy, viable population" and a 30% decline in regional warm-water carrying capacity would constitute "sustainable habitat throughout the manatee's range" (The Plan's stated Conservation Goal).

Further, the Plan appears to contravene Section 6 of the federal Endangered Species Act, "Any State law or regulation respecting the taking of an endangered species or threatened species may be more restrictive than the exemptions or permits provided for in this Act or in any regulation which implements this Act but not less restrictive than the prohibitions so defined."

In addition to the above overarching comments, we provide the following more specific comments:

As much as anything else, the Plan underscores the serious problems with the current listing process:

- If, in 5 years, manatees have not lost (or are not projected to lose) greater than 30% of their numbers, they will be proposed for downlisting again, regardless of whether any population growth takes place. This is a serious flaw in the process in that it is not sensitive to smaller declines or a static population that would not be considered as recovering. According to this Plan, if the population is not declining at the specified rate, it means recovery is being achieved. This certainly would not meet any reasonable definition of recovery and yet, under this flawed process the population could meet the MBGs, and thus be "moving toward" so-called recovery by FWC's dangerous new undefined use of the word. This point alone attests to the inappropriateness of the criteria themselves as well as to tying the MBGs to them in this dangerous fashion.

- The use of the word "recovery" appears throughout the Plan but in a very ambiguous and problematic context. Recovery is not defined here other than as the result of the MBGs showing a lack of population decline at levels of greater than 30%. Either this relationship is very poorly explained or it is intentionally used to set the stage for declaring success in the face of substantially declining population numbers. The state's listing criteria have no real connection to biological recovery – and their use as such are a gross misrepresentation of why IUCN criteria were developed in the first place.

- In various places in the Plan there are discussions about the differences between the four regional subpopulations (for example, the differences shown in Table 1) and pledges to focus management and research actions by location according to their different conservation needs. However, FWC insists on ignoring the subpopulations and these very differences when considering the species' listing status. Because of this, the MBGs would allow for the extirpation of two entire subpopulations since the Northwest and Upper St. Johns subpopulations combined make up only 16% of the entire population and a decline of 30% is permissible! The Plan claims it won't allow this to happen but fails to provide any strategies, regulatory or otherwise, to assure that it will not. In fact, the Biological Review Panel (BRP) ignored the fact that, when evaluated under the listing criteria, two of the subpopulations fell out as "Endangered," and proceeded to recommend downlisting of the entire population.

- The entire Plan, including the MBGs and proposed Management Actions, is derived from the so-called core biological model (CBM), which is not available for review by members of the public and has not been published in a peer-reviewed scientific journal. Perhaps it is a perfectly sound scientific model but not having access to it is a clear and unacceptable disadvantage to adequately reviewing and commenting on this Plan. FWC should postpone adoption of this Plan until the model has been peer-reviewed and accepted for publication by a scientific journal. At that time, it will be available for reviewers of the Plan, which would be necessary for a proper review of this document.

- It is not appropriate for FWC to change the species' listing status before the agency has completed the tasks they themselves say are necessary to implement a management strategy.

- The Plan states that the effort to determine carrying capacity is in its infancy, yet that is one of the critical elements the agency says will have greatest influence on achieving the MBGs, which they must do to determine if their management strategy is working.

- Baseline information for any of the Management Actions proposed is essential in order to have something to compare to future conditions. Without a baseline, how does one evaluate how successful the management strategy is? There should be starting points for each Management Action with a description of what is known (and the uncertainty) about the current state. The baseline should include known information on manatee distribution, habitat values, spring flows, boating patterns and compliance, enforcement, zones, local MPPs, and educational materials. If this is not done, how will FWC know which one of their strategies might be responsible? The Management Actions almost always seem to be something to be developed in one or three or five year's time. That information should be known now, or at least at the starting point for when the reclassification goes into effect. And if the baselines are not known, the reclassification should not go into effect until they are known!

- There is nothing that jumps out as new or innovative approaches in the Plan. It is essentially an inventory of ongoing management and research, with vague references to other management and research actions that have been talked about for years and have not moved forward in any substantial way.

- An Implementation Schedule in tabular form that summarizes all the other "action" tables and places them together (similar to the table found at the end of the Recovery Plan) would help the reader identify the connections between these action tables found scattered throughout FWC's Plan.

- In several instances, the Plan relies on unpublished, internal reports. In a document as critical as this one, all scientific information that is relied upon to formulate and achieve conservation objectives should come from peer-reviewed scientific journals.

SPECIFIC REFERENCED COMMENTS

EXECUTIVE SUMMARY, pp. iii-v

The last sentence of the first paragraph is purely editorial in nature and should be struck. It could be argued convincingly that manatees "did not merit classification as endangered" because the rules were changed by the FWC's adoption of flawed criteria.

Paragraph 3 contains contradictory statements, first claiming that the Plan is different from the federal Manatee Recovery Plan in that the Plan "focuses primarily on those

components of manatee conservation which the State of Florida is primarily responsible," then later admitting "success will depend on cooperation between the FWC and partners at the federal, state, and local levels as well as with business interests and nongovernmental organizations."

The last paragraph of the Executive Summary also contains unnecessary editorial statements and again admits that the goal and objectives of the Plan cannot be met without federal resources. SMC again objects to the use of the nebulous term "recovery" in the context of the state listing criteria and the MBGs proposed in this Plan. We would submit that recovery should be tied both legally and biologically with meeting OSP.

LIST OF ACRONYMS, pp. xiii-xiv
EAR is not "Environmental Assessment Review," it is "Evaluation and Appraisal Report." There are also several entities listed that do not constitute acronyms.

Chapter 1, BIOLOGICAL BACKGROUND, pp. 1-5
In the Life History Overview, it is stated that: "Florida manatees have a low level of genetic diversity" and that, "Lack of genetic diversity within a population can result in inbreeding and a decrease in reproductive fitness." Was the lack of genetic diversity included in the CBM?

Chapter 2, THREAT ASSESSMENT, pp.7-11
Page 10, *Natural Threats*, contains the statement, "Red tide represents a major natural source of mortality for manatees in the southwest region that is beyond the control of managers." It is not clear why this should be conceded so readily and absolutely. Certainly it is worth exploring some sort of contingency plan (other than for carcass collection) similar to contingencies being developed for loss of warm water. The Southwest Florida subpopulation is in decline. It is also the one most affected by red tide. Past experience has demonstrated that if manatees exposed to red tide toxins are rescued prior to lethal exposure they can recover.

Chapter 3, CONSERVATION GOAL AND OBJECTIVES, pp. 13-19
The stated Conservation Goal is vague and sounds more like a mission statement. As an alternative, SMC proposes: An optimum sustainable population of Florida manatees with optimally secure habitat for the long term.

Some of the Conservation Objectives are also ambiguous and their relationship to the proposed Management Actions in Chapter 6 is not clear. For example, Objective 1 - Implement and improve strategies to minimize the risk to manatees from collisions with watercraft, has no timeline and appears to have no nexus with any of the listed Management Actions so it is impossible to learn (and therefore comment on) how this objective will be achieved. A look at the Management Actions reveals no new strategies to minimize this risk, just ongoing efforts. As best as we can determine, the Plan does not reference all of the appropriate legislative authorities and mandates that exist to mitigate against such high levels of watercraft mortality. Instead, the Plan goes out of its way to allow continuing high levels of watercraft mortality so long as the population does not decline at a rate greater than 30%. When more than 50% of adult mortality (where a

cause of death can be determined) can be attributed to one cause, such as watercraft – much greater efforts need to be put into reversing such losses to the population.

Similarly, Objective 2 states: "Within three years of adoption of the plan, implement a peer-reviewed, statistically sound method to estimate the manatee population." Who is going to do this and how? Is the 3-year timeline feasible or purely arbitrary? There is nothing wrong with setting a goal to finish a task within a certain time frame, but there should be some connection to reality and in a document like this, that information should be shared with the reader. Objectives 3 and 5 have longer timelines and realistically could be accomplished in a shorter time frame.

Objective 6 is to "Use measurable biological goals (MBGs) to evaluate progress toward recovery and evaluate population status." Again, reviewing this document in the absence of the information used to form conclusions about what constitutes relevant MBGs puts the reviewer at an extreme disadvantage. It would be impossible to suggest alternatives to the proposed MBGs without knowing the values associated with the parameters that were input into the CBM. Nonetheless, questions arise about the proposed MBGs. It is probably valid that high adult survival rates emerged as an important parameter to avoid population decline. The same is true with carrying capacity (K), and the emphasis on warm-water K is probably not misplaced. But there is a concern that other parameters, such as sub-adult survival, may not have emerged as an important parameter in the elasticity analysis because the input data are much less robust than for adults. Indeed, the Plan states that, "In addition, MBGs based on adult survival are attractive because there exists relatively reliable information for estimation (*i.e.*, it is measurable) …" Using only these two parameters ignores a wide range of variables that could affect the population, such as increases in mortality in other age classes, but that won't be known until some point in the future. And the importance of K outside of warm-water habitat is also less well-known but may play a larger role than is obvious and also may not be recognized until further in the future.

As to the MBGs themselves, several questions arise. Why would it be a goal not to allow a decline greater than 30%? This assumes any decline up to 30% would be acceptable. How can these be called "Measurable Biological Goals for Florida Manatee Recovery" if they allow for such declines? And how are these goals going to be measured? How do you measure population declines through model-based projections? The relationship between adult survival and warm-water K is also unclear and appears circular. Further, Table 1: Summary of approximate minimum values of adult survival and warm-water carrying capacity (K) required for recovery, by region, appears to underestimate the minimum K, at least for the Upper St. Johns subpopulation. Currently, the highest actual count for Blue Spring is 190 manatees. Why would the minimum K be less than what the spring can support now?

The goal of a mature population size does not allow for differentiation based on the sex of the individuals or known reproductive capability. In a species such as manatees where successful life history strategies include promiscuous mating behavior, reproductive females would seem to be more important to quantify than the total number of adults.

This is another flaw in the state listing criteria – they are not sensitive to individual species' life history strategies.

Again, throughout this chapter, the state listing criteria are erroneously referred to as recovery criteria. Managing for a 30 % decline does not indicate "progress toward recovery."

Chapter 4, PROPOSED REGULATIONS, page 25
The only proposed state regulations the FWC can envision over the next 5 years are related to changing the status of manatees from endangered to threatened. There are myriad regulations that could enhance the protection of manatees and habitat that can and should be undertaken, such as removing the exemptions from 68C-22.003 as discussed in the next chapter; sea grass and other habitat protection regulations; developing a rule for MPP standards and identifying significant risk counties; rules for protecting springs that manatees depend on; and a regulation for acting on "hot spot" mortality. Additionally, since the state lacks any real planning requirements for facilities and activities beyond the waters' edge, nor does it assess cumulative impacts of water-related development upon aquatic ecosystems, these issues should be identified as shortcomings in need of a legislative solution. Without such information it will be very difficult to assess and plan for future biological carrying capacity within these aquatic ecosystems.

Chapter 5, PERMITTING FRAMEWORK, pp. 27-28
In discussing the elimination of exemptions to boat speed regulations, this section states that, "In order to eliminate this type of permit, Rule 68C-22.003, F.A.C., would need to be modified. The county-specific rules that reference the availability of guiding permits would also need to be modified; however, these latter changes could be made over time as the affected rules are reviewed and amended for other reasons." The question becomes then: By eliminating professional guiding references in .003 but leaving them in specifically by county rule until some unspecified date, is guiding still allowed until the subsequent rules are addressed?

Further, why eliminate only fishing guide permits? ALL permits that allow exceptions to manatee protection speed zones should be eliminated. The Plan provides no valid rationale as to why only fishing guide permits will be eliminated. Invoking the "fairness" aspect only strengthens the case against all permits, including boat motor testing, commercial fishing, and waivers for boat races, movies, boat show demonstrations and the like.

This section also states that, "The exceptions do not authorize the permittee to take or harm manatees in any way." However the term "take" is not defined.

Chapter 6, MANAGEMENT ACTIONS, pp. 29-43
FWC agrees with certain stakeholders that manatees "should not be listed or reclassified based on the subpopulations." However, two of the four subpopulations (or nearly half of the Florida manatee population) came through the Biological Status Review (BSR)

process qualifying as "Endangered," and therefore, strategies for management should – at least for those 2 sub-populations – be implemented as such.

Page 30, ***Review of Existing Zones***, Paragraph 1, states: "The data needed in particular will be manatee and boat distribution collected during aerial surveys." With the continuing high levels of watercraft-related manatee deaths in some areas of the state, such as Lee County (the Caloosahatchee River, Pine Island Sound, Matlacha Pass and San Carlos Bay in particular), *new mortality data alone*, supplemented by all the other data used during the rule development process, are justification enough to move forward with rulemaking, yet high mortality is not mentioned as a criterion in this section. In an ideal world it would be helpful to have current aerial survey data and boat distribution data, however, funding and manpower constraints within the FWC prevent this, and the lack of these types of data are no excuse to slow or stop strengthened manatee protection boat speed zones where boat-related mortality is high. It is very disconcerting that watercraft-related manatee deaths are not one of the first considerations by the FWC when determining where new speed zones are warranted. Investigating counties based on availability of the most up to date boating and aerial survey data is a good goal. However, it should not prevent increased protections from being implemented in a timely manner when threats in specific areas are escalating.

Certainly new mortality data alone, combined with years of recent mortality data showing unacceptable numbers of watercraft-related manatee deaths and the other "best available scientific information," is enough to provide manatees with additional or strengthened protection zones. Clearly, boat-related mortality data should be a driving force in prioritizing manatee protection boat speed zones in almost all cases (exceptions to include boating safety issues and aggregation sites where harassment from boating activities occurs). Mortality data are not mentioned in either list of criteria for zone creation on page 32 of the Plan. The FWC might argue that mortality data are covered under the criterion, "There is an identified manatee risk that requires immediate attention," but that would need to be clearly spelled out because mortality data have not been used as a rulemaking trigger since the Volusia County Emergency Rule of 1991. Many watercraft-related manatee mortality "emergencies" have occurred since then, with no emergency action and with a resulting lack of, or insufficient rulemaking action by, the FWC.

What is even more troubling is Table 3: Proposed time line for manatee protection rules-related actions. Lee and Brevard counties, for example, are not even identified for speed zone review for the first five years, yet they continue to lead in watercraft-related manatee deaths with unacceptably high numbers (including high spikes).

When ranking counties for priority review and new zones, the FWC should first ask, which manatee sub-population is the most endangered? By the FWC's own admission, that would be the Southwest Florida sub-population, which the FWC says has declined. The next question should be how many watercraft-related manatee deaths have been documented in each county over ten years? The answer would reveal that Lee County is the uncontested leader in watercraft-related manatee deaths over the last ten years statewide. The conclusion: Focus resources on Lee County to try and reverse the deadly

watercraft-related trends there. The FWC should then ask itself where it can have the next biggest impact. The answer would be Brevard County, which has been second to Lee County in watercraft-related manatee deaths over the last ten years and leads Florida in 2006.

Absent adoption of new zones, there is so much more that the FWC can and must do to reverse the level of watercraft mortality. Much greater priority needs to be given to identifying and implementing strategic law enforcement initiatives and better sign posting. The best zones possible cannot be effective if the boaters don't know what is expected of them or there is no reasonable expectation that violating a marked zone will result in negative consequences. We can no longer tolerate being told we don't know why manatees continue to die from watercraft strikes, which means the appropriate monitoring of signage conditions and enforcement presence must be a regular on-going activity. Then, if watercraft deaths continue, more effort can be given to adding protections where they are needed. See our other comments below regarding law enforcement coordination.

Page 31, ***Development of New Zones*** – Why is there no mention of proposing zones for Everglades National Park? It is high time this area be assessed and zones put in place. FWC has the authority to address these waters but the state has been deferring to the park for decades. It is time to step in and address this glaring omission in such important manatee habitat.

Page 34, ***Coordination Activities with Law Enforcement***, Paragraph 3 – This paragraph discusses keeping law enforcement agencies informed of mortality trends and emerging mortality hotspots so that enforcement activities can be better targeted. While this is a worthy effort, it is ironic that watercraft-related manatee mortality "hotspots" finally receive a mention and a possible action to help address it. Unfortunately, hotspots have been present in some areas for years, such as Pine Island Sound, and the lack of manatee protection boat speed zones will make this law enforcement effort meaningless. Hotspots have also been present for years in areas with manatee protection zones, such as the Caloosahatchee River (obviously the current speed zones and Manatee Protection Plan have not helped reduce watercraft-related manatee deaths), and targeted law enforcement efforts will do little to help manatees in areas with deficient protection. It is unacceptable that the FWC has <u>no plans</u> to address known deficient speed zones with heightened hotspots. The FWC should include a table of existing watercraft-related manatee mortality hotspots in this document and how it plans to reduce manatee deaths in them.

Although it makes sense to investigate new designs for watercraft hulls, manatees must be protected from harmful collisions with existing designs until new hulls can be developed and utilized.

Pages 40 – 41, **Manatee Protection Plans**, discusses a schedule for MPP reviews: Once again, FWC does not consider watercraft-related manatee mortality a factor in determining when MPP reviews should be conducted. The FWC should assess how manatees have fared since it has approved each MPP. That would certainly help clarify

where the FWC's efforts should be. Lee County's MPP, for example, has been a dismal failure. Watercraft-related manatee deaths have not even been checked in Lee County, let alone decreased, as they should under an effective MPP. To continue to use these MPPs to permit projects and create even more deadly situations for manatees, as this management plan allows by default, will very likely contribute strongly to a declining manatee population. The FWC needs to develop appropriate assessment criteria to effectively evaluate the relative success or failure of each MPP to stop human-related deaths of manatees.

Page 41, ***Review of Comprehensive Plans***, last sentence reads: "In addition, the Environmental Assessment Review (EAR) conducted every seven years should be reviewed in certain counties for issues relevant to manatee conservation." First, it is not an "Environmental Assessment Review" that is conducted by the Department of Community Affairs, it is an Evaluation and Appraisal Report. Second, FWC must participate in EAR reviews for all counties with MPPs and all cities within county boundaries, to ensure that the MPPs are not being undermined, as was the case with Collier County and the City of Naples during their last EARs.

Chapter 7, LAW ENFORCEMENT, pp. 57-64 See comments regarding improved strategic planning initiatives under coordination of efforts with law enforcement. The plan should call for full staffing and use of existing law enforcement personnel more strategically until additional staffing can be secured.

Chapter 8, MONITORING ACTIVITIES, pp. 65-80
Why are the proposed aerial surveys for Collier County excluding the portion of the county south of Marco Island?

The heading for Table 16 includes the statement: "Surveys conducted by research partners are not included." Why not? Please provide the rationale for excluding these surveys.

Chapter 9, ONGOING AND FUTURE RESEARCH, pp. 81-98

As mentioned elsewhere, the state needs to coordinate with the FWS and COE to assess the cumulative impacts associated with development and other human activities on manatees and manatee habitat. Biological carrying capacity research should also be undertaken to determine when existing and/or proposed new development and human activities will exceed such capacities.

Chapter 10, IMPLEMENTATION STRATEGY, pp. 99-102
In this section the following statement is made: In addition to listing our proposed five-year planning window for individual sections within the draft plan, the FWC team that developed the plan decided to use an Adelphi process to provide some insights into possible prioritization. This process is actually called a Delphi technique, not Adelphi.

It is unacceptable that through this process, the tasks of developing a GIS cover for marina projects and development of a guidance document for MPPs got rankings so low so as to lose any priority status. Addressing the cumulative effects on manatees and habitat of so many marina development projects should be an utmost priority for recovery of the population. Similarly, the agencies have identified MPPs as the ultimate tool to address the issue of illegal incidental take of manatees through marina development and boat operations. Yet FWC does not think these actions are important enough to warrant priority status.

LITERATURE CITED, pp. 125-143

This section is further subdivided into two sections, the second one entitled: SUPPLEMENTAL SOURCES: RELEVANT INTERNET WEB SITES, WHITE PAPERS. There appears to be some ambiguity concerning where some of the papers should be listed. There are papers from peer-reviewed publications in the supplemental section and unpublished or internal technical reports in the primary section.

GLOSSARY, pp. 145-146

This glossary is woefully inadequate. Important terms that are used in the document, particularly in Chapter 3, where the critical methods to be used in measuring the biological goals are described, terms such as elasticity, temporal variability, first year growth rate, 100 year simulated population size, metrics, etc., are not defined in the glossary and therefore understanding of the concepts is not accessible to anyone without a science background and/or not privy to the CBM.