

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

National Academy of Sciences
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National Research Council

Stephen D. Parker, Director

Water Science and Technology Board

Commission on Geosciences, Environment, and Resources
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April 7, 2000

Ms. Mary Doyle, Chair
South Florida Ecosystem Restoration Task Force
U. S. Department of the Interior
1849 C St. NW
Washington, DC 20240

Dear Ms. Doyle:

As you know, the National Research Council's (NRC) Committee on Restoration of the Greater Everglades Ecosystem (CROGEE) held its second meeting in River Ranch, Florida on February 28-March 1, 2000. This mailing provides a brief synopsis of the meeting and the committee's proposed work plan for the year 2000 (Attachment A). The proposed work plan is, of course, of high interest as, with the Task Force's concurrence, we will move forward with what we believe are a diverse set of activities that should serve well the interests of restoration of the Greater Everglades ecosystem. Also attached for your reference are the agenda from the recent meeting (Attachment B), and the committee roster (Attachment C). Minutes of the recent committee meeting will be transmitted when available.

As you know, the first meeting of the CROGEE, held in December 1999, was the first exposure of many of the committee members to the complex issues surrounding the Everglades restoration activities. Therefore, the format of that first meeting was organized by SFERTF officials and NRC staff to familiarize members with these issues, including the goals of the restoration, the agencies involved, the competing demands for water, the basic structure and biogeography of the ecosystem, and the hydrologic and ecological tools used to understand the system.

After that meeting, the committee identified several important areas concerning the restoration effort: (1) the scientific underpinnings and linkages of the conceptual ecosystem models; (2) aquifer storage and recovery; (3) regional assessment of invasive exotic plants; (4) various uses and limitations of the hydrologic models; and (5) the spatial, temporal, and human context of the restoration (see CROGEE's first *Quarterly Interim Progress Report*, January 5, 2000).

In preparation for the second meeting, the CROGEE members divided informally into three subgroups on hydrologic, ecological, and social-science issues to help identify key topics and/or speakers for the second meeting. The agenda was then planned in collaboration with Terrence "Rock" Salt, Executive Director of the Task Force, and Bradford Brown, a member of the

Working Group and Science Coordination Team. The presentations on the first day of the meeting (2/28/00) were designed around three general themes:

- Hydrologic modeling issues (e.g., peer review and sensitivity analysis of the South Florida Water Management Model; uncertainties and appropriate uses of the Natural System Model);
- Quantitative ecological modeling (e.g., prediction of reproductive success of higher trophic level species such as wading birds; response of vegetation to water management practices); and
- Planning issues in South Florida, including population pressures, zoning and planned growth, brownfields, and environmental justice.

The meeting then divided into breakout sessions where the committee members and invited speakers and guests had a more informal dialogue about the respective themes. The hydrologic and ecological subgroups held their sessions jointly, as many questions centered on the interactions between the hydrologic and ecological models.

The morning of the second day of the meeting consisted mostly of presentations on the goals and interactions of projects already up and running, such as the Kissimmee River restoration program, and the economic and logistical rationale for the sequencing of the various proposed restoration activities. In the afternoon, the committee, NRC staff, Rock Salt, members of the SFWMD staff, and others took a field trip down the Kissimmee River (C-38) to view a restoration project on sections of the old river channel.

On the third day, the committee formulated its proposed work plan for approximately the next year, which was presented to and discussed later that day with Rock Salt and other interested individuals. The plan has five elements and is included as attachment A.

The proposed work plan is consistent with terms of the Cooperative Agreement 5280-9-9029 between the National Academy of Sciences and the U.S. Department of the Interior, and the items for attention correspond closely to those on the Task Force's original list of potential study topics (presented to the CROGEE by Rock Salt on December 3, 1999) as well. For example, our first and fourth points correspond with the Task Force's request to "review aquifer storage and recovery." The second point correlates with one of the highest-priority items of the Task Force, that the CROGEE "review the scientific underpinning of *Conceptual Ecosystem Model* report." The third point relates to Task Force items "restoration levels and flows" and "water quality improvement" and is of obvious importance to the overall restoration effort. Finally, the fifth point responds well to the Task Force's request that CROGEE study "linking land-use planning to conservation planning." In addition to these specific plans, in order to effectively carry out its advisory efforts in support of sound science, restoration planning, and adaptive environmental management, the CROGEE will continue to acquire information about all components of the Restudy, with meetings of the full committee continuing to occur regularly, approximately four to five times per year.

In summary, the committee is making good progress in its work of providing advice to the Task Force. We are pleased with the cooperation and active participation that we have received from

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the many agencies and other entities that have a stake in the restoration efforts. We look forward to moving ahead with our plans, which will provide useful advice to the Task Force.

Sincerely yours,

Stephen D. Parker

cc: Col. Terrence Salt, Executive Director, SFERTF

Attachments

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Committee on Restoration of the Greater Everglades Ecosystem

Proposed Work Plan

May 2000—April 2001¹

The five initial priorities include the following five elements:

1. *Aquifer Storage and Recovery*—Aquifer storage and recovery (ASR) is a key component of the Comprehensive Plan. It is important that aspects of this technology, including water quality, and its feasibility at the large scales being planned, be understood as soon as possible. Thus the CROGEE proposes that very high priority be given to the task of understanding and analyzing the ASR pilot projects and in addition, to incorporating the pilot test results into an ongoing assessment of regional impacts of the large scale ASR operations. A subcommittee was selected (Bahr, Brezonik, and Vecchioli) to review plans for the ASR pilot project with a special emphasis on the use of adaptive management. Much of the value of adaptive management comes from designing pilot and other projects to maximize opportunities for learning. This is especially true for a large-scale project like ASR, where it is important to design (local) pilot projects that will allow inferences about injection, storage, and recovery aspects and impacts on water quality expected for the full project over the South Florida region. The subcommittee plans to meet with people from the Corps, SFWMD, and other interested parties, possibly in a workshop forum. Will Logan of the NRC and Brad Brown were identified as the key contacts. It is anticipated that this activity would produce a report containing recommendations aimed at enhancing the value of the ASR pilot projects for both technical experts and decision makers.
2. *Ecological Indicators*—The next CROGEE meeting will probably be held in late May or late June. The main focus, in our effort to continue to build a solid base of knowledge for the members of the CROGEE, will be on ecological indicators, and the process and science behind their selection. Ecological indicators, developed by the Science Coordination Team, are important because they are the tools to measure the success of the restoration effort. Some ecological indicators focus on individual species, such as the endangered Cape Sable Seaside Sparrow; some focus on community composition and structure, such as the Index of Biotic Integrity; and some focus on ecosystem processes, such as biological productivity or trophic status. Depending on how they are chosen, different ecological indicators may respond differently to various environmental factors and to different restoration activities, and in such cases, choices about appropriate restoration activities might need to be made. Thus, understanding the reasons for choosing various ecological indicators is critical to understanding the scientific basis for implementation of the restoration plan. A request was made for a complete list of performance measures, and John Ogden, co-chair of the Science Coordination Team, promised to supply the CROGEE with such a spreadsheet within 2-3 weeks of the meeting, followed by additional documentation. A subcommittee of the CROGEE will be identified to prepare for this meeting;

¹ (time period approximate)

David Policansky will serve as the NRC contact. The proposal would be to produce a short guidance report on the topic of ecological indicators.

3. *Marine Ecosystems*—The subsequent meeting (fall 2000) is tentatively planned to focus on downstream impacts of changed conditions in the Greater Everglades Ecosystem on the estuaries and bays. Many of the ecological communities along South Florida's coasts and in the coastal ocean are sensitive to the amount, timing, salinity, and other aspects of the chemistry of the water that flows to them from the Everglades. Some of those ecological communities are in national parks or national marine sanctuaries, and all of them are of biological, recreational, commercial, or aesthetic interest. Thus it is important to understand how changes in the Everglades have affected those marine communities and how various aspects of the restoration plan might affect them. Some specific issues include the challenges in coupling the Water Management Model with the estuarine circulation model, understanding the causes of changes in productivity of Biscayne Bay, and understanding the effects of nutrients on coral-reef communities. A report would likely follow this meeting.
4. *Restoration Program Storage Options*—The final meeting of 2000 would examine the storage issue in its larger context. A major feature of the restoration plan is providing enough water storage capacity to meet human needs while also providing for the needs of the Greater Everglades Ecosystem. While the previously mentioned workshop would focus on the ASR pilot tests, this meeting would look at the detailed rationale for the proposed alternatives for the entire range of storage options.
5. *Human Dynamics Aspects of Restoration Efforts*—The CROGEE is interested in research activities that relate to human dynamics, including the implications of land-use change and population dynamics for the restoration plan. For example, the restoration effort is expected to be effective far into the future, but many aspects of the human environment will likely change over the next 20-50 years (or sooner). Land uses may change, as may the kinds and distribution of a variety of economic activities and the number and distribution of people living, working, and engaging in recreation in South Florida. Many aspects of those changes are difficult or impossible to predict, but it is important that the restoration plan reflect recognition of and robustness to changes that could have significant consequences for its implementation. We propose to issue a short report to the Task Force in mid-2000 that would be useful as you proceed with development of your strategic plan.

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Committee on Restoration of the Greater Everglades Ecosystem

Second Meeting*
River Ranch Guest Ranch
River Ranch, Florida
February 28—March 1, 2000

Agenda

Monday, February 28

7:00 a.m. Breakfast on your own (Poachers Dockside Restaurant opens at 7:00 a.m.)

CLOSED SESSION

8:00 a.m. Committee and NRC Staff meeting

OPEN SESSION

8:30 a.m. Welcome and opening remarks by CROGEE Chair Jim Davidson

8:40 a.m. Hydrologic modeling

- Nuts-and-bolts of the SFWMM (45 minutes) Jayantha Obeysekera
Randy Van Zee, Richard Punnett, Ken Tarboton
- Historical topography (30 minutes) Chris McVoy
- Discussion (35 minutes)

10:30 a.m. Break

10:40 a.m. Quantitative ecological modeling

- ATLSS (25 minutes) Don DeAngelis and Ronnie Best
- ELM (25 minutes) Carl Fitz
- Discussion (30 minutes)

* (1) Lodging is at River Ranch Guest Ranch, 3200 River Ranch Road, River Ranch, Florida 30030. Phone: (941)692-1321, Fax: (941)692-9135. The meeting will take place at this location as well.

- 12:00 p.m. LUNCH (in meeting room)
- 12:45 p.m. Planning Issues in Southwest Florida Wayne Daltry
 1:10 p.m. Planning Issues in Southeast Florida (“5 1/2 Million and Growing:
 The Urban Side of Everglades Restoration”) Julia Trevarthen
- 1:35 p.m. Discussion
- 1:55p.m. Environmental Justice and South Florida Restoration Richard Gragg
- 2:25 p.m. Discussion
- 2:45 p.m. Meeting divides into three concurrent open sessions (social science issues,
 hydrology, and ecology) – discussions led by three CROGEE members
 (Convention Center and Spanish Moss Meeting Rooms)
- 4:25 p.m. Open meeting ends; break

CLOSED SESSION

- 4:30 p.m. Three concurrent closed sessions with subcommittee groups formulating work
 plans.
- 5:30 p.m. Recess from committee business

OPEN SESSION

- 7:00 p.m. Dinner followed by speaker, Bob Johnson “A View from the Park”

Tuesday, February 29

CLOSED SESSION

- 8:30 a.m. Committee and NRC Staff meeting

OPEN SESSION

- 9:00 a.m. Projects already up and running Dennis Duke
- 10:00 a.m. Discussion
- 10:15 a.m. The timing of the various phases...economic/logistical rationale Stu Appelbaum

- 11:15 a.m. Discussion
- 11:45 a.m. Southwest Florida Environmental Impact Statement Bob Barron
- 12:10 p.m. Discussion
- 12:30 p.m. “Open mike” (three minutes per speaker; please sign up)
- 1:00 p.m. Lunch, pre-field trip briefing
- 2:00 p.m. Committee field trip to Kissimmee project
- 6:00 p.m. Return from Field trip, adjourn for the day

Wednesday, March 1

CLOSED SESSION

- 8:30 a.m. Closed session, entire committee. One hour for each subcommittee to summarize their conclusions/plans, and receive feedback from the other committee members.
- 11:30 a.m. Closed session/working lunch, continued, but with the individual groups integrating the thoughts of the other committee members into their work statements and plans.

OPEN SESSION

- 1:00 p.m. Briefing and discussion with the SFERTF Executive Director and others on future plans.
- 2:00 p.m. Adjourn

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