

RESOURCE MANAGEMENT/RESEARCH INTEGRATION

IN THE

CRATER LAKE LIMNOLOGY PROGRAM

Jonathan B. Jarvis

National Park Service

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INTRODUCTION

In 1982, the U.S. Congress passed PL 97-250, requiring an investigation into the possible reduction in water quality of Crater Lake, Oregon. Crater Lake is the principal resource of Crater Lake National Park and is internationally known for its deep blue color, near pure optical properties and extreme water clarity. Spurred by the congressional mandate, the park has developed a comprehensive, interdivisional program to monitor the lake water quality, protect the entire caldera ecosystem, and keep the public informed of lake research findings.

There are a number of key players whose close relationships and communications make the program function towards a common goal.

They are:

- Regional Office
- Principal Investigator
- CRLA Administration
- CRLA Resource Management Specialist
- CRLA Biotechnicians
- CRLA Ranger Staff
- CRLA Interpretation

How each player functions in their role and how each interrelates is important to the overall success of the program. An understanding of the importance of Crater Lake and a commitment from each to the protection of the Crater Lake ecosystem is the driving force behind its success. (See Figure 1.)

REGIONAL OFFICE

The Pacific Northwest Regional Office of the Chief Scientist and the Office of Resource Management provides the Crater Lake Limnology program:

- Program oversight by reviewing annual reports, action plans, development plans, proposals, and review of each year's accomplishments.
- Funding assistance through special funding sources, year-end money, and Regional Science accounts.
- Special assistance in developing science contracts with complex requirements.
- Supervision of the Principal Investigator.
- Sources of information for contacts in other regions, agencies, or institutions with similar water quality investigations.
- Coordination with other Cooperative Park Study Unit scientists.
- Liason with the Regional Director for program support.
- Liason with the other Regional staff for coordinating and program support.
- Technical question assistance.

PRINCIPAL INVESTIGATOR

The Crater Lake Limnology Program Principal Investigator provides the program:

- Overall scientific program design.
- Quality control on sample collection and laboratory procedures.
- Data management, interpretation, and statistical analysis.
- Liason with the scientific community.
- Scientific and technical aspects of the Biennial report to congress.
- Prepares the Annual Report.
- Funding through the Cooperative Park Studies Unit.
- Liason with the Oregon State University for data management on the mainframe CYBER.
- Liason with science community peers for review of lake program.
- Liason with scientific collaborators.
- Source of staff for Biotechnician positions at the CPSU and at CRLA.
- Supervision of Graduate students working on theses on Crater Lake special studies.
- Coordination with CRLA Resource Management Specialist for logistics and scheduling.
- Field sample collection supervision of water sampling during monitoring trend week.
- Field sampling collection supervision of water sampling during winter expeditions.
- Technical information contact for the press concerning Crater Lake water quality.

RESOURCE MANAGEMENT SPECIALIST

The CRLA Resource Management Specialist provides the program:

- Funding and budget control of park base funding for the lake research program.
- Biotechnician supervision.
- Laboratory operation.
- Collaborates on the Annual Report and the Biennial Report to Congress.
- Coordinates and field supervises logistical operations.
- Maintains three lake research boats.
- Maintains park based micro-computer for water quality data management and data transfer to the Oregon State University CYBER.
- Procures all equipment necessary for data collection and operational logistics.
- Serves as Public Information officer with local newspaper, radio, and television concerning the lake program.
- Operates the CRLA Research Center.
- Coordinates boat logistics for monitoring, special studies, and logistical needs.
- Provides information on lake research program results to park interpretation staff.
- Maintains lake research files.
- Maintains museum collection samples of specimens taken from lake during research program.
- Coordinates lake logistics, laboratory, and boat needs for collaborating scientists.

- Provides park plan review for protection requirements for the caldera ecosystem.
- Coordinates with other divisions to ensure administrative actions do not endanger lake resources.
- Serves as team leader in winter sampling expeditions.
- Coordinates with CRLA Administration, Maintenance, and Ranger staff for program assistance.

BIOTECHNICIANS

The Biotechnicians (one permanent, one a Cooperative Education Student, and one from the CPSU), are supervised by the CRLA Resource Management Specialist and provide the program:

- Field sample collection.
- Boat operation for monitoring and collaborating scientists' special studies.
- Laboratory analysis of samples.
- Transportation of samples to commercial laboratories for analysis.
- Direct coordination with Principal Investigator for scheduling boats.
- Check-in/check-out of visiting researchers to the CRLA Research Center.
- Maintenance of boats and sampling gear.
- Initiation of procurement needs for logistics, boats, laboratory, and boathouse.
- Responsible for field safety of boats, researchers, and boat personnel.
- Data recording in field and laboratory notebooks.
- Data entry into park based microcomputer.

- Review of monitoring plans, annual reports, and operational plans.
- Assistance in logistics of boat deployment, boat storage, winter operations, and helicopter operations.
- Identification of potential actions by park staff, visitors, or the concessioner concerning impact to the caldera ecosystem.
- Training to park staff on boat operations.
- Information to the staff interpreters.
- Completion of their own special studies concerning the lake.
- Operation and maintenance of lake research scientific instruments.
- Operation of trail tractor to carry equipment and water samples to and from the lake shore.

RANGER STAFF

The CRLA Ranger Staff provides the following assistance to the program:

- Assistance in logistics such as boat lowering, boat deployment, and boathouse operations.
- Supervises helicopter operations for slingloading boats and/or equipment to and from the lake.
- Assistance in winter operations, including winch operation for lowering equipment down the snow chute, packaging equipment for deployment, and weighing sling loads.
- Participation in winter sampling expeditions by operating boats, assisting with the climb down and up the snow chute.
- Serve as alternate boat operators for lake monitoring, and special studies assistance.

- Surveys lake shore annually for accumulated man-made debris, collects and removes all material.
- Assists Biotechnicians in boathouse construction projects.
- Provides scuba divers for annual buoy inspections, and underwater clean-up operations.
- Provides additional tractor drivers for ferrying heavy scientific equipment to lake.
- Provides lake resource protection through enforcement of the regulations related to the caldera ecosystem (eg. no climbing in the caldera).
- Serve as acting Resource Management Specialist.
- Provide compass coordinates for lake sampling locations from the fire lookout.
- Collect data from remote sampling stations related to lake program.
- Provide source for loan of equipment from SAR and FIRE caches for lake logistics.

INTERPRETATION

The CRLA Interpretive staff provide the program:

- Development of interpretive programs that tell the natural history of the lake.
- Development of interpretive programs that tell the known limnological history of the lake.
- Provide the visiting public an understanding of the lake research program.

- Interpret the activities of the lake research boats from the concessioner's tour boats and from the caldera rim.
- Provide publications and articles for the visitor about the lake research program and its findings.
- Provide an appreciation of the sensitivity of the lake to impacts and an awareness of the need to protect the lake resources.
- Provide a reminder to visitors on the concessioner's lake tour boats not to pollute the lake with trash or human waste.

CRLA ADMINISTRATION

The CRLA Administration provides the program:

- Sets a high priority for lake research related purchases that are often needed quickly due to a short field season.
- Provides assistance in development of unusual contracts or procurements for scientific research, consulting, or specialized sole-source equipment.
- Provides assistance in developing specialized Position Descriptions, appointments, and cooperative agreements to facilitate the continuity of personnel in the program.
- Provides general support for the objectives of the program.
- Provides assistance in developing flexible tour of duty for Biotechnicians to facilitate long field and laboratory hours.

--Provides assistance in the operation of the CRLA Research Center by billing occupants in a convenient manner.

--Provides computer assistance in setting up water quality data management programs and the communications link to the OSU CYBER.

--Provides maintenance assistance with the park based microcomputer.

FLOW DIAGRAM FOR THE COORDINATION
OF THE
CRATER LAKE LIMNOLOGY PROGRAM

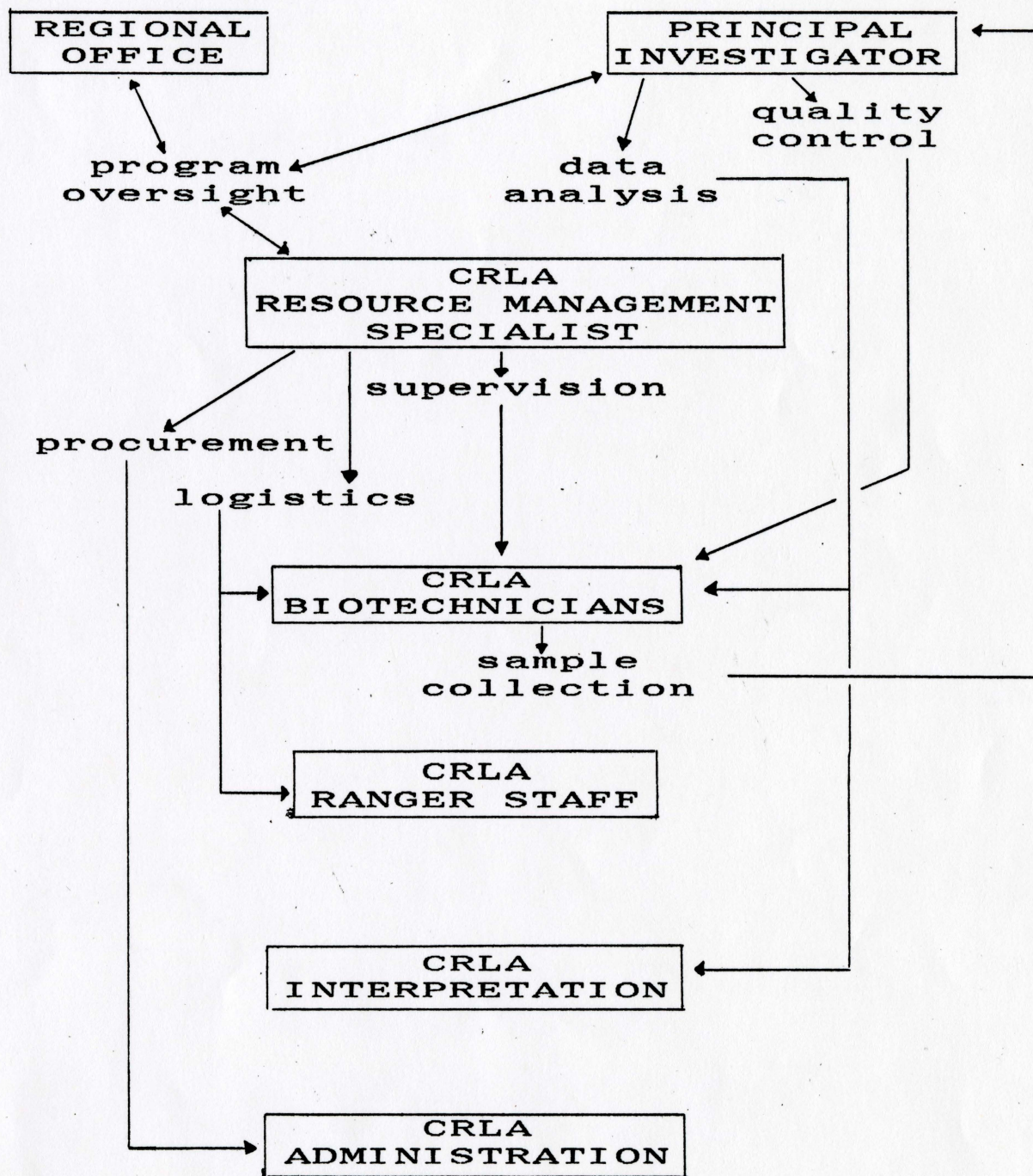


Figure 1

CONCLUSIONS

To achieve the overall requirements of the Crater Lake Limnology program, close coordination is necessary between each of the principal players in the organization. Each player has a important responsibility in the fulfillment of the program objectives. Cross communication, a clear understanding of each player's responsibilities, and information sharing are essential to the group function. This is facilitated by regular informal exchanges on-site and by telephone or note. Periodic formal meetings to discuss strategy, new information and conflict resolution are a requirement. At such meetings, participation by all parties ensures equal input, continued interest, and a general feeling of partnership. The key position in the coordination and communication is the Resource Management Specialist (RMS). This person facilitates the on-the-ground work through supervision, coordination of logistics and dissemination of information. The RMS keeps the park administration advised of new and important findings and interprets technical information where necessary. The RMS works very closely with the Principal Investigator to ensure field needs are met and the program is carried out in light of other park program and resource protection requirements.