

Citizen Science: The San Diego Plant Atlas Project

Topic Leader: Mary Ann Hawke, PhD, Plant Atlas Director, San Diego Natural History Museum

Facilitator: Jamison Tuitele-Lewis, Sierra National Forest

Note-taker: Linnea Hanson, Botanist, Plumas National Forest

Jon Rebman is the Curator of Botany at the San Diego Natural History Museum. This was his idea. He gave talks at plant groups to get the idea going and had key organizational meetings. Mary Ann first volunteered in running the project. When money came in then she did this on a full time basis. That took 2 years to do. Her salary is not funded by the museum.

Why a Plant Atlas in San Diego?

- Significant botanical diversity
- Manageable size
- Floristic resources under threat
- Lack of scientific knowledge
- Insufficient data for sound, science-driven decision making
- Success with Bird Atlas - observation oriented

California is one of only five Mediterranean climate zones in the world.

San Diego County flora-2143 plant species, 1573 natives (73%), 26 endemic plants, over 200 sensitive species. San Diego's biodiversity is threatened from urban sprawl and other human-caused stresses.

Started with observational Bird Atlas, which is now going to look more like the Plant Atlas. There is a Mammal Atlas too. For the Mammal Atlas, data was collected and used mathematical modeling.

Key Unanswered Questions that Drove the Project:

- What areas of the County have the greatest diversity?
- Are there new species yet to be discovered in the county?
- Where should we be conserving land?
- How can we provide decision-makers with sound, scientifically based information?

The San Diego County Plant Atlas Project:

1. Training to learn the procedures
2. Field work to collect plant specimens and record data about the plant and the location.
3. Press and dry plants.
4. Enter data online and submit specimens
5. Botanist verifies/corrects plant name
6. Volunteer mounters prepare specimens. Specimens are kept together so that the parobotanists can look at their specimens before they are placed in the main herbarium.

San Diego County is divided into a 3 square mile grid. It is based on the Township, Range and section system with 36 sections divided into fourths. More than one person can collect in a square. Some squares lack data; some have lots of data. They let people go where they wanted to go at the beginning. Now they are suggesting where people should go to collect.

When a volunteer signs up for a square, they are sent a packet of information including maps and permits. They have organized grid gatherings on newly acquired land and have sent a staff member with the parobotanists.

For incentives, the parobotanists are all official volunteers of the museum, meaning they have free access to the lectures, discounts at the gift store, classes and field trips. The Bird Atlas volunteers were a very social group that had regular parties. With the plant atlas they have been having about one event a year. They have also had a contest with prizes to see who submitted the most plants. They plan to set up an auxiliary committee to organize social events. There are about 200 active parobotanists and about 500 people have been trained in total.

Main Products:

- Training Program – involves the public while increasing awareness and respect for local natural resources
- Specimen Collection – supports scientific research, teaching, consulting, and land management
- Online Searchable Database – for use by biologists, students, teachers, consultants, land managers, landowners, conservationists, garden clubs, etc.

Voucher Plant specimens:

- Physically document the plant
- Can be verified if taxonomy changes
- Available for genetic or microscopic study
- Last indefinitely
- Can be borrowed and lent like a book

Difficult to run program without a qualified paid staff. They provide step-by-step instructions that the majority of the parobotanists follow. 167 species have been added to the county checklist due to the plant atlas project. At their gatherings a parobotanist's nametag shows how many plants the person has collected. Half of the parobotanists are actually professional botanists from State Parks, Fish and Game, consultants, etc.

Parobotanist program

- Involves interested members of the public in their local natural history,
- Trains parobotanists to collect proper plant specimens and field data
- Provide voucher specimens and data for scientific study
- Creates an organized system for receiving data and plant specimens

Parabotanist Training includes:

- Maps and Grid system
- Safety
- Access to property
- Permits-federal and state renew permits annually, cities are lagging behind. Very time consuming to get the permits.
- Special status species information
- What to collect
- Recording field data
- Submitting data and specimens

Mary Ann attends lots of meetings and networking to find parabotanists. She gives lots of talks, goes to all of the meetings that she can to find new folks. Partners have been very cooperative.

If special status plants are found they are recorded as a feature, a picture is taken and data recorded. A list of special status species for that particular square only is given to the parabotanist. The county has a species predictive model that is used to get a species list. There is a photo album to become familiar with the special status species.

The goal of the project is to get a sample of every species in every square in the county. There is an online form to fill out. The parabotanist can print out what has already been collected for that particular square. They follow the 1 in 20 rule, so if there are not enough plants to collect any then they take data and a photo and fill out an observational form.

Parabotanists

- Volunteers of the San Diego Natural History Museum who have completed training
- Do not have to be experts in plant identification since all specimens are verified by the Curator of Botany
- Collect plants and data from the field and submit them to the herbarium

Should I start a citizen science project?

- *Need* - is the project necessary?
- *Recruiting* - do I have a source of appropriate volunteers readily available?
- *Workforce* - how many volunteers will it take?
- *Networking* - collaboration is essential
- *Funding* - need money from many sources, write grants
- *Staffing* - lots of hand holding required
- *Scope* - be very clear about what you are not, not teaching to ID plants
- *Procedures* - develop clear instructions, guidelines and expectations
- *Accessibility* - make your project easy to use
- *Legal issues* - permits, liability insurance

- *Management* - don't expect to be able to manage such a time and labor intensive project with a volunteer staff! You WILL need to pay full time core staff to manage your project and maintain consistency!

Requirements to be a Parobotanist:

- Attend the training classes
- Have computer access
- Visit your collecting area at least 3 times per year
- Submit a minimum of 25 plant specimens per year
- Enter your data online and then deliver the specimens to the museum in a timely manner
- Follow SDNHM procedures and instructions to ensure the quality of the scientific information being gathered

Project Staff

- Jon Rebman - 10 month endowment, 2 months paid through project
- Project Director - full time, grant funded, provides oversight
- Parobotanist Manager - full time, coordinates with parobotanists, reviews specimens with them and give feedback
- Database Manager - half time retiree
- Training - half time grad student
- Data Steward - half time

Plant Atlas newsletter

- Plant Atlas Happenings
- Schedule of Events
- Plant of the Month
- New county Record of the Month
- Wanted plants

Website: www.sdplantatlas.org