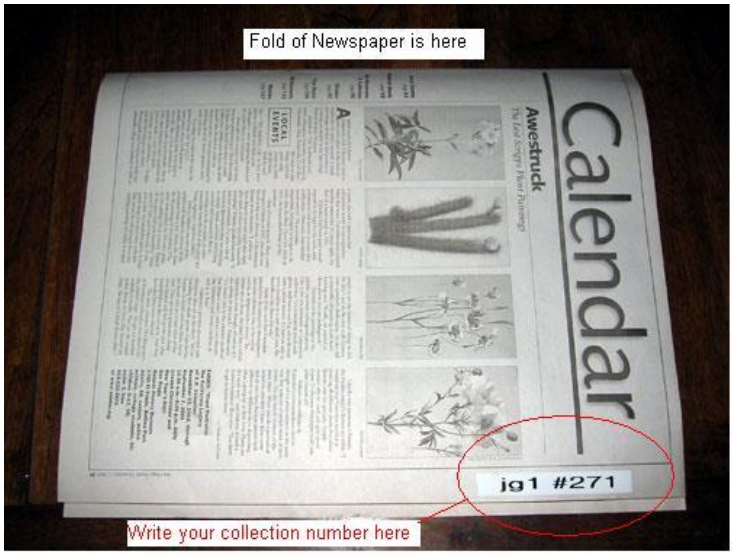
How to Collect and Press Proper Plant Specimens

As a parabotanist, your task is to contribute to our overall project goal, which is to curate one flowering/reproducing specimen of each plant species that occurs in each atlas grid square. Once you submit a pressed and dried specimen to the museum, we will mount it on a sheet of special paper with its label, and file it in the SD Herbarium. Herbarium specimens will last for hundreds of years if properly maintained and they are an effective way to scientifically document floristic diversity. Here is some general guidance on how to collect and press museum-quality plant specimens.

Field Collecting

- Plan ahead. Please review the maps and other information provided in your handout packet, and make sure you carry with you copies of your letter identifying you as a parabotanist, and any permits that are required for access and/or collecting. **Phone your contacts in advance** to make arrangements if you are working on public land.
- Before you go out, visit our website at www.sdplantatlas.org to check out which plant species have already been collected from your square. You can choose "Search the Database" to find this out. Print the list if you like, and carry it with you for reference.
- Once in the field, evaluate whether or not a species *should* be collected. Be able to recognize any possible "sensitive" species, i.e., those that are rare, threatened, or endangered that may be protected by law and may not be collected legally without special permits. *Do NOT collect sensitive species*!
- Do not endanger the local population if there are only a few individuals present. Use the "1 to 20" rule of thumb: for every one specimen you collect, there should be at least 20 more present in the surrounding population. (For herbs, the rule applies to individual plants; for shrubs and trees, it applies to shoots removed.)
- For herbs, dig up at least one whole plant to show roots that can help the botanist determine whether the plant is an annual, biennial, or perennial and identify the type of root (e.g., fibrous or tap) or underground stem (e.g., corm, bulb, rhizome, etc.).
- For shrubs, trees, or vines, clip one or more branches. The ideal plant specimen includes flowers (or other reproductive parts for ferns and non-vascular plants), fruit, leaves, and branches. Reproductive structures are often necessary to positively identify the plant, but it is not always possible to find flowers and fruit on the same plant at the same time. Do the best you can but do not mix together cuttings from different plants (i.e., don't take a branch from one plant and then take the fruits or flowers from another).
- Get enough of a sample to distribute over your 11x17 sheet in your plant press (e.g., a few branches of larger shrubs, or several small plants that can be distributed over the sheet).

- For cacti, slice and press the flowers, but place the stems and fruits into a paper bag. Label the bag with the same collection number as the flowers and submit them both to us. Similarly, large cones cannot be pressed so they may be placed into a paper bag with the same collection number as the rest of the specimen.
- Place each plant specimen inside a folded sheet of newspaper (like *The Reader*) and write its unique collection number on the upper outside edge of the newspaper, facing outwards (please see diagram below).



The "**collection number**" consists of your own "Login Initials", the # sign, and the specimen's unique collection number. In this example, the assigned login initials were "jg1", and the newspaper contains specimen number 271. Please write each collection number in the location and format shown here.

- Stack the newspapers and place in a field press with a few cardboard ventilators for support, or tie up the bundle with string, straps, or bungee cords.
- Record the field data for each specimen in your field notebook (including the collection number, and detailed information about the collecting location, surrounding vegetation, and characteristics of the plant itself).

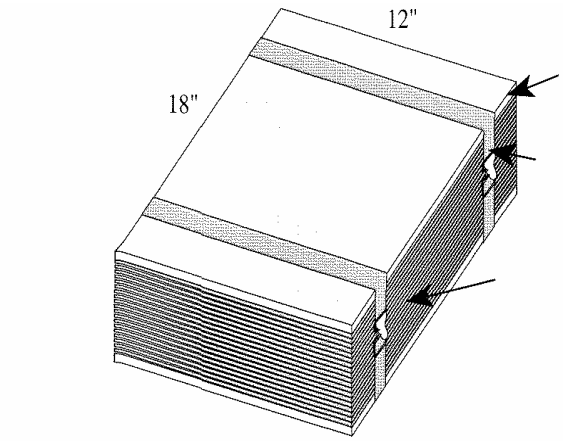
Plant Pressing

After you get your plants home from the field, they will have relaxed a bit and will be ready for you to transfer from your field setup to a plant press where they can be properly laid out, pressed and dried. Plants should be pressed within about 12 hours of their collection (otherwise the leaves may become moldy or the plant may shrivel up and not press nicely). If the newspaper is wet, you will need to change the paper, ensuring that you also transfer the collection number to the fresh paper.

- A basic plant press consists of two boards 12" by 18" (half-inch plywood or even thinner will do fine), plus two adjustable straps (or even ropes).
- Clean up the specimens (e.g., shake off excess soil from the roots and pick off dead leaves etc.) and if necessary trim or bend into a "V", "N" or "M" shape to neatly fit inside the press.
- Arrange the plants exactly as you want them to appear once they are mounted. Make sure leaves are spread out and not overlapping, that fruits and flowers are

showing, and turn over a few leaves so that the underside of several can be seen.

- Plants are pressed by placing each specimen inside one of the single sheets of folded newspapers, and separating each newspaper sheet with a cardboard ventilator so you have an alternating stack of newspaper and cardboard.
- Place the endboards on the outside of the stack, and tie straps around the outside as shown in diagram below. Tighten the straps down very hard.



Standard Plant Press

1/2" plywood endboards

Straps with buckles

Layers of cardboard ventilators

From: Simpson, M.G. 1997 *Plant Collecting and Documentation Field Notebook*. SDSU Herbarium Press.

- Air dry by placing the plant press in a well ventilated location. It may take days to weeks for the plants to dry completely.
- Do NOT put the plants or plant press into a microwave or conventional oven. Heat is not necessary but good air circulation is.
- If required, change the paper every few days to prevent molding, especially for succulent plants. Plants are dry when they don't feel cool to the touch.
- For the health of those who must handle the dried plants and the specimens, please do not use chemicals of any kind on the plants (e.g., use no mothballs, insecticides etc.). During the verification, mounting, and accessioning process in the herbarium, all specimens are routinely frozen to kill any insect pests.
- Do not use any tape, glue or other adhesives.
- Sit down ASAP and enter the field data online at our website www.sdplantatlas.org. Timely data entry is important because it will permit other parabotanists sharing your square to see what has already been collected, thus helping to prevent duplication of effort.
- When it is time to submit your pressed and dried plants to the herbarium, please look on our website and print out the handout titled "*Guide to Specimen Submission*" and the "*Specimen Submission Form*".

For more details, refer to Simpson, Michael G. (1997) *Plant Collecting and Documentation Field Notebook*, SDSU Herbarium Press, for an excellent explanation of plant collection techniques.