

Justification for New Butterfly Lab at Volunteer Village

I am requesting the Friends board to replace the old 12' x 16' butterfly lab at the Volunteer Village with a new 16' x 30' Morgan building. The current building has rotten wood and large gaps that allow insects such as ants, mosquitos, and wasps to enter. These are detrimental to both the workers and caterpillars and butterflies we are rearing. Specifically, disease is a major problem for rearing Monarch butterflies and it is impossible to create a sterile environment with surfaces and walls that are not washable. A sterile environment is critical for raising caterpillars and butterflies to eliminate bacteria and protozoan parasites. A more detailed list of deficiencies are as follows:

- Building is not up to FWS standards because it is not handicap accessible.
- No restrooms for local volunteers and staff.
- No shower for safety bleaching the butterfly enclosures.
- No environmental control to maintain temperature (heating/cooling), humidity, and lighting
- Cannot exclude contaminants (insects and disease-causing microorganisms)
- Cannot disinfect ceilings, walls, and floors. (We plan to use this new lab as a controlled and sterile environment for raising eight different species of butterflies and five different moths for the school districts, outreach events and to release into the wild.)
- Inadequate space for rearing plants and butterflies. We are very limited in the number of plants and butterflies we can rear at any given time, and we cannot separate the butterfly life stages which increases problems with disease¹
- Limited electrical power for rearing milkweed and butterflies, which limits both the quantity and quality of production. (The solar-powered Discovery Center does not have adequate power to provide lighting and heat critical for propagating milkweed from seed and rearing butterflies.)
- No extra space for storage (rearing supplies and for Friends group)
- The lab must be at the Brazoria volunteer village because of the following:
 - Proximity to the Discovery Center (school tours)
 - Greenhouse must be close to butterfly rearing so that plants can be moved back and forth
 - Space and hookups available
 - RV volunteers on-site

¹**Justification for separate rooms.** EGG room: Rearing boxes for eggs. Held until hatch. Then move to caterpillar room. CATERPILLAR room: Purpose is to rear caterpillars. Plant material provided. High contamination risk requiring isolation. CHRYSALIS room: Developing butterflies held through emergence. High contamination risk requiring isolation. New adults must be screened for disease ADULT BUTTERFLY room: Special environmental conditions require separate rearing area

Goals and Purposes of New Rearing Lab

The addition of a larger, more efficiently organized butterfly laboratory at Brazoria National Wildlife Refuge would benefit the refuge in several ways:

- Additional power and environmental control of lighting, temperature and humidity control to allow successful plant cultures and butterfly rearing
- Environmentally safe environment free of contaminants
- Construction and equipment to clean/disinfect interior for reducing disease
- Adequate space for plant propagation and butterfly rearing.
- Space for Friends to store materials

Discovery Center (DC) educational programs. Continuous rearing of Monarch butterflies to support educational programs with the goal of stimulating interest in school children for environmental, habitat, and species protection.

Exhibits and outreach events. Rearing various butterfly species for exhibits at DC and various outreach events such as Migration Celebration (see list of butterfly species below)

Distribution to schools. Schools in the Brazosport Independent School District have expressed interest in purchasing butterflies for their classes. For example, when we announced that we had excess painted lady caterpillars to the Brazosport Independent School District, within one hour of advertising 12 schools wanting 25 caterpillars each for their classes. This demand also means that the Refuge could sell butterflies to other agencies and educational groups. For example, Monarch eggs can be sold for as much as \$1 each, and larvae and adults for as much as \$5 each, which is the current price that commercial insectaries charge for butterflies.

Butterflies targeted for rearing: Monarch, painted lady, Gulf fritillary, queen, pipevine swallowtail, giant swallowtail. Other butterflies and moths may be reared as space, labor and other facilities allow.

Specific Design and Equipment Needs

- Large industrial sink to be able to wash and bleach large screen cages for butterflies
- Separate rooms for each life cycle of the butterflies
- Windows for sunlight in butterfly room
- Large screened area for adult butterflies to be able to fly freely
- Air conditioning/heat/dehumidifier and humidifier/hot water heater
- Stove and refrigerator for diets and cold storage of insects and insect food
- Smooth hard-surfaced walls, ceiling and floors in rearing areas for cleaning/disinfecting
- Shelving in all spaces of washable material (e.g., plastic)
- Chairs, shelves and tables