ERDG

NEWS RELEASE

March 1, 2000

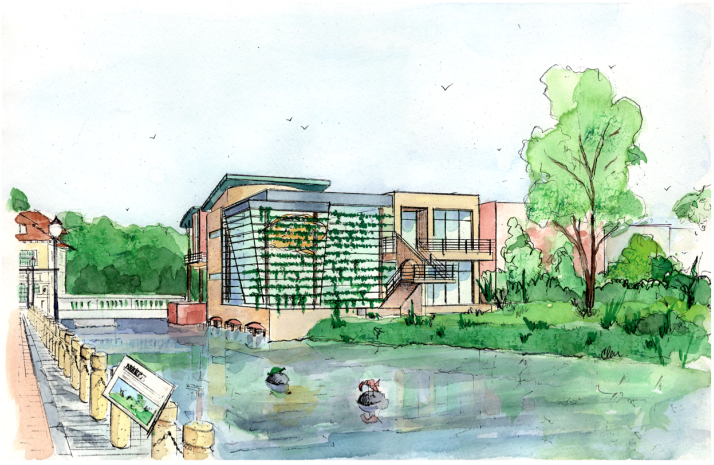
The Ecological Research & Development Group Inc. (ERDG) a 501 (c)3 nonprofit organization dedicated to the conservation of the worlds four horseshoe crab species, plans to build this nations first Horseshoe Crab Research Institute® (HCRI) in Milton, Delaware.

The site is on the shore of the Broadkill River located between, Union Street, the main road in town, and the eastern boundary of Lake Wagamons waterfall and natural marsh. The Town of Milton is 15 miles west of the Atlantic Ocean.

The program is for a private institution for environmental development studies and specifically horseshoe crab research and conservation. A museum to educate the public on the paleontology, anatomy and natural history of the world's four horseshoe crab species is included in the program.

ERDG is very interested in maintaining the historic architecture and charm of the town and will develop the site in a manner that enhances the appearance and character of downtown Milton and fills a need for additional residential and commercial space. The project cost is estimated to be three million dollars.

Over the last five years ERDG has grown to be recognized internationally as a leader in horseshoe crab conservation. The HCRI is just one of many programs and initiatives that complement its goal to protect the worlds four horseshoe crab species.



ERDG a 501c(3) non-profit organization dedicated to the conservation of the world's four horseshoe crab species
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HORSESHOE CRAB RESEARCH INSTITUTE BUILDING

ARCHITECT'S STATEMENT

SITE:

The site is on the shore of the Broadkill River in the Town of Milton Delaware, located between, Union Street, the main road in town, and the eastern boundary of Lake Wagamons waterfall and natural marsh. The Town of Milton is 15 miles west of the Atlantic Ocean

PROGRAM:

The program is for a private institution for environmental development studies and specifically horseshoe crab research and conservation. A museum to educate the public on the paleontology, anatomy and natural history of the world's four remaining horseshoe crab species is included in the program.

SOLUTION:

The building, a two-story structure built-out to the maximum 70' x 100' property lines, is organized around a large double height space with dramatic views up river to the waterfalls and the natural marsh. This large space functions as the display and educational area for the museum's story; the education and preservation of the world's four remaining horseshoe crab species. Flanking the main space on the lower level are research labs equipped with aquariums housing hundreds of horseshoe crabs for public viewing and a touch tank for physical interaction with the ocean dwellers. The upper level has private offices overlooking Union Street, a lecture hall for 50 people, a small library/workroom, and a quiet lounge area overlooking the marsh. Interior walkways overlook the display space, and lead to the outdoor rear terrace and marsh observation area with views up river to the falls and the feeder lake.

Exterior forms of the structure express the particular function of interior spaces. Roof planes are placed to capture the optimum solar angle for mounting photovoltaic solar panels for energy collection. Natural day lighting is maximized to reduce the demand for artificial lighting, typically a major contributor to heat load, and to connect the user to the dynamic views of the surrounding environment.

The north elevation, on the river, is a straight forward two-part façade of glass, and stone with large and small windows that create a pleasing pattern of glowing light on the river. The west façade is similar with materials of glass, stone and concrete. Terraces on each level with exterior vertical circulation, projecting beyond the main structure, add a playful pattern of light on the marsh at night.

Union Street's elevation recaptures the architectural features and scale of this old ship building town, with tall round timber columns, exposed steel brackets, large glass retail-style storefronts on the lower level and smaller punched windows at the upper level. This façade erodes at the corner into a double height entrance space, evoking movement and the transformation from the small town setting to the flowing river and the more modern facades on the side and rear of the building.

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Preliminary Concept Design November 2001

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Introduction

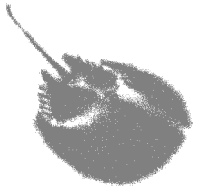
This Preliminary Concept Design represents the second stage in a three-part process we call Concept Design. In Concept Design, we work with our clients to identify the goals and key content areas for their project, and visualize the way that visitors will experience the completed project.

In the first stage of this process, Edwin Schlossberg Incorporated (ESI) met with the representatives of Ecological Research and Development Group ("ERDG"), their consultants and architects to determine their goals and aspirations for the Horseshoe Crab Research Institute ("HCRI" or "the Institute"). We presented the results of that process in our Goals and Parameters Memo in September 2001.

Now, in this Preliminary Concept Design, we offer our initial ideas on the fundamental components of the design for the HCRI. As these ideas are, in essence, a response to the design challenges the HCRI team outlined in our discussions, we refer to them as a design solution. This design solution represents the underlying concept for all the design work that follows.

The purpose of this presentation is to engage the HCRI team in the creative direction of this design process, and thereby ensure that the design concept accurately reflects its original intentions.

ESI is delighted to have this opportunity to work with ERDG to make its vision for the HCRI a reality. The conversations we have now will direct the outcome of the last stage of the concept design process, the Final Concept Design.



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Goals and Challenges

ERDG is creating the HCRI as an outgrowth of its mission to prevent damage to native wildlife populations and habitats from human activities. **The essential goal** of the exhibit space at the HCRI **is to arouse interest and concern** among its visitors **for the horseshoe crab's well being,** and to educate visitors on measures they can take to preserve it.

To accomplish these goals, the HCRI's activities and exhibits should generate among its visitors a greater appreciation of the horseshoe crab and the research being done by the Institute. Ideally, these exhibits will **inspire visitors to carry through** on their concerns after their visits **by getting involved in research and conservation efforts.** The HCRI should play an active role in its visitors' follow up efforts by functioning as their liaison to the professional work being done in this field.

Realizing these goals presents the following design challenges:

- **Make the exhibits and activities accessible to visitors of all ages and levels of interest**, from the casual visitor, to students and school groups who will require greater depth.
- **Make the research being done at the HCRI visible and comprehensible** to all.
- **Engage visitors in activities and exhibits** on topics related to the horseshoe crab's anatomy, historical longevity and natural history.
- **Illustrate the impact of the horseshoe crab upon its environment** and the positive contributions it makes to human medicine.
- **Make the public aware of the caliber of the research** taking place and the reputation of the HCRI in the scientific community.
- **Provide specific educational programs for school groups, other groups** such as birdwatchers, and the local Broadkill community, that complement and incorporate the work of other institutions.
- **Provide access on-site to HCRI's digital resources**, including Dr. Carl Shuster's personal library and ERDG's website, www.horseshoecrab.org.

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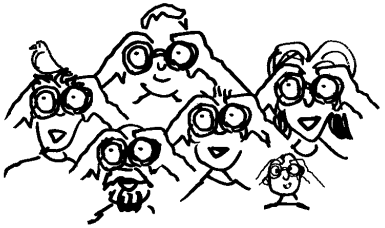
Visitor Types

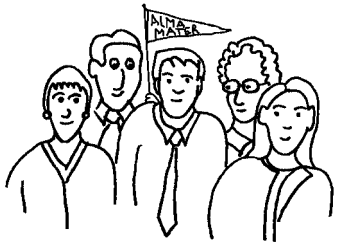
The HCRI expects to be a destination for several different types of visitors. These include:

School groups – Possibly the largest segment the HCRI will serve, school groups will visit the HCRI in association with the HCRI's own curriculum-based program about the horseshoe crab, entitled "Green Eggs and Sand."

Families on an outing – They may be from the local area, or tourists visiting the region on a vacation. Tourism is one of Delaware's largest industries, and Milton is projected to be one of the fastest growing towns in Sussex County.



Birdwatchers – Many thousands of bird enthusiasts visit the region each year, often timing their visits to migratory cycles related to the horseshoe crab's own spawning cycle. Given this fact, the HCRI could be a source of great interest to this community.



College students – The University of Delaware and other schools in the region offer a number of programs that are complementary to those of the HCRI. Outreach to this community may include coordinating lecture series and co-hosting symposia with these other institutions.

Researchers – The HCRI intends to be the world's most complete source of information on the horseshoe crab and its ancestors, making it a prime destination for scientists and others involved in similar pursuits.

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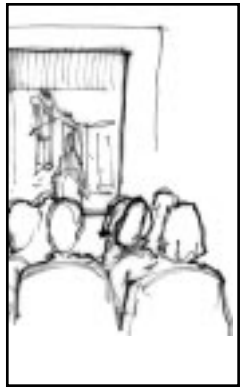
Design Solution Giving Visitors a Role to Play

The moment **visitors** enter the HCRI, they will **see** that **real** scientific **research** is being conducted there, **and** that there are **ways in which they can take part.** Visitors will find hands-on activities that stimulate their curiosity and offer the pleasures of discovery inherent in the scientific process.

The activities will be suitable for both groups and individuals, and designed to support the local curriculum, so that **the HCRI will become a destination for school groups.** The HCRI will provide school groups with facilities and opportunities that would not generally be feasible for them to maintain.

The voices of the scientists, conservationists, artists and others whose work forms the foundation of **the HCRI** will be used in the **exhibits** to **convey** their **enthusiasm** for the horseshoe crab and related topics to visitors. As visitors proceed from activity to activity, they will come to understand that they, too, can continue to play a role in this community's efforts even after they conclude their visit.



In addition to the exhibit program, **the HCRI will offer lectures and other programs,** including excursions to the Delaware Bay, to reach out to birdwatchers and similar constituencies.

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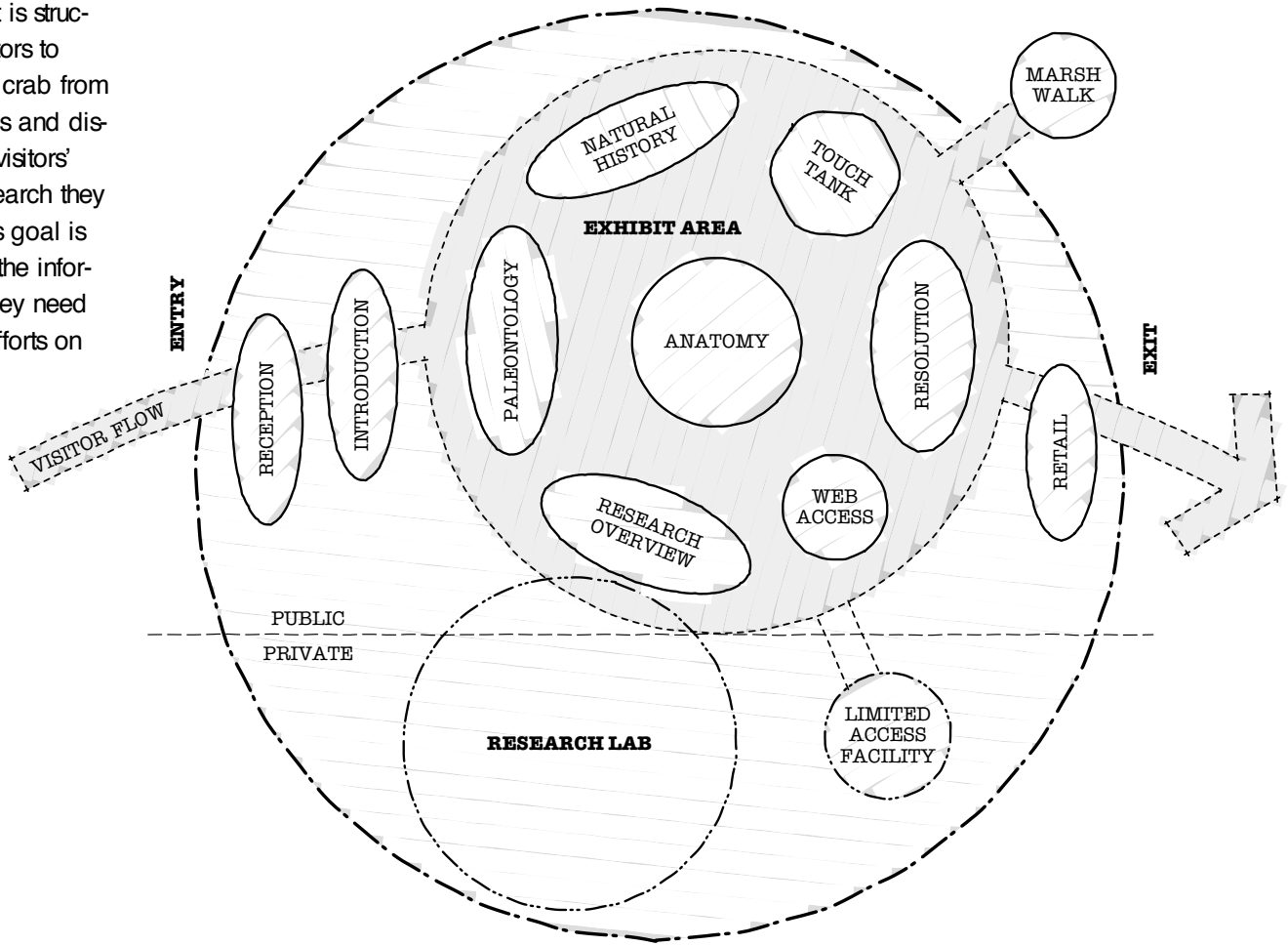
Experiential Plan

The exhibit environment is structured to encourage visitors to examine the horseshoe crab from a variety of perspectives and disciplines, and heighten visitors' appreciation of the research they can observe on-site. Its goal is to provide visitors with the information and incentive they need to support the HCRI's efforts on an ongoing basis.



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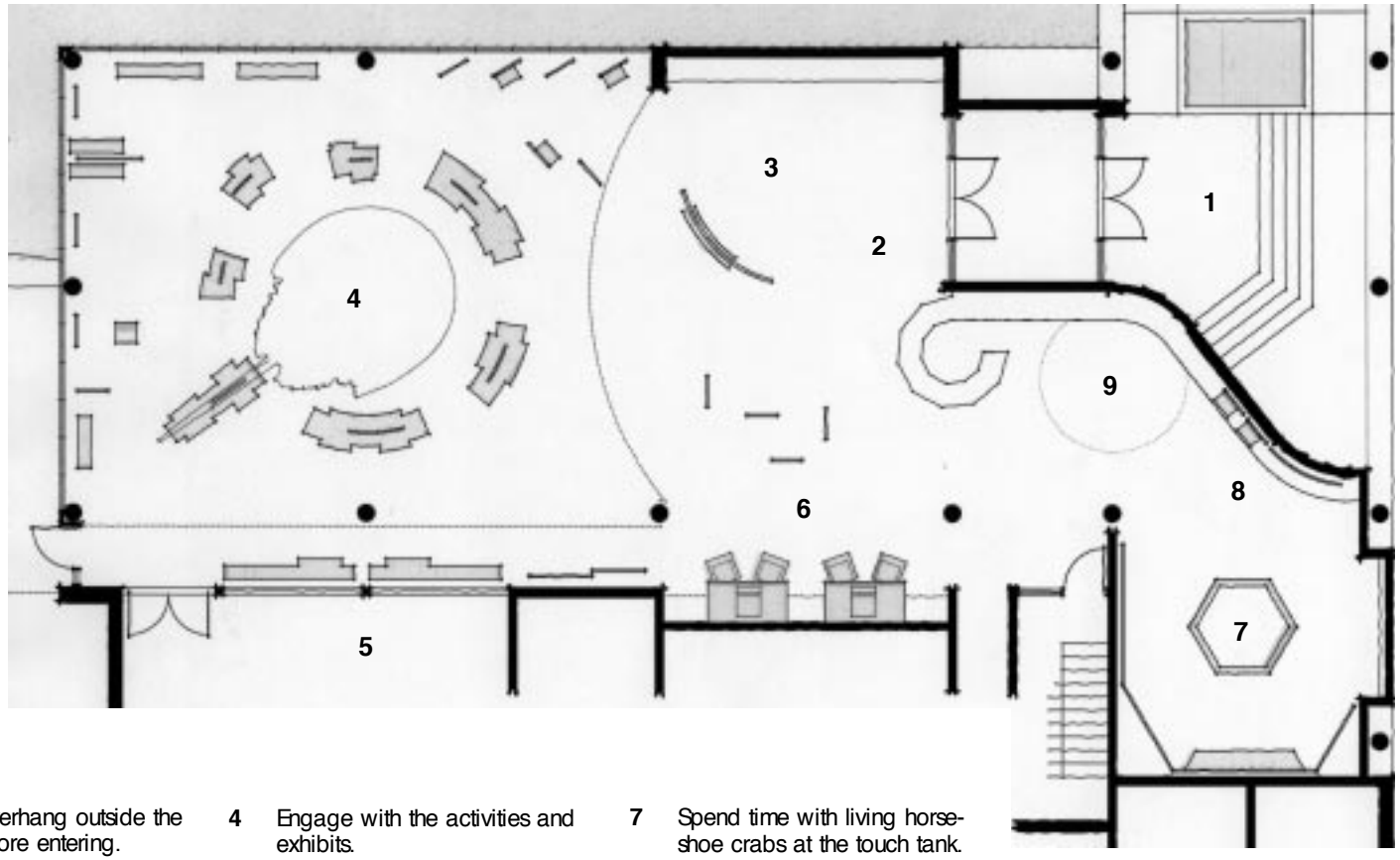
Key Plan Circulation

On an average trip to the HCRI, visitors may:



1 Gather in overhang outside the entrance before entering.

2 Be greeted by the receptionist and receive basic orientation.

3 View a brief film that previews topics and inspires curiosity.

4 Engage with the activities and exhibits.

5 Observe research in progress in the laboratory.

6 Encounter horseshoe crab-inspired artwork, and use the computers to view research around the world.

7 Spend time with living horseshoe crabs at the touch tank.

8 Receive information on ways to aid HCRI research and the horseshoe crab.

9 Purchase HCRI souvenirs in the retail area.

10 Upon returning home, visitors may return to the HCRI web site to post data they may have compiled, artwork or other communications pertinent to HCRI programs.

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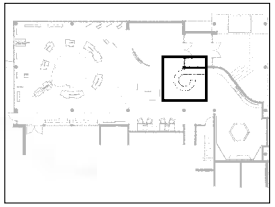
Walkthrough Intro/ Reception



Upon entering the HCRI, visitors will experience the calm, delight and curiosity a shoreline habitat can inspire. Where appropriate, forms in the physical design will echo the natural design of the horseshoe crab itself. The research being conducted in the facility will be immediately visible, as will be aspects of the energy-efficient engineering, and the components of each will feel harmonious with the prevailing atmosphere of airiness and light.

Visitors can proceed through the exhibit environment in any sequence they wish.

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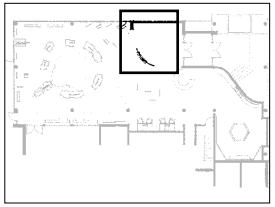
Walkthrough Introductory Video Moment



The average visit will begin with a brief film that previews the core topics of the exhibit area, and inspires curiosity. It may possibly include testimonials from Dr. Shuster and others explaining what first piqued their own interest in horseshoe crabs and what accounts for their continuing interest. School groups may begin their visit by attending a specially-prepared presentation in the lecture hall upstairs.

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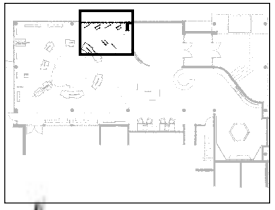
Walkthrough Longevity / Paleontology



On the approach to the main exhibit area, visitors will encounter presentations concerned with the horseshoe crab's survival and continuity in the midst of our planet's great changes over the past 350 million years. This story may be told through a combination of archaeological and cultural artifacts. Fossils, photographs, art, poetry, and narratives may be used to document the horseshoe crab's presence in cultures both ancient and new, including those of Native Americans, our own modern society, and in the myths of the Japanese samurai. Taken together, they will make the case for the horseshoe crab as our fellow traveler through time, and one who is worthy of veneration and respect.

This story and its component elements may continue to appear, interspersed with other activity and exhibit areas, throughout the space.

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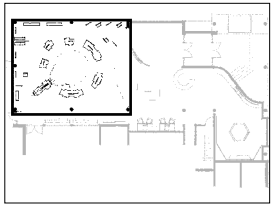
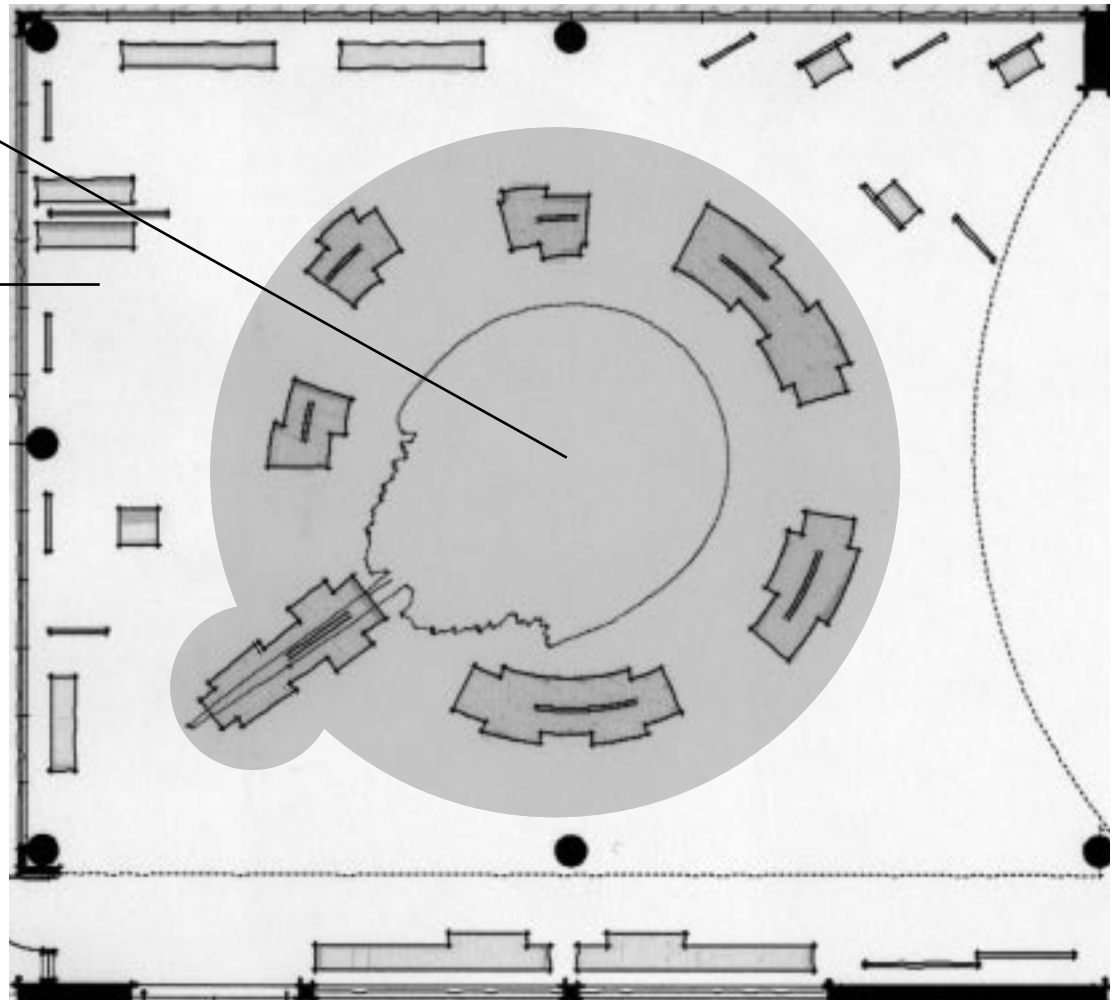
Walkthrough Main Exhibit Area



The main exhibit area will be organized around the form of the horseshoe crab. Activities at the center of this space will focus on the horseshoe crab's anatomy and physiology, while presentations on the horseshoe crab's natural history and related topics will be distributed around this area's perimeter. This organization is predicated on the belief that an appreciation of the horseshoe crab's contributions to our world begins with an understanding of the remarkable qualities of the horseshoe crab itself.

Activities in both areas allow and encourage visitors to discover for themselves what it is that forms the foundation for the research in progress at the HCRI and around the world.



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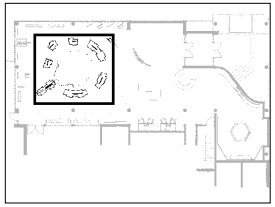
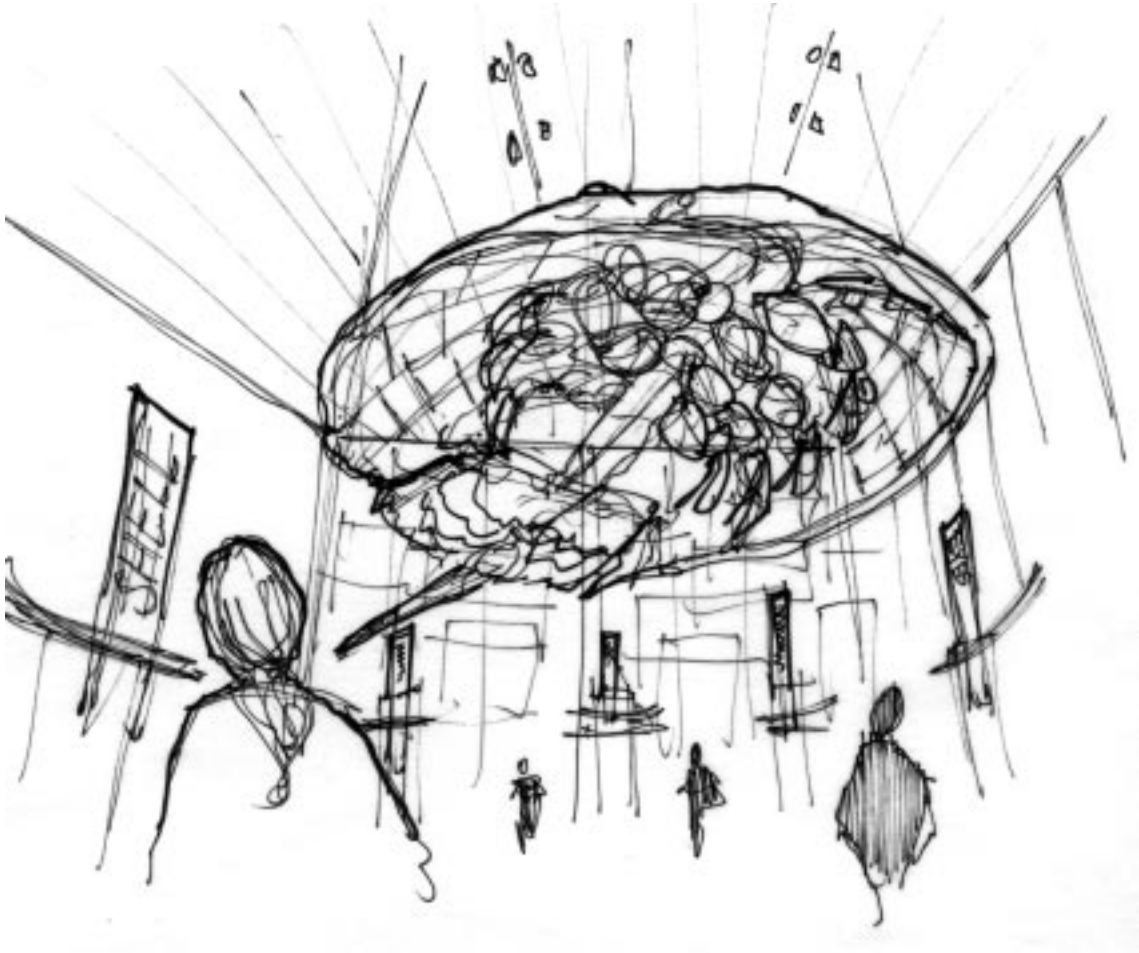
Walkthrough Central Area: Anatomy & Physiology



A larger-than-life sculptural representation of the horseshoe crab's dome-like structure may hang above this central area, to encourage visitors to consider the principles of engineering naturally present in its design. Beneath it, visitors will find individual hands-on activities that illustrate specific aspects of the horseshoe crab's physiology, such as its sensory faculties, its self-sufficiency as a biosphere, and its contributions to modern human society.



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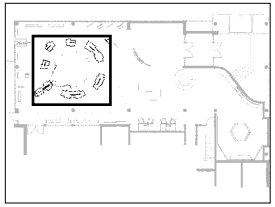
Walkthrough Central Area Activities



Activities in this area may offer visitors the opportunity to:

- 'See' as a horseshoe crab, in an approximation of its visual mechanisms.
- Compare and contrast our own five senses with the horseshoe crab's chelicerae and other perceptual mechanisms.
- Discover the 'blueness' of the horseshoe crab's blood, owing to the presence of copper.
- Observe the clotting process when the horseshoe crab's blood detects endotoxins.
- Re-create the bio-chemical process by which their chitin is able to accelerate healing when used as a suture.
- Construct a horseshoe crab replica from such everyday items as hinges, bowls, rigatoni, thread, lampshades, etc. to observe the basic engineering principles present in the horseshoe crab's construction.
- Use plastic replicas of horseshoe crab 'parts' to create molds in sand that demonstrate how the essential forms present in the crab's structure prove useful in the human world as tools.
- Conduct tests that reveal the horseshoe crab's energy efficiency.

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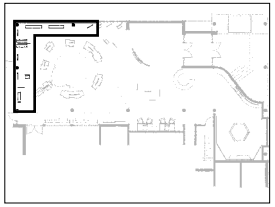
Walkthrough Perimeter Exhibits – Natural History and Habitats



On the outer edge of the main exhibit area, visitors will find presentations on the horseshoe crab's natural history and environs, which incorporate into the story views of the wetlands outside the HCRI's windows.

Activities and exhibits here will demonstrate key moments in the horseshoe crab's life cycle, including spawning, molting and reproduction. They are intended to aid visitors' comprehension of the research on these topics being conducted on premises, as well as such EPDG programs as "Just Flip 'Em" and others.

A computer simulation will allow visitors to juggle environmental factors in the horseshoe crab's habitat and encourage visitors to consider the impact they and others may have on the natural world.

A special presentation on the evolution of Delaware Bay will show how and when the horseshoe crab arrived in the local region. Photos and other artifacts may document the various environmental factors that influenced these patterns of migration, and direct visitors to specific locations nearby where they can witness seasonal events as they occur, and may encourage visitors to take a walk out on the marsh using the HCRI's pier.

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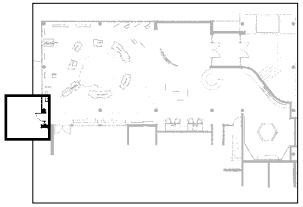
Walkthrough Marsh Walk



A pier accessible from the main exhibit area will make it possible for groups to visit the adjacent marsh and get a closer look at this essential wetlands habitat.

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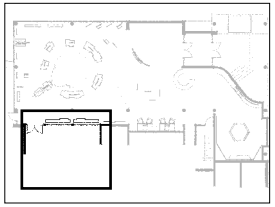
Walkthrough Research Observation



A large window into the HCRI's professional research laboratory will allow visitors to observe work in progress and invite them to consider the open issues in this field. Signage within the lab will indicate to visitors what is taking place in particular tanks and areas. Visitors may get an underwater view from cameras submerged in the tanks that visitors can operate with remote controls.

Additional exhibits at appropriate points throughout the facility will point out aspects of the energy-efficient technology in use at the HCRI.

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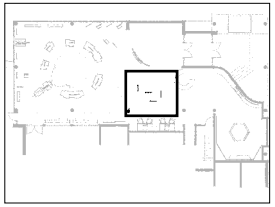
Walkthrough Changing Exhibit Area



As visitors proceed from the research observation window to the touch tank, they will encounter an area for temporary or seasonal exhibits. These exhibits may feature the winners of the HCRI's poetry and art contests, as well as first-hand accounts and updates of pertinent sightings and events from researchers, birdwatchers and others.

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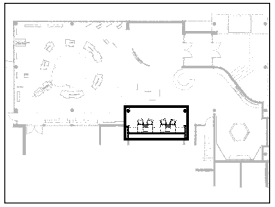
Walkthrough Computer Workstations



Visitors will also find computer stations in this area that will provide ready access to the HCRI's digital resources and professional affiliates.

In addition to the HCRI web site itself, these stations may make the following available to visitors:

- Digitized versions of Dr. Shuster's archives
- A "corral" of web sites of educational institutions and research partners involved in complementary programs, including those in Kasaoka, Japan and San Sebastian, Spain
- Current or completed projects from school groups engaged in the HCRI curriculum program
- Art and poetry of contest participants
- Footage from underwater cams, etc.

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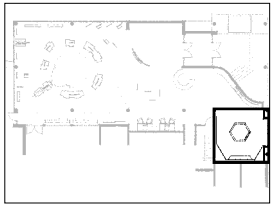
Walkthrough Touch Tank



The touch tank at the HCRI will allow visitors to study the horseshoe crab at close range. Whether visitors begin or end their visits here, this encounter is certain to render their visit less abstract, and more "real."

The area surrounding the touch tank will be designed to create an atmosphere of reflection. The railing on the perimeter of the tank may be inscribed with haiku about the horseshoe crab. Visitors will be encouraged to sketch the crabs in the tank, as in a life class. The walls may be decorated with the work of their efforts.

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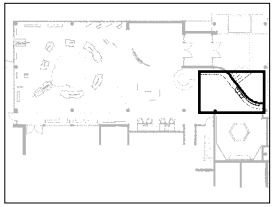
Walkthrough Resolution Activities and Retail



At the close of their visit, visitors will be invited to join the HCRI's community, and get involved with its conservation and research efforts.

As currently happens on the HCRI's web site, visitors may be encouraged to adopt a beach during spawning season, and report crab sightings to the HCRI. Teachers may be offered help with lesson plans and ideas for teaching science and biology. All will be invited to celebrate the horseshoe crab in drawings, poems and stories.

A small retail operation at the HCRI will serve to enhance the HCRI's revenue stream and provide an additional tool for community outreach.

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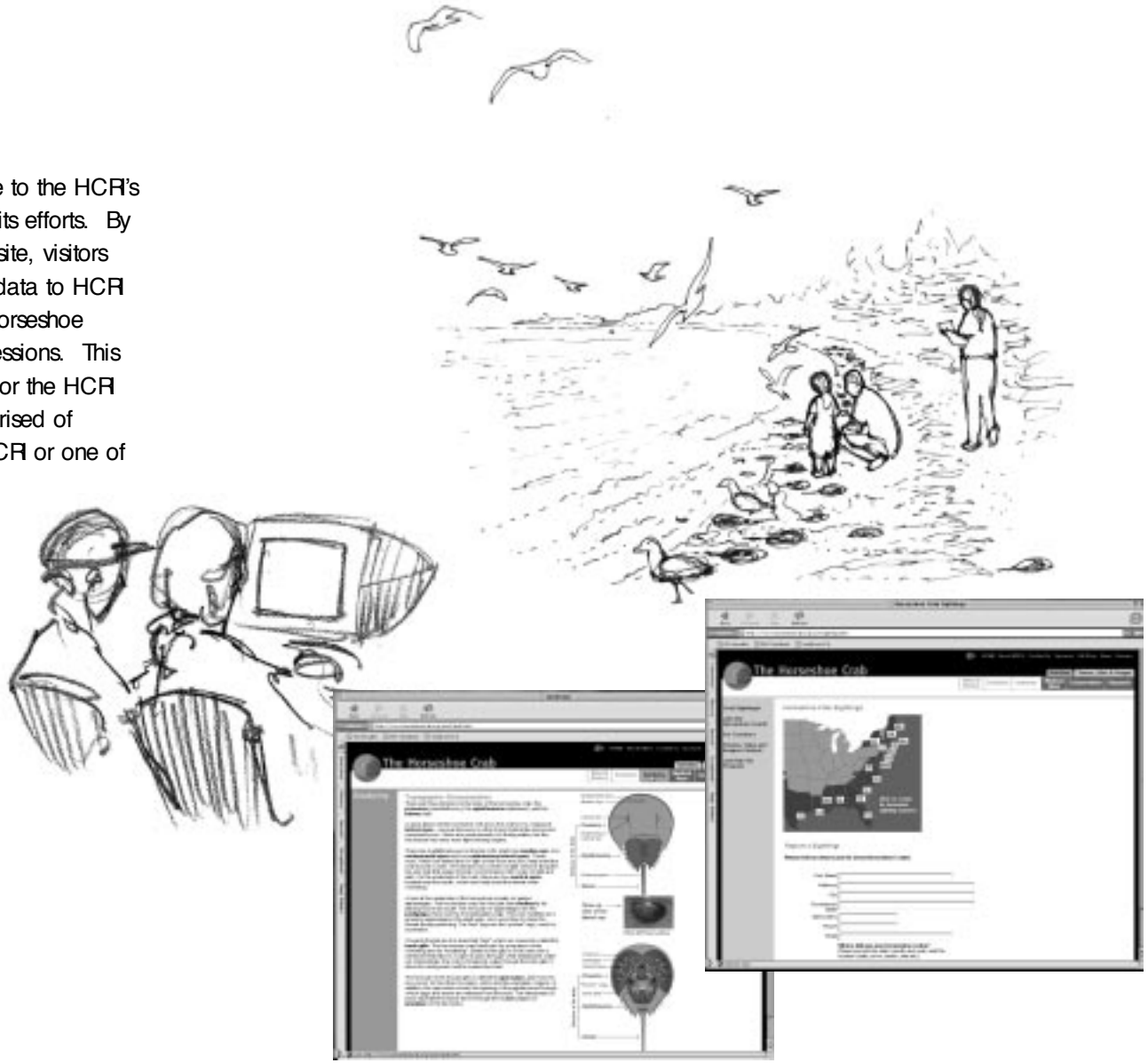
Walkthrough In the Field and at Home

Visitors can respond online to the HCRI's invitation to participate in its efforts. By returning to the HCRI website, visitors will be able to contribute data to HCRI research and share their horseshoe crab-related creative expressions. This is also a convenient way for the HCRI to keep its community apprised of upcoming events at the HCRI or one of its partner institutions.



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VI. Conclusion

It is our sincere hope that the Ecological Research and Development Group will find the concept design outlined in this presentation a constructive beginning in the creation of the visitor experience at the Horseshoe Crab Research Institute.

We look forward to developing this concept into an innovative, exciting and integral part of the HCRI's efforts.

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