UNIT 4
Hawaiian Fishponds Today

"The fishpond is like a slice of orange, and it is like a happy Hawaiian face."

Kyson Kalawe-English, Grade 4
Kilohana School, Moloka'i
Hawaiian Fishponds Today

“Ho’ulaulima [sic] ku na kāpuna, mālama no ka loko i’a ho’omau neiia waiai ho’oilina. Let us work in the manner of our ancestors, let us preserve the fishpond to continue this part of our heritage.”

Lehman L. (Bud) Hecny (1993)

Loko kuapā (fishponds with rock seawalls) were developed for the specific purpose of sheltering and nurturing fish for consumption as early as the 13th century in Hawai‘i. A feature of these shoreline fishponds unique to the Hawaiian Islands is the placement of one or more sluice gates or grates (mākahā) in the fishpond wall (Kikučhi, 1973). Massive fishpond walls still standing after centuries of wind and waves are silent testimony to the engineering feat that Hawaiians achieved. Although fishponds played an important role in the lives of early Hawaiians, today only a handful are in use. What led to decline of fishponds and what is the potential for restoring these cultural treasures?

Decline of Fishponds

When the Kingdom of Hawai‘i became a Territory of the United States at the beginning of the twentieth century, about 100 of the estimated 488 original fishponds were still in operation (Farber, 1997). Although the surface area of the active ponds decreased to about half of what it had been a century earlier, production dropped to a third of that estimated at the time of European contact with the Islands. Seventy-five years later, in 1975 to 1976, the State of Hawai‘i recorded less than 10,000 kg of total production from all fishponds or only 1% of the pre-European contact production (Tamaru and Carlstrom-Trick, 1998).

The causes of decline are many, but key among them are destruction of pond walls ordered by ruling chiefs during war, decimation of the native population due to introduced disease, and the sandalwood trade which, by order of the chiefs, drew many able-bodied men and women to the forest to harvest wood. Changes in land tenure as a result of the Great Mahele of 1848 also played a key role in the decline of fishponds. There was a total loss of pond management practice due to the transfer of the authority of the chief and king to the bureaucracy of the elected and appointed government. Benign neglect and lack of repair of damaged wall and gate structures caused by natural events such as storms, tsunamis, and lava flows also led to pond deterioration. Today, many valuable oceanfront properties are built atop fishponds that were filled in by housing developers.

Restoration Efforts

Physical restoration and revitalization efforts of some Hawaiian fishponds began during World War II in an attempt to produce food for increasing civilian and military populations. In addition to those efforts, there have been several major surges in restoration activities:
1965: Rockefeller Foundation; 12 fishponds on Moloka‘i.

1986-90: Department of Historic Preservation, Maui County and the Hawai‘i Department of Business Economic Development and Tourism; two fishponds on Moloka‘i.


1995-current: U.S. Department of Agriculture and Hawai‘i Department of Labor and Industrial Relations: at least four fishponds on Moloka‘i (Tamaru and Carlstrom-Trick, 1998).

Loko i‘a played an important role in the lives of early Hawaiians. Yet today, it is a challenge for the few who are involved in fishpond production for the economic climate has changed.

Hawaiian pond culture systems were developed in a subsistence economy where labor had no cost and where the primary function of the loko kuapā was the storage of fish for the benefit of the ali‘i.

Efforts are being made to restore and place in service several fishponds both as sustainable development demonstrations and as opportunities to maintain ties to an important element of cultural heritage.

Educational Tools

The early Hawaiians’ extensive understanding of their environment is evidenced by the integrated agricultural/aquaculture complex that today is symbolized by the loko kuapā. Rediscovering ways to be in tune with the, sun, moon, tides, fish, crustaceans, and algae may prove to be more important to our children than the monetary value of any fish produced from these ancient structures.

Using the ancient fishponds as educational tools is a way to teach and preserve the culture of the early settlers of Hawai‘i. Reflecting on the past is also a way to help us set our course for the future. The Hawaiian saying “He ali‘i ka ‘āina; he kauwā ke kanaka. The land is a chief; man is its servant” is translated by Mary Kawena Pukui (1983) to mean that “Land has no need for man, but man needs the land and works it for a livelihood.” What can we learn from the ways that the early Hawaiians responded to their environment? Which of their practices are still relevant today as we seek to mālama i ka ‘āina?

Humankind is becoming aware that our world is not one of infinite resources. The following message stated almost 150 years ago, has been largely ignored by modern society:
...You must teach your children that the ground beneath their feet is the ashes of your grandfathers...so that they will respect the land... Teach your children...that the earth is our mother. Whatever befalls the earth befalls the sons of the earth.

...This we know; the earth does not belong to man, man belongs to the earth... Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web; he does to himself.

- Native American Chief Seattle (1854)

In the fast-paced societies of today, movements to understand and preserve the mores of the past are becoming widespread. The Native Hawaiian renaissance, begun passionately in the 1970s, is bringing awareness that that past holds key information that is critical to how we carry on in the future.

Apparent in prayers and oli passed down through the generations, the early Hawaiians viewed their world as a gift from the gods. Nature, in all its glory, was to be loved, respected and cared for. In our efforts to mālama i ka ‘āina, we must preserve also the physical evidence of the past such as the loko i’a, structures that have clearly withstood the test of time. By allowing them to become our classrooms, we can almost hear the chanting, the clunking of stone upon stone, the groans of the early Hawaiians as they passed the heavy stones one-by-one to each fishpond site. It is within this setting that students can truly begin to appreciate the science, language arts and social traditions mastered by the early Hawaiians.

Me nā mea ‘i loa mai nā wā mamua, o holomua kākou i kēia au
Ua hiki mai ka wana‘ao no ka ho‘ōla a me ka hoʻāla hou.

Let us move forward to the future carrying with us the best from the past. The time has arrived for the revitalizing and reawakening of our community.

- S. Haunani Apoliona (1991)

References


Mangrove is an introduced plant now common in many Hawaiian fishponds.
<table>
<thead>
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<th>Assessment</th>
<th>Key Concepts</th>
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<th>Content Standards and Benchmarks</th>
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</table>

- A summary of why the fishpond is important to conserve natural resources and cultural resources.
- A description of how the fishpond is cared for today and why it is different from in early Hawaiian times.
- Hawaiian fishponds begin development.
- Hawaiian fishponds in early Hawaii.
- Hawaiian fishponds have unique characteristics.
- Hawaiian fishponds are different from today.
- Hawaiian fishponds have developed over time.
- Hawaiian fishponds have impacts from human activities.
- Hawaiian fishponds are managed for natural resources.
- Hawaiian fishponds are involved in community education.

Explain a fishpond activity:

- How are fishponds conserved today and for future sustenance?
- Why is it important to conserve these resources?
Unit 4 Culminating Activity

Unit 4 is a culminating activity that builds on activities presented in Units 1 – 3 and focuses on a visit to a fishpond. Students develop learning logs with the following information:
- questions they formulate and information they have gathered at the fishpond;
- a description of how the fishpond they visited is different from an early Hawaiian fishpond; and
- a summary of how the fishpond is cared for today and why it is important to conserve natural and cultural resources.

Sample Rubric for Culminating Activity

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<tr>
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<tbody>
<tr>
<td>Science: Living the values, attitudes and commitments of the inquiring mind</td>
<td>Questions indicate critical thinking and blending of ideas from previous units, leading to further knowledge of different ways fishponds have changed from early Hawai‘i to today.</td>
<td>Questions expand on ideas and lead to further knowledge of different ways fishponds have changed from early Hawai‘i to today.</td>
<td>Questions lead to some information about ways that fishponds have changed from early Hawai‘i to today, but more thinking is needed.</td>
<td>Questions are unclear, irrelevant (don’t apply to the subject), or too simplistic to expand on ideas and lead to further knowledge.</td>
</tr>
<tr>
<td>Points</td>
<td>__________________________________________________________________</td>
<td>__________________________________________________________________</td>
<td>__________________________________________________________________</td>
<td>__________________________________________________________________</td>
</tr>
<tr>
<td>Science: Mālama I Ka ʻĀina</td>
<td>Writing accurately summarizes how the fishpond is managed and cared for today and provides thoughtful ideas and examples to illustrate why it is important to conserve resources.</td>
<td>Writing accurately summarizes how the fishpond is managed and cared for today and presents well-developed ideas about why it is important to conserve resources.</td>
<td>Writing is accurate, but needs more information to explain how the fishpond is managed and cared for today and/or why it is important to conserve resources.</td>
<td>Writing is unclear and needs more information or examples.</td>
</tr>
<tr>
<td>Points</td>
<td>__________________________________________________________________</td>
<td>__________________________________________________________________</td>
<td>__________________________________________________________________</td>
<td>__________________________________________________________________</td>
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I NOTICED:
Exploring a Fishpond

- How are fishponds today different from fishponds in early Hawai‘i?
  How are fishponds cared for and why is it important to conserve these resources?

Hawai‘i DOE Content Standards

Science: Living the values, attitudes and commitments of the inquiring mind:
- Students apply the values, attitudes and commitments characteristic of an inquiring mind.

Science: Mālama I Ka ‘Āina: Sustainability
- Students make decisions needed to sustain life on Earth now and for future generations by considering the limited resources and fragile environmental conditions.

Grades 4 - 5 Performance Indicators

Grade 4
- Ask questions.
- Ask questions to expand an idea or statement.
- Examine why there is a need to conserve natural resources.

Grade 5
- Ask questions.
- Ask questions to expand an idea or statement.
- Examine and explain why there is a need to conserve natural resources.

Key Concepts

- Hawaiian fishponds have changed over time. Fishponds today have some new alien species of plants and animals, mākāhā made of modern materials (some have movable gates), and impacts from human development.
- Hawaiian fishponds being restored today are managed for education, food production, and the conservation of cultural and natural resources.
- Communities are involved in caring for fishponds by restoring pond walls, removing alien species, and teaching others about the pond’s significance.

Prerequisites

At least one activity from each of Units 1 - 3
Exploring a Fishpond

Activity at a Glance

Students investigate a fishpond to learn more about the physical features, the life in the pond, and human activities at the pond—past and present.

Time

2 class periods and a field day at the fishpond

Skills

observing, formulating questions, reasoning, analyzing, writing

Assessment

Students complete learning logs with:

• questions they have formulated and information they have gathered;
• a description of how the fishpond they visited is different from an early Hawaiian fishpond; and
• a summary of how the fishpond is cared for today and why it is important to conserve natural and cultural resources.

Vocabulary

‘āina – land, environment
aloha ‘āina – love for the land
conservation – wise use; protection that prevents exploitation or destruction
hō‘īhi – respect
laulima – cooperation; working together
mālama – care for

Materials Needed

Provided:

• fishpond hunt log

Needed:

• clipboards (one per group)
• rubber bands to secure papers to clipboard
• pencils
• notebooks for learning logs

Advance Preparation

Schedule a field site visit to the fishpond. Contact the curriculum coordinator or a person on your island (see Appendices) to make arrangements for your visit. The coordinator will help schedule a date for your class to visit the fishpond and line up resource people to be available on the day of your class visit. The coordinator will provide you with a list of supplies you may need and assist you with any other inquiries. Be sure to:
• Send home field trip permission slips along with a note to parents about what students will need.
• Evenly divide the class into four smaller groups to rotate through learning hui (stations) at the pond.
• Make one copy per group of the fishpond hunt log provided with this activity.

Before Visiting the Fishpond

1. Write the following statement on the board and ask students to come up with ideas to complete it:

   “Hawaiian fishponds have changed over time. Fishponds today have...”

2. Discuss students’ ideas and challenge them to generate questions that would help them to complete the statement. (Save their questions for #6 below.)

3. Tell students that the class will be visiting a fishpond and explain that there will be resource people on site to answer questions and to help them explore at different learning stations. Review the stations and the key concepts that will be covered:

   • The Ahupua’a – the physical environment: stories and human impact in the ahupua’a where the fishpond is located

   • Life in the Pond – organisms (native and alien) that live in the fishpond today

   • The Mākāhā – how the mākāhā functions and how it is different from an early Hawaiian mākāhā

   • Plants and Mo'olelo – the cultural connections to fishponds and how we care for the pond today

4. Divide the class into four groups and explain that students in each group will work together on a fishpond hunt. Distribute a fishpond hunt log to each group.

5. Have students review the log and select a “Recorder.” This student will be responsible for recording answers onto the fishpond hunt log while students are at the fishpond. Each student within the group is responsible for gathering information from each learning station and assisting his/her group’s “Recorder” in recording the answers.

6. Have students list their questions on the backside of the fishpond hunt log and have them determine who will ask each question during the field investigation.

7. Explain that the fishpond hunt log will be turned in after the field site visit and that the information collected will help students to create individual learning logs. Discuss what is expected in the assessment for this activity and if desired, have students work on a rubric that will be used in the assessment. (See sample rubric provided with this unit.)
8. Discuss safety precautions and values that are important for a good field experience, such as hō‘ihi (respect) and mālama (care for) the environment and one another.

Investigations at the Pond

9. At the fishpond, students will participate in four learning stations. The time at each station will last approximately 30 minutes.
   - Remind students to ask their questions at each station and for the “Recorder” to take notes and record the team’s evidence.
   - Encourage students to take photographs (if desired) to help with their learning logs.

After Visiting the Fishpond

10. Discuss students’ observations from the field trip and their ideas about conserving fishponds.

Discussion Questions
   - What is the most interesting thing you have learned about fishponds?
   - What responses to your questions did your group receive from resource people at the pond?
   - What would you still like to learn to further your knowledge of fishponds? How might you find this information?
   - How have people had an impact on Hawaiian fishponds?
   - Do you feel it is important to restore and conserve fishponds today? Why or why not?
   - What does “Mālama 1 Ka ‘Āina” mean to you?

11. Ask students to complete the assessment activities.

Adaptations/Extensions

- Re-visit the K-W-L chart from Unit 1 and have students fill in what they have learned.

- Convert your classroom into a “fishpond” and invite other classes to come in for guided tours. Students could use cardboard or butcher paper to make rock walls and ‘auwai. Small branches and wire could be used to construct mākāhā. To add pond life, encourage students to create three-dimensional animals using the pond life cards. Duplicate copies can be colored, cut, stuffed and hung or displayed around the “pond” in the appropriate habitat. Educational labels should accompany each animal and each feature of the pond.

- Work with your school community to schedule days to mālama the fishpond. Contact the person or agency that oversees the fishpond and develop plans for service projects such as litter control and pulling mangrove. Have students document the progress made with “before” and “after” photographs.
• Make posters with captions about caring for fishponds and post them in a public area such as a library or mall. Students may also reduce their posters to postcard size and mail to ‘ohana (family) and friends with their messages.

• Have students produce a PSA (public service announcement) about caring and restoring fishponds. Facilitate the production process by identifying roles such as camera crew, director, writer, and talent. Help students with the concept idea and storyboard. Submit the project to cable television for airing.

Note: Please share samples of your students' work with Project Kāhea Loko for posting on the project's Website. The Website address is: www.thepaf.org. Mahalo!
## Fishpond Hunt Log

<table>
<thead>
<tr>
<th>Station 1</th>
<th>Your Evidence</th>
<th>Station 2</th>
<th>Your Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Ahupua‘a</strong></td>
<td></td>
<td><strong>Life in the Pond</strong></td>
<td></td>
</tr>
<tr>
<td>Find the freshwater stream(s) that flows (or once flowed) into the fishpond.</td>
<td></td>
<td>Find a producer that lives in the pond. (Hint: It makes its own food using the sun's energy.)</td>
<td></td>
</tr>
<tr>
<td>Find the highest peak in the ahupua‘a.</td>
<td></td>
<td>Find the kind of fish that the ali‘i usually harvested from the pond.</td>
<td></td>
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<tr>
<td>Summarize the mo‘olelo (story) about this area.</td>
<td></td>
<td>Find a big carnivore in the pond.</td>
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<tr>
<td><strong>BONUS</strong> Describe aloha ‘āina (love for the land) and how this value helps to maintain a healthy ahupua‘a.</td>
<td></td>
<td><strong>BONUS</strong> Describe how the value hō‘ohi (to respect) can be applied to the plants and animals that live in the fishpond.</td>
<td></td>
</tr>
<tr>
<td>Your Evidence</td>
<td>Malama</td>
<td>Your Evidence</td>
<td>The Fishpond</td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td><strong>BONUS</strong></td>
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</tr>
<tr>
<td><strong>Hawai'i</strong></td>
<td>native got here?</td>
<td>why are they no longer here?</td>
<td>Name a fishpond</td>
</tr>
<tr>
<td></td>
<td>you think this is the reason</td>
<td>who watches over the pond?</td>
<td>in the building of importance value</td>
</tr>
<tr>
<td></td>
<td>how do people find this pond?</td>
<td>how would you use this pond?</td>
<td>(to cooperate with others)</td>
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<td>Find a place that</td>
<td>Find a plant below</td>
<td>Find out how</td>
<td>Find - Hawaiian diet</td>
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