



Activity #1

Kāhili Ginger Values and Perspectives

● ● ● Class Period One Kāhili Ginger Perspectives

Materials & Setup

- One copy of the “Perspectives” acetates (master, pp. 8-9)
- Overhead projector and screen

For each group of three to four students

- *One* perspective card from “Kāhili Ginger Perspectives” (master, pp. 10-11)
Be sure that at least one group has each of the four perspective cards. More than one group may have each perspective.

For each student

- Student Page “Kāhili Ginger Information Sheet” (p. 12)
- Student Page “What’s Your Perspective?” (pp. 13-14)

Instructions

- 1) Show the whitetip reef shark acetate to the class. Engage students in a brief discussion:
 - Ask:
“What is this?”
“What’s your reaction to it?”
“What would your reaction be if you were snorkeling or diving and you saw one?”
 - Observe: Different people have different *perspectives* about sharks. Some people think they’re neat, some think they’re scary, some are so fascinated that they spend their whole lives studying them, some want to kill them, and some think they should be left alive.
- 2) Ask students for ideas about what can change people’s perspectives. Write a list on the board or overhead. Here are some ideas to insert:
 - Perspectives can vary in different situations,
 - Having more information can sometimes change a person’s perspective, and
 - Listening to other people’s point of view can change our opinion, bring up questions we may not have thought of before, or give us a broader perspective. People who speak especially passionately or articulately may be able to change the way other people think or feel about a topic because of their strong beliefs, ability to speak convincingly, or well-constructed arguments.
- 3) Show the *kāhili* ginger acetate to the class, showing only the photo and covering up the printing at the bottom of the page. Ask, “What is this?” Make sure everyone knows it’s *kāhili* ginger, but do not go into more detail.



- 4) Divide the class into groups of three to four. Give each student a copy of the Student Page “*Kāhili* Ginger Information Sheet” and each group *one* of the perspective cards from “*Kāhili* Ginger Perspectives.”
- 5) Uncover the bottom of the *kāhili* ginger acetate, so students can read the proposal. Each group’s assignment is to develop a short, compelling, persuasive response to that proposal, from the perspective given on its role card.
- 6) Give groups 15-20 minutes to develop their responses. Then ask a spokesperson from each group to present the group’s response, making it as dramatic, full of feeling, and persuasive as possible.
- 7) If there is time at the end of class, discuss with students how well they were able to take on another person’s perspective. Did they agree or disagree with the perspective they had to work with? Which of the group responses seemed most compelling? Why?
- 8) As homework, assign the Student Page “What’s Your Perspective?”

● ● ● Class Period Two *Values and Perspectives*

Instructions

- 1) Ask students to define the word “values.” Values are commonly defined as things (such as principles or qualities) that have inherent worth or desirability. Ask students to come up with some examples of values and write them on the board or overhead. Some examples of Hawaiian values include *mālama* (caring), *laulima* (working together), *ho‘omanawanui* (patience), *‘ohana* (family), and *lokomaika‘i* (generosity).
If students have difficulty generating a list of values, ask a few students to volunteer to tell the class something that’s really important to them. If it doesn’t seem basic enough to be a value, ask the student why that’s important, and keep asking the question until you get to the level of basic values.
- 2) Tell students that there is a different but related way of using the concept of value. Write the phrases “intrinsic value” and “instrumental value” on the board or overhead. Briefly discuss what the terms mean by first asking students for their ideas. Then bring in the following definitions and write some examples on the board or overhead:
Intrinsic value — Worth or desirability that is ascribed to something simply because it exists. This type of value is also known as “existence value.” Intrinsic value systems include spiritual and aesthetic perspectives.
Instrumental value — Worth or desirability that is ascribed to something because of what it can do for people (or a person). Instrumental value systems include cultural, ecological, economic, educational, personal, legal or recreational perspectives.
- 3) Brainstorm some examples of how these different types of values would affect someone’s actions or preferences. For example, someone who saw a fish as having intrinsic value might prefer to leave the fish living in the ocean. Someone who saw the fish as having primarily instrumental value might prefer to catch it and eat it.



- 4) Ask for a show of hands from students who believe Hawai‘i should enact a law banning the propagation, sale, and distribution of *kāhili* ginger. Then ask for a show of hands from those who disagree. Finally, ask for students who aren’t sure to raise their hands.
- 5) Have students divide into three groups: those who support the law, those who oppose the law, and those who aren’t sure. If no students raised their hands for one group, then have only two groups. Give groups 15 minutes to identify and make a list of the beliefs and values that underlie their positions.
- 6) Now have the three groups reassemble. Have a spokesperson from each group read the list of beliefs and values. After each list is read, discuss the types of values (intrinsic and instrumental) and the value systems (e.g., aesthetic, cultural, economic) that each group expressed.
- 7) Wrap up the class by asking students to discuss the importance of values in decision making. Did the values of the three groups seem similar or different? If they seem different, do students think that explains the different positions of each group? If they seem similar, what else do students think could explain the differences among the groups’ positions?

Journal Ideas

- Think of an important decision you’ve made and discuss why you decided the way you did. What values influenced your decision? Did anyone try to get you to change your mind? Did it work? Why or why not?
- Discuss how protecting native rain forests could be important to someone who ascribes primarily intrinsic value to the forest *and* by someone who ascribes primarily instrumental value to the forest.
- Do you think the fact that a nonnative plant such as *kāhili* ginger has been given a Hawaiian name changes people’s perspective about the plant? Why or why not?
- Can the value of *kāhili* ginger be weighed against the value of intact native rain forests? How would you compare or evaluate the two? Why?

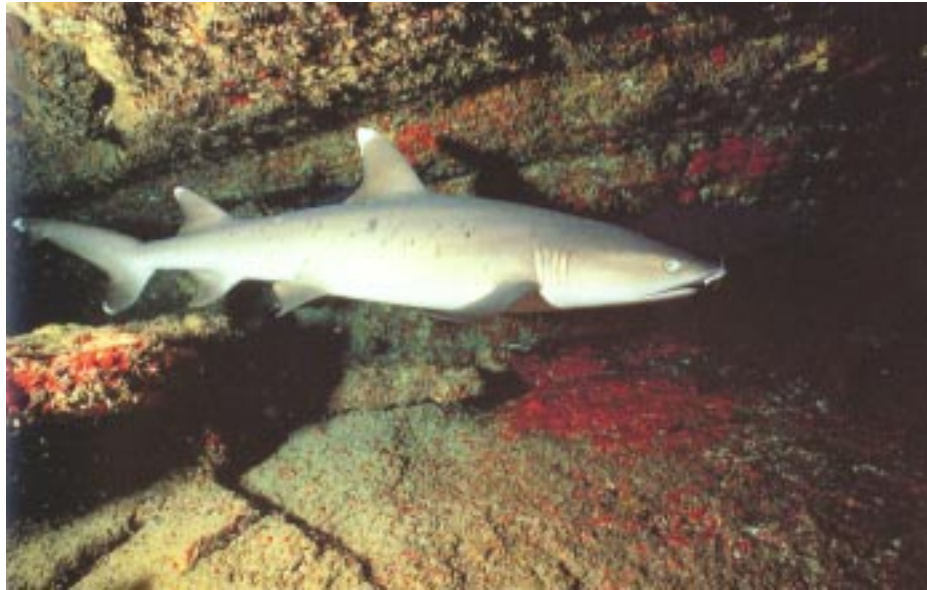
Assessment Tools

- Student Page “What’s Your Perspective?”: Evaluate on the basis of the quality of student reasoning and articulation.
- Participation in class discussions and group work
- Journal entries



Perspectives Acetates

#1 **Whitetip Reef Shark or *Manōlālākea*** (*Triaenodon obesus*)



*Photo: David R. Schrichte in John Hoover,
Hawaii's Fishes, Mutual Publishing*



#2 *Kāhili* Ginger

(*Hedychium gardnerianum*)



Photo: The Nature Conservancy

In New Zealand, *kāhili* ginger is a locally common plant often seen along river bottoms and valley floors. This nonnative species has started to appear in New Zealand's native forests and is predicted to pose a significant threat to many of New Zealand's native forest ecosystems, as well as areas recovering from disturbances such as logging. This species forms vast colonies, choking out native vegetation almost completely and preventing growth of new trees, shrubs, and forest floor plants. *Kāhili* ginger may permanently displace rare plants or cause serious losses to populations of uncommon plants and entire natural communities. To guard against this possibility, New Zealand law prohibits the propagation, sale, and distribution of *kāhili* ginger.

Should Hawai'i adopt a similar law? Why or why not?

Using the information on the "*Kāhili* Ginger Information Sheet" as well as your group's perspective card, develop a compelling, persuasive answer to this question.



Kāhili Ginger Perspectives

Cut along dashed lines

Perspective #1 Nursery Owner

Your nursery grows *kāhili* ginger and sells it to landscapers and home gardeners. Other nurseries and mail order catalogs sell this plant, and if your customers couldn't buy it from you, they'd get it somewhere else. People love this plant because of its fragrant and beautiful flowers. *Kāhili* ginger is the showiest of all of the ginger varieties, with giant flower heads of brilliant yellow flowers with protruding dark orange stigmas (flower parts that receive pollen grains) that give the flowers a dramatic look.

People like how easy these plants are to grow. Once they've become established, *kāhili* ginger plants easily spread throughout an area and require little weeding because the hearty, dense ginger growth crowds out other plants. *Kāhili* ginger helps prevent erosion and its deep green leaves form an attractive planting even when the flowers are not in bloom.

Perspective #2 Hiker

You love to walk in the forest, and your favorite time of year is August and September, when the *kāhili* ginger is in bloom. The yellow flower heads blooming along the trail fill the air with a sweet, sharp, unique fragrance. On your way out of the forest, you love to pick a few flowering stalks to take home with you. The delicate flowers don't last long, but that's a good excuse to go for another hike to pick more! The ginger fruits also provide food for birds, which you love to watch along your hikes.

Although it is not native to Hawai'i, you appreciate this plant's interesting connection to Hawaiian culture. It is named for the *kāhili*, the feathered standard that symbolized Hawaiian royalty. On its stout stalk, the flower head looks like the feathered head of the *kāhili*.



Cut along dashed lines

Perspective #3

Natural Preserve Manager

Your job is to preserve the native Hawaiian rain forest. Nonnative plant species like *kāhili* ginger make that job difficult and expensive. *Kāhili* ginger is an “invasive” plant, which means that it grows quickly and reproduces rapidly, aggressively taking over new areas and outcompeting other plants for light, water, and nutrients. That’s bad news for native plants, many of which are important in traditional Hawaiian culture. Especially threatened are the rare plants that are found only in Hawai‘i and the native animals that depend on these plants.

Eradicating ginger in an area is a labor-intensive and expensive task that requires systematic attention. Young seedlings may be pulled out, but larger, established plants must be uprooted. Large clumps can be eliminated only by cutting down the vegetation with a cane knife and then applying herbicide to the cut surface of the rhizome. These sites must be monitored for regrowth, and all of the areas of the preserve that are likely habitat for ginger must be patrolled regularly to detect new populations established by birds or rats dispersing seeds that may come from cultivated ginger around homes and businesses.

Perspective #4

Native Insect Researcher

Your studies of native *Drosophila* flies are adding to the scientific community’s understanding of evolution and island ecology. You estimate that over 800 species of flies in the family Drosophilidae have evolved here on the Hawaiian Islands over about 70 million years, all of them the descendants of just one or two ancestral species. Because they are a prime example of adaptive radiation and because their behavior and its connection to evolution is relatively easy to study, these flies are a resource of international importance.

Many of these 800 species are found only in tiny patches of habitat offering specific foods and mating sites. Since their habitat is so small, these species can easily be reduced to small numbers or eliminated by anything that degrades the forest, including invasion by aggressive plants such as *kāhili* ginger, which can completely displace all native plants in the understory. From discussions with your colleagues, you know that other researchers share your concern over the potential for *kāhili* ginger and other invasive plants to destroy critical habitat for other unique Hawaiian species.



Kāhili Ginger Information Sheet

***Kāhili* Ginger**

Hedychium gardnerianum, Family Zingiberaceae

Native to India, Himalayan region

Introduced to the Hawaiian Islands as an ornamental plant

Description

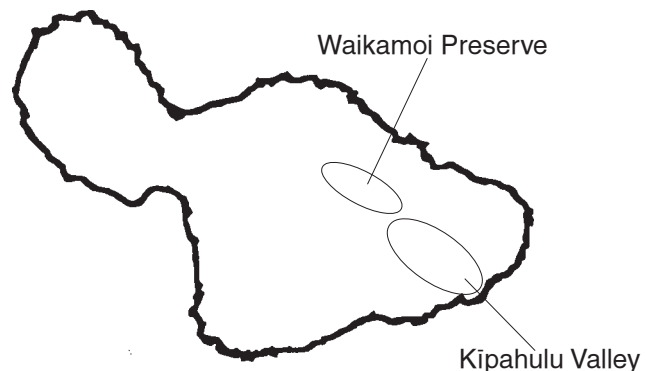
This is a large, showy ginger that can reach heights of up to six feet. It bears large heads of fragrant, bright golden-yellow and red flowers. The flower head turns into a cluster of large, fleshy, bright orange-red fruits. The fruits split open exposing bright red seeds that are very attractive to birds.

Growth Habit

Grows in dense clusters that spread by runners that extend from the base of the plant and sprout new plants

Distribution on East Maui

Kāhili ginger is grown in home gardens and landscape plantings, especially in cool, moist, sunny to partially shaded areas. It also has spread beyond cultivated areas and is now found in protected rain forest areas such as Waikamoi Preserve (managed by The Nature Conservancy) and Kīpahulu Valley (a part of Haleakalā National Park). *Kāhili* ginger is also found in Ko‘olau Gap between 600-900 meters (1968-2932 feet) elevation



and has displaced thousands of acres of native rain forest in the East Maui watershed. (Distribution is not fully known because only small areas of the Haleakalā rain forest are being actively managed and monitored for the presence of ginger.)

How Spread

Kāhili ginger may be intentionally propagated by transplanting “rhizomes” (thickened, underground plant stems that produce shoots above and roots below). Rhizomes that are dug up can also resprout—for example, in compost piles—if they are not dried and thoroughly burned. *Kāhili* ginger can also be dispersed, sometimes long distances, by birds that eat the fruits and excrete the seeds or carry them to other parts of the forest. Fruits of streamside plants can be carried downstream by running water.

Potential Effects on Native Forests

Because of its bird-dispersed seeds, *kāhili* ginger is capable of spreading to remote forests. Once established, this ginger may spread by growth of its rhizome mass. In time, this species may completely dominate the ground cover and shrub layer of invaded forests, replacing the natural understory plants and preventing the growth of young native trees.



What's Your Perspective?

1) Think back to the class activity. Can you identify any perspectives about banning or not banning *kāhili* ginger that were not presented during the activity? If so, what are they?

2) What is *your* perspective on the question your group worked on during class? Here is that question again:

In New Zealand, *kāhili* ginger is a locally common plant often seen along river bottoms and valley floors. This nonnative species has started to appear in New Zealand's native forests and is predicted to pose a significant threat to many of New Zealand's native forest ecosystems, as well as areas recovering from disturbances such as logging. This species forms vast colonies, choking out native vegetation almost completely and preventing growth of new trees, shrubs, and forest floor plants. *Kāhili* ginger may permanently displace rare plants or cause serious losses to populations of uncommon plants and entire natural communities. To guard against this possibility, New Zealand law prohibits the propagation, sale, and distribution of *kāhili* ginger.

Should Hawai'i adopt a similar law? Why or why not?



- 3) What is your opinion based on? What intrinsic and instrumental values are involved in your opinion?

- 4) Should companies that sell nonnative plants in Hawai‘i be required to provide information to customers about their potential effects on native ecosystems? Why or why not? Would it make any difference whether the plants are potentially invasive (capable of spreading out of cultivation and disrupting native ecosystems)? Why or why not?

- 5) Some companies sell plants through the Internet or mail order catalogs, shipping them around the world from a central nursery instead of through locally based nurseries. If companies selling nonnative plants in Hawai‘i were required to provide information about their potential effects on native ecosystems to customers, how could this be set up and enforced for nurseries that do business over the Internet?