5 *Honu* at Home

So happy together
How is the weather
So happy together
We're happy together
—The Turtles, "Happy Together"

Honu homebodies

If *honu* could speak, there'd be no sweeter word than "home."

As soon as we learned to identify individuals, we recognized that *honu* tend to be faithful to the same places. Some *honu* occupy exactly the same spot year after year. Some have two or three favorite places, while others are content just to stay in the same small area.

Our primary dive site stretches about half a mile, north to south. We've found that some of the turtles we know wander up and down within that area, while others stick to one specific reef. We've dived over the same reefs since 1988, and we've known certain *honu* for almost all of that time. For example, Nui and Tutu have been there since 1990.

Honu really do have a sense of place, of home—of their *kuleana*.

The *kuleana* and its *'ohana*

"*Kuleana*" is a Hawaiian word that means, among other things, "small piece of property." When we learned that the same *honu* stayed in the same vicinity year after year, we asked George Balazs if there were terms to describe the area they inhabited. He told us that there was no formal terminology that applied specifically to marine turtles. He then put forth an excellent suggestion: *kuleana*. When we heard the word, we immediately felt that his choice was exactly right.

We also needed a word to describe the group of *honu* inhabiting a

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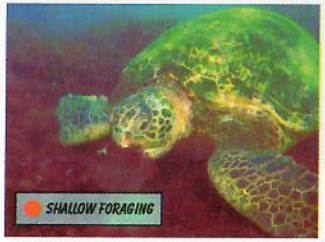
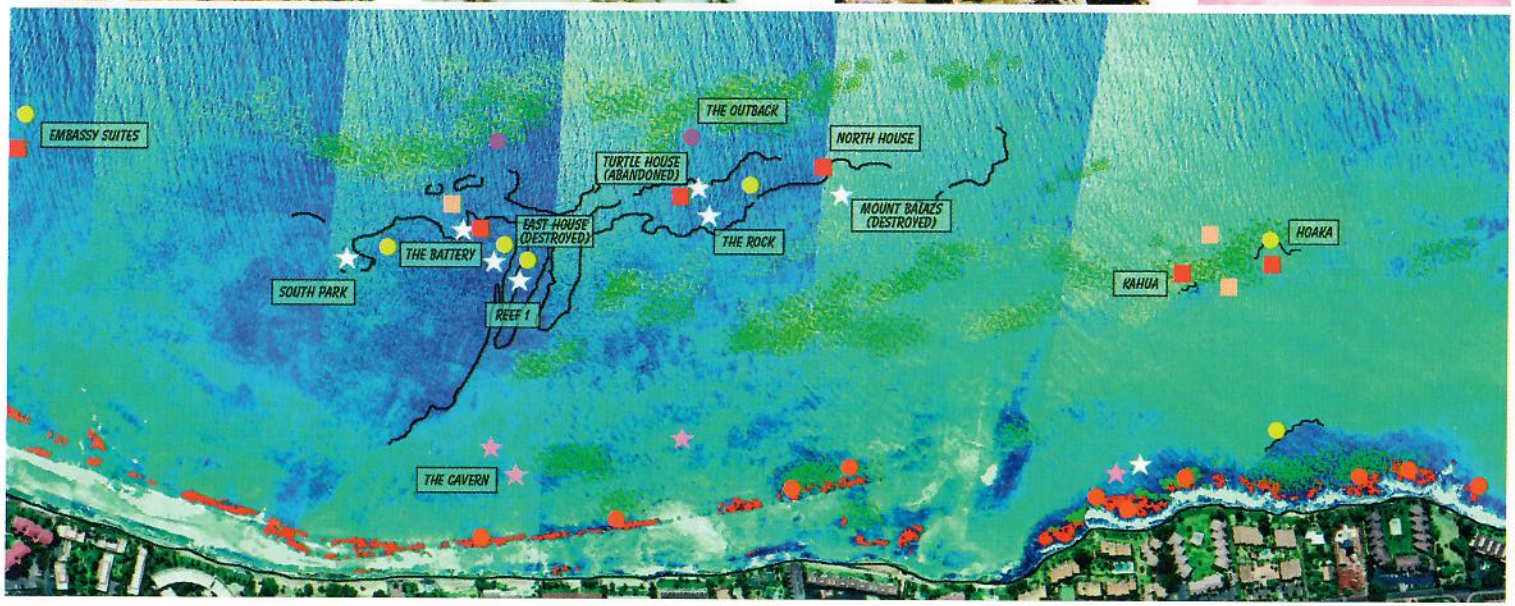




Facing page: This is the Honokōwai *kuleana,* prepared by overlaying points of interest on an aerial map created by the School of Ocean and Earth Science and Technology, University of Hawai'i, Mānoa. At least two *honu,* Nui and Tutu, have been calling Honokōwai "Reef-Sweet-Reef" since 1990.

kuleana. As before, George told us that there was no formal term, but again he had an excellent suggestion: *'ohana.* This is a Hawaiian word that is often used to mean "family" but also to describe groups that share an experience, such as a high school class or a softball team. While *honu* residing in the same territory might indeed be related—the Hawaiian breeding population is still relatively small—they aren't really a family, but they *are* an *'ohana.*

A prime *kuleana* attracts and keeps a large *'ohana.* It is divided into two distinct parts: the resting area and the foraging area.

The resting area

The resting area contains one or more extensive reefs on which *honu* can rest and peer out at their world. It's these reefs that contain the clues that tell you that you've come across a *kuleana:* Turtle Tramples.

The *honu* are hard on their *kuleana.* Corals are fragile and turtles are not. Certain types of coral—notably the finger coral known as *Porites compressa*—break easily under the weight of a turtle. Since the *honu* typically prefer to rest in the same places day after day, they often wind up making holes littered at the bottom with crushed coral, which we have dubbed Turtle Tramples because that's what turtles do.

The effect of turtles taking off and landing atop coral leaves little to the imagination, especially when you consider that many *honu* weigh over two hundred pounds. The *honu* can do damage even when resting. Just lying around breaks and grinds brittle finger corals into rubble.

Lobe corals *(Porites lobata)* and rice corals *(Montipora capitata)* are gradually worn away. The *honu* like to lie in the hollows and depressions of this kind of coral, and the constant abrasion eventually rubs the coral surface smooth.

All this wear and tear is the consequence of the preference the *honu* have for lying in "potholes," as the Hawaiian fishermen and divers sometimes refer to them. Not all potholes are formed by *honu,* but some are. Regardless of how a pothole came to be, however, the turtles like to use it.

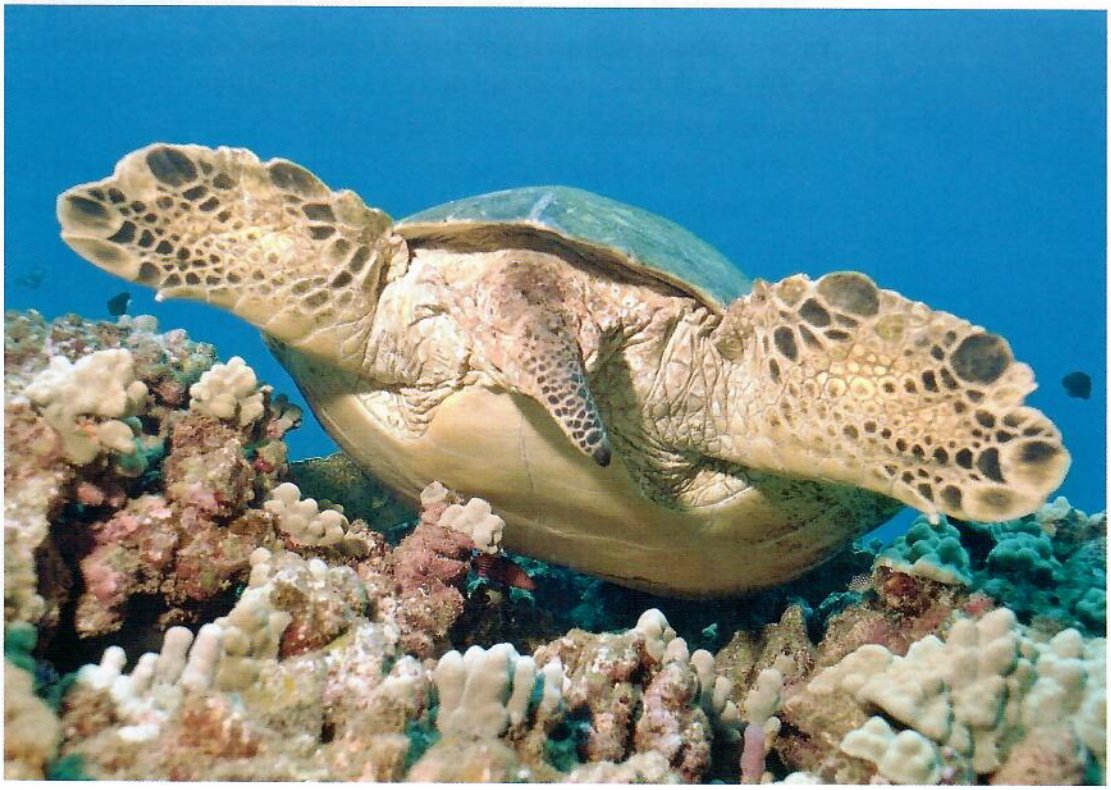
Wana settles back into in her favorite Turtle Trample after surfacing for air. When this picture was taken, she had been using this same place for three summers, but she didn't make this Trample. Other *honu* rested here long before Wana arrived at Honokōwai, and some of them still share it with her.

The foraging area

A good *kuleana*'s foraging area provides plenty of *limu* and is close to the resting site. Just like us, *honu* prefer the convenience of dinners close by.

The foraging area is most likely to be along a stretch of rocky coastline that hosts the red *limu loloa (Pterocladiella)* that is one of their preferred foods.

The *honu* eat several other kinds of *limu* as well. Here's a *honu* dinner menu, in no particular order: *Ulva fasciata* or *pālahalaha, Codium edule* or *wāwae'iole*, and *C. reediae* or *'a'ala'ula*. Seaweeds without Hawaiian names include *Amansia glomerata, Spyridia filamentosa, Acanthophora spicifera*, and *Hypnea musciformis*. (The last two of these are alien; that



Here's Tamu scratching his plastron in 1996, when he still had an immature and short tail. He's using a chunk of coral that is abrasive enough to satisfy his needs. The bad news is that constant use of the same piece eventually kills the coral polyps. Hours and hours of *honu* rubbing grind the coral into rubble. Once it is dead, algae begin growing over the debris, making it useless for scratching purposes. Eventually the *honu* abandon the site completely.

is, they are not native to Hawai'i.) All of these species grow in shallow water, usually close to shore.

Scratching posts

Aside from good foraging and resting areas, a *kuleana* should have another prized *honu* amenity: large coral heads or volcanic rock ledges on which, beside which, and under which *honu* can rub or scratch.

One of the more intriguing things you'll likely see a *honu* do is scratch. They scratch the tops of their shells, the bottoms of their shells, their soft body parts, their throats, the tops of their heads, and even their rear ends. From this we've concluded that there isn't a part of a sea turtle that they don't scratch sooner or later.

The corals of a *kuleana* bear testimony to the *honu*'s urge to scratch. Years of rubbing will wear portions of coral heads smooth. With their strong front flippers, *honu* will pull themselves forward, dragging their plastrons over the sandpaper-like corals.

Hind feet are surprisingly supple and can grasp things to the rear, allowing the *honu* to reverse gear over the same set of corals. A scratching sea turtle observed from above makes for one remarkable sight: front flippers raking forward, rear flippers returning the *honu* to its original position, accompanied by side-to-side shimmying. It looks for all the world like an old jalopy negotiating a washboard country road as seen from a helicopter.

That's just what they do for their bellies; the backs of the *honu* get scratched, too. *Honu* like to find a rocky overhang that is just the right height to crawl under and rub the top of the shell. These scratching posts are often temporary, however. *Honu* are powerful animals. The forces they generate by rising up eventually can be too much for the outcropping. If so, it cracks, then collapses, and another *honu* scratching post is gone.

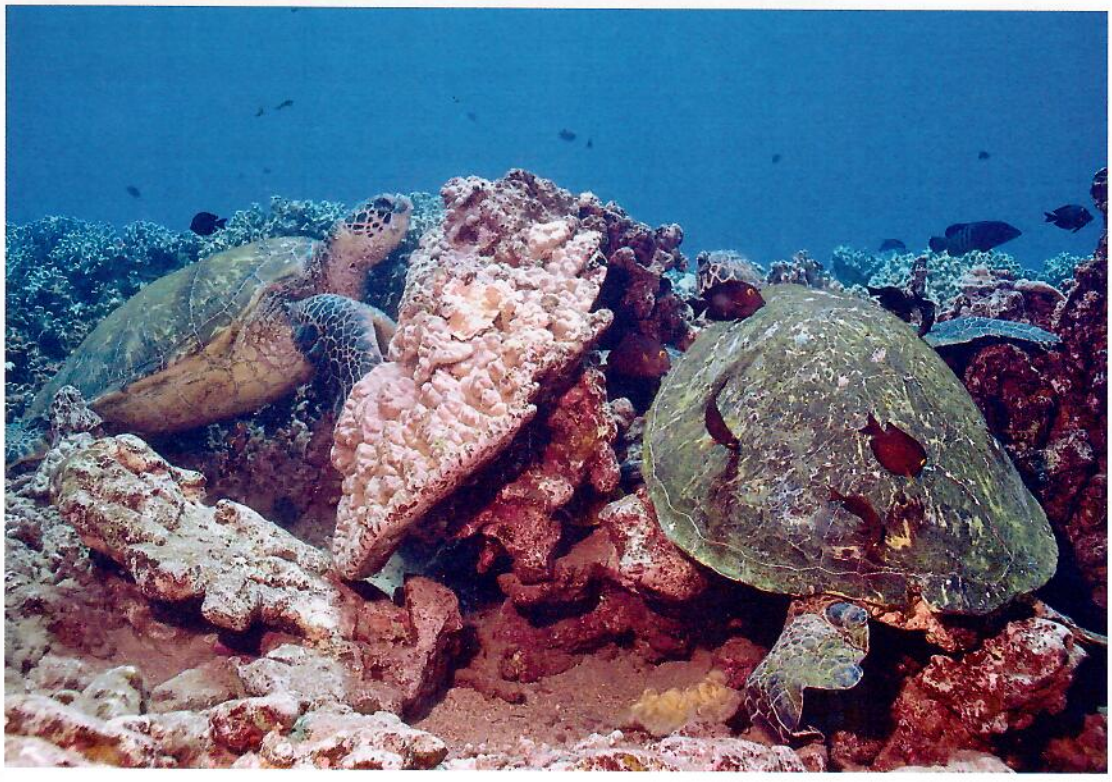
One question that still puzzles scientists is *why* they scratch. Humans and many other animals scratch because they itch, but this seems unlikely for a carapace or plastron. (After all, your fingernails don't itch, do they?) Might scratching be a part of cleaning? Nobody knows.

Cleaning stations

A *kuleana* also is likely to have one or more "cleaning stations" — places where turtles cluster while various kinds of reef fish groom them.

A *honu* snuggled away in a Turtle Trample often becomes host to a reef party. A variety of fish gather round because to them, a turtle is the reliable host for a meal: algae on the shell, for example, and even some

Facing page: When the top picture was taken in 1998, Tamu's tail had revealed him to be a male. He still liked to scratch, and here he satisfies a major itch under the lip of a large coral head at East House. For a few years, East House was a major *honu* attraction because the coral was at the perfect height to rub and scratch a *honu* carapace. You might find it interesting to match the patterns on Tamu's hind flippers with those in the photo of him scratching in 1996. These patterns are one way we use to identify individual *honu*. The bottom picture shows that by the summer of 1999, East House had been toppled. The massive overhanging coral proved to be no match for the forces created by the *honu* scratching their carapaces. Because it still provided opportunities for turtles to scratch their plastrons, the *honu* continued to be attracted to it.



skin parasites you'd rather not read about. There are two basic types of cleaner fish: herbivorous grazers and parasite eaters.

The herbivores typically swim and graze in schools. They mostly eat algae on the *honu*'s shell, although it's not uncommon for them to browse on the head or flippers as well. Where we dive, the goldring surgeonfish *(Ctenochaetus strigosus,* Hawaiian name *kole)* is the most common algae cleaner. We also see other herbivores such as convict and yellow tangs helping out. These cleaners eat with a sucking/scraping action, but the sensation doesn't seem to bother the turtles. Since the *honu* seem to enjoy scratching their shells so much, we suspect that if they can feel it at all, they probably enjoy the stimulation.

At times, one of the *honu* drifts slowly above the reef in a presentation posture, while the grazers work. The head and all four limbs hang down, completely exposing body parts for cleaning, and occasionally even the eyelids droop shut. Such a turtle looks even more relaxed and blissful than a *honu* sleeping on the bottom.

The parasite eaters are a completely different story. They nip rather than scrape and usually target skin barnacles, small worms, and other parasites found on the leathery skin of the turtles. The *honu* often flinch when one of these cleaners bites, so we suspect that there's a little pain involved. Still, a reduced parasite load is the reward for putting up with the discomfort, much like the way we tolerate getting our teeth cleaned by a dentist.

The saddleback wrasse *(Thalassoma duperrey,* Hawaiian name *hīnālea lau wili),* the most obvious parasite cleaner, is a colorful and fast-moving fish. It's rather likeable until you see one snap at a turtle's eye.

The other common parasite eater is the whitespotted toby (*Canthigaster jactator,* no Hawaiian name). This tiny fish likes to take cover under the turtle it feeds on. You often won't see it until the turtle, annoyed by the biting, gets up to leave. In the waters off Honokōwai, it's difficult to find a *honu* without a toby skulking underneath.

All of these species and more will gather where turtles like to rest. The resulting cleaning activity explains why the place becomes known as a cleaning station. We used to think that the cleaners were the reason the *honu* gathered in particular locations, but years of observation have changed our opinion. We've seen the turtles cluster around many spots where there aren't cleaners. On the other hand, we've seen the algae grazers gradually gravitate to groups of resting *honu.* We've concluded that the *honu* create their own cleaning stations.

The turtle in the foreground is Iakopa, who was tagged at Kīholo on the South Kohala coast of the Big Island. In 2001 Iakopa was reported at Olowalu on Maui and by 2003 had taken up residence at Honokōwai. Although *honu* are typically strongly attached to their foraging area, as they grow larger some of them do move about, especially those from the west coast of the Big Island. Iakopa is the Hawaiian form for Jacob. Jacob Almanza felt a special connection with the *honu*. He was just twenty-two when cancer took him from his family. May his spirit be with the *honu* forever.

Moving between *kuleana*

We've mentioned developmental habitats. That kind of *kuleana* attracts recruits but can't meet the needs of older, larger turtles, so as the youngsters mature they must eventually move on. Other *kuleana* include both developmental and adult resting habitats, in which case you'll see *honu* of all sizes. Kāneʻohe Bay, Oʻahu, and our own dive site, Honokōwai, Maui, are good examples. Many of the *honu* growing up in areas like these will stay in the vicinity after they mature, although others relocate. When they do, the search for a new *kuleana* — probably their home for the rest of their lives — can take them a long way away.

From some of the tags we've read, we know that turtles arrive in West Maui from Moloka'i and the Kona Coast of the island of Hawai'i. Although the numbers aren't high, George Balazs has collected other tag recoveries documenting cross-channel movements from one island to another.

Are these migrants, seeking new places to settle, or nomads, continually wandering? In our experience, once we've identified a new arrival we'll encounter that turtle again and again. It's true that there are constantly roving *honu,* of course, but there's a lot of evidence for strong site fidelity once they've found a place to their ultimate liking.

After they've settled into a *kuleana,* what do the *honu* do? They mostly do the same things we do at home: eat and sleep. They just tend to do it backwards from us.

Honu at rest

During the day, most *honu* seem to enjoy nothing more than sprawling on the ocean bottom. They could just be lazy, but reptiles often follow periods of eating with rest in order to aid digestion, so we prefer to think that they're hard at work processing their meal.

In any case, once a *honu* has settled down, it usually isn't long before the eyes droop and eventually close and the turtle dozes off.

Sleeping *honu* are beautiful to see, especially when they attract a cloud of colorful cleaners. Aside from that, there isn't much to say about an inactive *honu,* except "Please do not disturb!"

Honu feeding

Once you've seen both, you'd probably agree that foraging is more interesting to observe than resting. Most *honu* feed in about three to six feet of water. Occasionally you might see the *honu* grabbing a bite or two in deeper water. In our experience, this is most likely to happen right after a late afternoon visit to the surface for air. They are probably getting hungry as dinnertime grows near, so instead of heading directly back to the reef, turtles sometimes settle on the bottom amidst some algae such as *Amansia glomerata* and proceed to nibble.

We correlate this kind of foraging to cattle grazing. The turtle extends the neck, craning to eat whatever is within reach before crawling along just far enough to find more.

When we saw red oozing from a turtle's mouth and nostrils for the first time, it alarmed us. We inspected the animal closely for any sign of injury, thinking that perhaps the *honu* had swallowed a fishing hook or worse. We now view these red events for what they actually are: *turtle burps!* This portly *honu* is still busy digesting a dinner of *Pterocladiella,* the red seaweed that gives a *honu* red burps.

Lomi (tag U164) has just come back from the surface, but before settling down to rest she decides to have a little snack. Although it looks like she's eating sand, she's actually using her serrated jaw to scrape up some of the red seaweed *Amansia glomerata,* which is often covered in sand and silt. Midafternoon foraging in forty feet of water or more is not particularly unusual, but it seldom lasts more than a few mouthfuls. Most *honu* foraging takes place much closer to shore.

We don't see the *honu* spending a long time at this sort of eating. After a few minutes, the turtle usually heads back to the reef for another nap. That's why we think of it as snacking, like your trip to the fridge when you get up to stretch during a TV commercial.

In the shallows, we liken the *honu* to chickens. They hunt and peck, because the surge of the waves won't allow them to settle down and graze. Instead, feeding is an active and challenging process that involves flippers flailing just to remain right side up as the *honu* try to get at the *limu.*

Honu food processing

We have been lucky enough to be able to do some undisruptive snorkeling with the Honokōwai *honu* around sunset while they forage. We can

only admire their tenacity. They are determined and focused feeders. They rip and scrape *loloa* from the rocks, timing their mouthfuls with the ocean's swell. Waves can leave a foraging *honu* momentarily stranded on the rocks or even swept upside down, tail saluting the sky.

Sooner or later, the *honu* snatches a mouthful of seaweed. The turtle then presses the material against the roof of the mouth, ejecting water and loose debris through the nostrils, and swallows.

The *limu* is first stored in a *crop* that holds food for later digestion. It is located along the esophagus before the stomach and is actually an expansion (ballooning) of the esophagus. It's not clear what purpose it serves, but it does provide an interesting twist to our comparison of the *honu* to chickens while feeding. That's because the crop is primarily a feature of avian digestive systems. In fact, of all the species of marine turtles only some Pacific greens seem to have a crop, such as the *honu* and the Australian green turtles. Perhaps most interesting of all is that scientists don't know why this is so.

From the crop the seaweed moves into the stomach, where actual digestion starts, and then on to the intestines, where it is completed. Eventually the waste is formed into fecal pellets and discharged through the cloaca. For us, this is where it gets interesting.

There is a line that separates the casual observer of an animal from the truly involved. You cross it when you become interested in their waste matter, which we'll politely refer to as fecal pellets. We confess that we carry plastic bags on our dives for the sole purpose of collecting *honu* droppings —brownish-green nuggets that hold a gold mine of *honu* information. Fecal pellets are a way to gain at least partial insight into what the *honu* are eating. Thankfully, we're just collectors; others do the analysis.

It's easy to recognize *honu* fecal pellets. Underwater, they look much like the human version, except they're greenish. If you find one lying on the bottom, look around. It's usually only a matter of time until you find the entire turtle.

Incidentally, if you're watching a turtle underwater and you notice bubbles coming from the hindquarters, watch carefully for a bowel movement. We've noticed that the *honu* often pass gas just before more solid matter emerges.

A foraging site is another good place to find *honu* pellets, but only around feeding time. The wave energy close to shore tends to break them up and remove them or sometimes wash them onto the beach. When that happens, *honu* pellets dry out and turn dark brown or blackish. For-

A truly dedicated student of the ways and habits of *honu* displays a treasured find: a large, fresh, intact pellet of completely processed *honu* forage. A seaweed expert can analyze this sample and see what went into the front end of the turtle to result in this specimen emerging from the back end.

tunately, unlike the droppings of most land animals, the *honu* version doesn't smell or attract flies (perhaps a benefit of being vegetarian).

So you don't even have to go into the water to collect *honu* fecal pellets should you be so inclined, which we realize you most likely aren't. Just walk the beach near a foraging site and look down.

Night feeding

Casual observation easily reveals that many *honu* approach shore to feed around sunset, and that they are also feeding at dawn. Do they feed all night? George Balazs conceived a clever study to find out.

First, he used ordinary dog collars and pouches specially sewn by his wife, Linda, to fashion holders for time/depth recorders (TDRs), small electronic devices that track and store the number of minutes a turtle spends at the surface and at a particular depth.

Wana was a test subject for George Balazs' 2002 time/depth recorder (TDR) study. The small electronic device, temporarily attached to her left hind flipper, recorded depth every minute. In this way, we could determine her diving behavior over a twenty-four-hour period. This particular study confirmed that in the evening, Wana (like others in her *'ohana*) ventured inshore to feed. Here Wana had just finished some surface basking, filled her lungs with air, and with an impressive burst of powerful flippers headed straight back to her Turtle Trample.

Next, we directed George to certain *honu* at our dive site, thirty feet underwater. These were adults, the size class whose eating habits he knew least about. We selected turtles that we knew he could approach without upset and that we could rely on finding later. George easily attached the TDRs to each chosen *honu*'s hind flipper. The design made it simple for us to unclip and retrieve them when George instructed us to do so. George's colleague Marc Rice, of Hawaii Preparatory Academy, then downloaded the data for analysis. After collecting data on several turtles during two separate summers, we finally got some behavioral insights.

Typical *honu* foraging takes place around dusk and dawn in shallow water. This *honu* is feeding at a place we call the Pantry because the lush beds of *loloa* growing there often attract five or six turtles at a time. Pictures like this are difficult to get because the light is poor at sunset and the water close to shore is often murky due to the surge of the waves and percolation of fresh springwater.

The *honu* we studied spent the day resting for lengthy periods in water around thirty feet or more deep. When they surfaced to breathe, the time spent on top of the water was usually measured in minutes. Of course, we already knew this pattern from diving with the *'ohana* at our dive site.

Right around sunset, when we rarely dive, the TDRs showed that the turtles left the deeper water of the reef. For about half an hour, the *honu* were near or at the surface, the pattern you would see if they were swimming somewhere.

They eventually wound up in water that was typically less than three feet deep. The TDR printouts revealed shortened intervals between breaths, exactly as you would expect when the turtle is more active and therefore using more air. They spent less than a minute at the surface, again consistent with foraging behavior. The *honu* repeated this pattern in the early morning around sunrise.

Soon after sunset, however, some turtles moved into deeper water and

went into a resting pattern: twenty to thirty minutes at depth, broken by intervals longer than a minute at the surface. Clearly, some turtles did not feed all night. Some, however, did.

We have more puzzles now than when we started. Where do the turtles that don't feed all night go? The data did not show them swimming back to their known *kuleana* resting area. Besides, the few times that we'd worked up the courage to dive at night, we didn't sight a single *honu* in their daytime haunts. We assume the daytime feeders sleep at night, but where? Do they feed all day, or just part of the time? Do they retreat to the reefs after dark, reversing the pattern we've seen elsewhere? Nobody knows. Perhaps most intriguing, since turtles at some locations in Hawai'i (such as Laniākea on O'ahu) have switched to daytime feeding, why do some Honokōwai *honu* prefer to feed at night? The nocturnal activities of the *honu* are still mostly mysteries.

We don't know if these questions can be answered. We do know George Balazs, however. If there's a way to solve these puzzles, he'll find it.

The faithful *honu*

Over the years, several of the *honu* we've met have become long-term "friends." We've seen them summer after summer, often resting in exactly the same place where we last saw them the previous year.

Mature *honu* go missing some summers because they migrate to the breeding grounds. We worry about them, but they usually manage to find their way back. As we've described, the *honu* have strong site fidelity — they're faithful to their *kuleana*.

Still, some do locate elsewhere, particularly the males. We are more likely to lose track of newly mature males at Honokōwai than the adolescents or females. Although we see many males year after year, some move on. We don't know why the absentees go, but we have resighted a few of these missing males a few miles away both up and down the West Maui coast. Females and adolescents, on the other hand, tend to stay.

Since the *honu* are highly loyal to their breeding and resting sites, you might conclude that they also like to feed in the same places every day. As far as we can tell, you'd be right.

Once we discovered where many of the Honokōwai *honu* were foraging, we quickly determined that the same turtles usually showed up at feeding time. What we found interesting, though, was that not all the *honu* we saw at the resting site came to the foraging site that we were observing.

Conversely, some of the *honu* that we identified at the foraging site were turtles that we hadn't seen resting on the reef. Apparently, different *'ohana* share common foraging pasture.

There's also no doubt that the Honokōwai *kuleana* holds more than one place where turtles feed. Perhaps the *'ohana* spreads out instinctively as a strategy to avoid the sharks that might be attracted to a concentrated group of turtles. Maybe they are avoiding the overgrazing that could occur if they all ate together. It could be as simple as a matter of taste: Some *honu* prefer the *limu* in one location to that of another.

The foraging habits of *honu* still pose many unanswered questions. As scientists are fond of saying, "More research is needed."

Social structure

When we explain the *kuleana* and *'ohana* concepts to people, they want to know whether the *honu* have a social order. Do they form friendships? Do they even recognize each other? Is there any sort of hierarchy? Does one turtle dominate?

We often see the same turtles resting close to one another, but we don't think they do so out of friendship. It is much more likely that this happens because they share the same preference for a particular part of the reef.

They couldn't become friends unless they recognized each other as individuals. We would like to believe that they can do this because we've regarded them as individuals ever since we learned to tell them apart. Aside from wishful thinking, however, we have no evidence that *honu* have the awareness they would need to distinguish one from another.

In fact, the turtles don't even seem to have a pecking order. In other words, we have never seen evidence of one *honu* consistently dominating another, let alone a whole group. Even size is not a reliable predictor of which turtle will prevail in a confrontation — or for that matter, which one will be the aggressor. At times, we've seen the smaller *honu* chase off the larger.

Can't we all just get along?

When we first encountered the *honu,* they tended to cluster around a place that we came to call the Turtle House. We didn't know anything about their social habits, so we thought that what we were seeing was typi-

This is the *mauka* (landward) side of the Turtle House in 1996. While Limu snoozes on a coral head fractured because too many turtles used it as a scratching post, a juvenile rubs against a fallen fragment. It is exactly this sort of activity that eventually destroyed the place. The original Turtle House attracted as many as a dozen turtles at a time. The constant comings and goings, the scratching and rubbing, and even just the resting pummeled these corals to rubble. Just five years after this photo was taken, the area was drastically different. The coral head that dominates this picture is now a mere shell. The surrounding rubble is coated with brown algae, and the ocean floor here is populated primarily by sea urchins. The Turtle House is now an unrecognizable ghost town. Even the fish have moved on. The Turtle House as we knew it exists no more. Such is the dynamic nature of the *honu*'s environment. Fortunately, Hawaiian turtles are highly adaptable, surviving all manner of changes.

cal. There were usually five or six turtles resting together in what seemed to be blissful harmony.

Later we learned that gatherings of *honu* were something new. One reason was that previously, there just weren't that many *honu*. Their numbers didn't begin to increase until the mid-1980s, so they simply weren't as likely to encounter one another and cluster.

The end of turtle hunting in the mid-1970s is another probable factor. Groups of *honu* would have been prime targets for hunters. Once the killing of turtles stopped, it was safe for the *honu* to get together.

This new tendency to congregate inevitably resulted in competition for the prime resting spots. Some *honu* occupy locations that are the envy of others. When one turtle challenges another for a coveted place—and it happens a lot more often than we originally thought—the *honu* get snippy.

Honu can do damage to each other, as shown by their mating scars, but squabbles over spots aren't nearly as serious. Landing atop one another to claim a space is more likely than biting. Even the bites we've seen are really just brief, gentle nibbles, similar to the way you'd tap someone on the shoulder as a nonverbal, "Excuse me, but . . ."

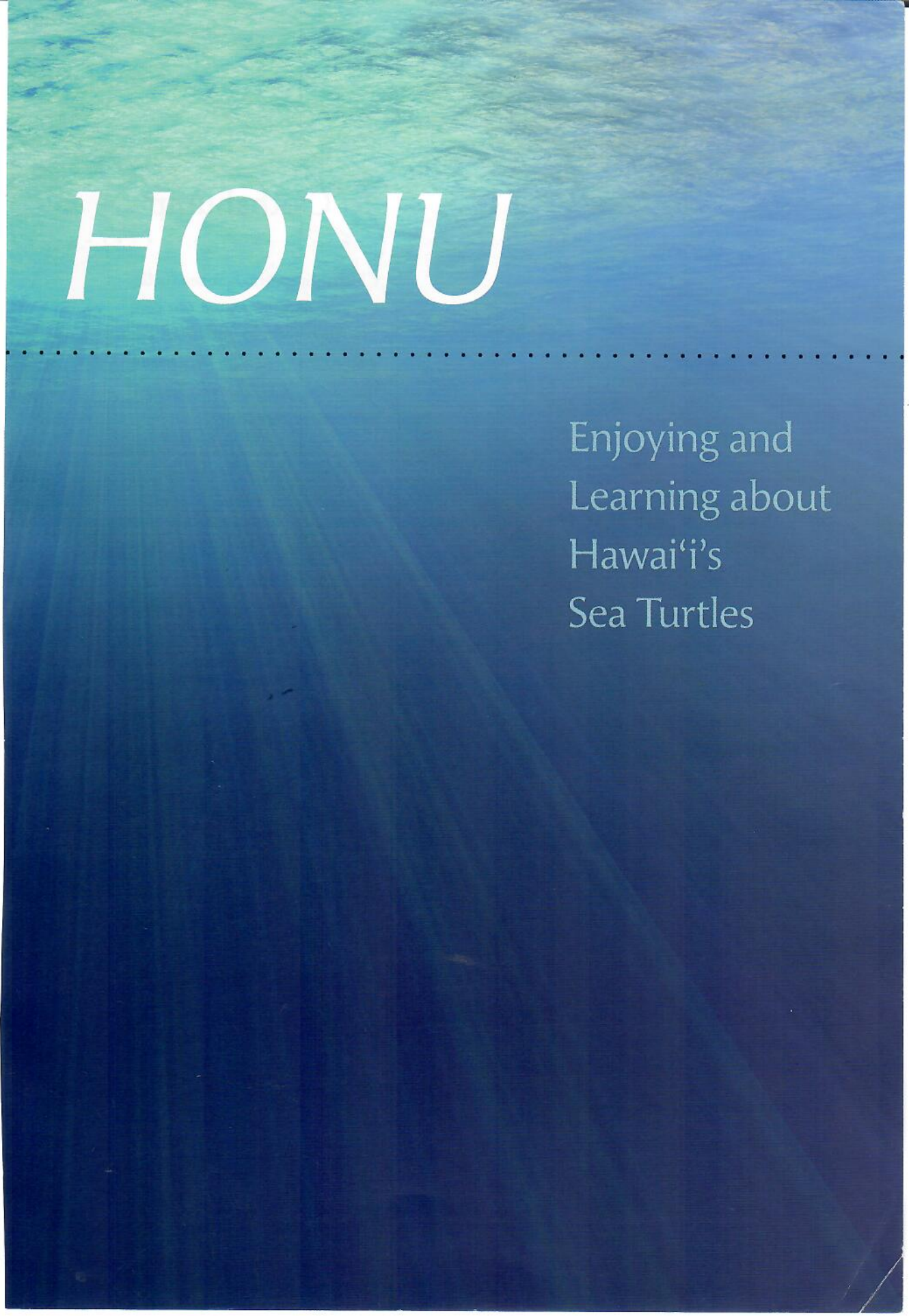
Occasionally we've observed fights that don't appear to be turf tussles. The *honu* go face-to-face, mouths open and snapping. The bouts are brief, and we've never seen any injury result from them. Why they quarrel like this, we can't say.

One thing we've never seen *honu* fight over is food. At the foraging site, *honu* concentrate on eating and struggling with the ocean surge. The turtles will feed close together, sometimes even getting tossed into one another when a wave breaks, all without even the slightest hint of discord.

THE BOOK OF HONU

Enjoying and Learning about Hawai'i's Sea Turtles

PETER BENNETT AND URSULA KEUPER-BENNETT



HONU

Enjoying and
Learning about
Hawai'i's
Sea Turtles

To Clothahump

Clothahump, the first sea turtle we ever met, known at our dive site from 1988 to 1993. Sketch in watercolor pencil on illustration board, 10" x 15". Ursula Keuper-Bennett, winter 2003.

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HAWAI'I NATURAL HISTORY

This is the first guide to finding and observing Hawaiian green turtles, or *honu*. It describes an exciting journey of discovery undertaken by two avid sports divers, Peter Bennett and Ursula Keuper-Bennett, who encountered their first *honu* twenty years ago while diving off Honokōwai, Maui. The Bennetts soon realized that many *honu* (and green turtles worldwide) were afflicted with debilitating and potentially deadly tumors. They began to document the disease using photographs and videotape and in the process educated themselves about the daily lives of *honu*. To their surprise, they discovered they were the first to make prolonged observations of a marine turtle population in its natural habitat.

Drawing on their extensive experience, the Bennetts explain how to find and watch *honu* from shore and while snorkeling, kayaking, and especially diving. They describe the behaviors they have documented over the years and what they might mean. Their rich collection of photographs will introduce readers to *honu* not only as a species, but also as individual animals whose histories they have closely followed and recorded. This special group of *honu* includes Clothahump, the one who started it all; Tutu, who has made the 500-mile migration to her nesting grounds at least six times and shown amazing fidelity by returning to the same spot on the reef after each migration; 5690, who vanished for twenty years until she decided to make her nest on the busiest beach in Lahaina, Maui; Nui, a youngster suffering from tumors who went on to beat the disease and mature into a handsome adult male; and George, the survivor of a particularly vicious shark attack.

Thanks to a highly successful conservation and research program and protection granted by the U.S. Endangered Species Act, encounters between sea turtles and humans in Hawai'i have become common. Accessibly written and extensively illustrated, *The Book of* Honu will alert turtle enthusiasts and others on what to expect when they come across these gentle creatures and how to observe them respectfully.

Since 1988 Peter Bennett and Ursula Keuper-Bennett have journeyed every summer from their home in Ontario to West Maui to dive with and learn from *honu*. They pioneered the use of underwater photography and videotaping in the study of *honu* and in 1995 developed Turtle Trax, the first web site devoted to sea turtles.