

The Samurai Crab

by Joel W. Martin

Morning arrived cold and gray, with the waves promising more storms to come. It was April, in the year 1185, and the southern Inland Sea of Japan was no place for the meek. Ships stirred restlessly, and troubled voices carried softly across the waters in the small inlet named Dan-no-ura. The Emperor Antoku looked out from his flagship across the sea and knew that his death, and the death of his people, was approaching from the east. For nearly fifty years now the struggle had raged between his people, the Heike or House of Taira, and the warriors known as the Genji, or Miyamoto Clan, from the eastern provinces. At stake was nothing less than total control of the world as they knew it.

Antoku no longer held out any hope for survival. All omens had been wrong. The previous day had seen an enormous school of dolphin approaching his flagship, marked by grey banners with the stylized butterfly logo of the House of Taira. The Royal Diviner had been requested. His prediction: that if the school of dolphin divided and went around the ship, the Heike would survive, but if they dived beneath the waves, so too would the Heike warriors go down in defeat.

The dolphin had dived before even reaching the Emperor's vessel.

Antoku surveyed the scene around him. One thousand ships made up the Heike fleet, and each bore samurai trained for battle. But across the waves, approaching as one with the oncoming storm, were three thousand ships of the Genji. Antoku turned, his very small hands clutching the dove-grey robe that denoted his status, his long black hair moving in the damp wind. Behind him was the nun of the second order, who approached him and wrapped his small body in her own flowing robe. "Grandmother, where are you taking me?" asked the Emperor, to which she replied, "There is another kingdom, beneath the waves. . . ." And clutching the boy—for the Emperor was but nine years old—to her breast, she disappeared over the side of the ship, taking with her the last hope of the House of Taira. The subsequent massacre of the Heike was both quick and brutal. None of the samurai survived, and only a few of the wives and consorts were allowed to live, claimed as spoils of battle by the victorious Genji. The war was over. The Heike were no more, and the Genji would rule Japan forever.

OPPOSITE

Painting by Utagawa Kuniyoshi depicting the battle of the Heike and the Genji in 1185, with the defeated Heike samurai turning into crabs as they are thrown from their own ship into the sea. This painting is of interest for several reasons. First, because of the artist's known life span (1797-1861) and because of the stylized nature of this painting, we can assume that the Heike legend was firmly established before the early 19th century. Second, although the artist was familiar with the story, he was less familiar with crabs; the ones in the painting belong to at least two different families, neither of which is the correct family for the true "samurai crab" (*Heikea japonica*). The lateral spines and long claws of the three crabs on the left, clearly different from those on the real samurai crab, place them in the family Portunidae. Crabs closer to the ship are possibly members of the family Grapsidae, as they appear more rectangular and have shorter claws. None of these crabs looks at all like a Dorippidae, the family of the samurai crab.

THE ABOVE STORY IS TRUE. There was indeed a large-scale naval encounter in the small bay called Dan-no-ura, southern Inland Sea of Japan, in the spring of 1185 (in some references March, in others April), and the outcome of the battle was a decisive victory for the Genji. More important, though, than establishing the Genji as the ruling party, the battle marked the end of the Age of Courtiers in Japan (A.D. 710-1185), with power transferring from the court aristocracy to the warrior class, and ushering in the age of the military leaders, or shoguns. Called by historians the period of Medieval and Feudal Japan, the shogunate was to last until 1868. History tells us, through several extant versions of the *Heike monogatari* (story of the Heike), that the Genji arrived in a storm and therefore surprised the Heike, that the Emperor Antoku was only nine, that he (or at least his guardian) chose death over defeat, and that those loyal Heike samurai not choosing death by their own hands were thrown into the sea by the conquerors. The events are not difficult to believe; it is the nature of man to war. But the tale has generated other stories that are not true, and they are the subject of this essay.

The first story generated by the events depicted in the *Heike monogatari* is that the Heike still live on the floor of the Sea of Japan. Actually, some survivors of the Heike lineage do survive, and they commemorate in April of each year the battle of Dan-no-ura, and the events that followed the massacre, in coastal Japanese villages. But what lives on the floor of the Sea of Japan and surrounding bodies of water are not people, but crabs. According to the myth, these crabs are the ghosts of the Heike warriors, hideously transformed after their loss and doomed to walk the abyss for all time.

How could such a myth originate? Actually, it is easy to see. These crabs, whose scientific name was until recently *Dorippe japonica*, have a pattern of grooves and ridges on their backs that bear an uncanny resemblance to a human face; more precisely, they resemble the grimacing face of a samurai warrior. These are samurai crabs, known throughout the Orient as *Heike-gani*, the crab of the Heike.

I do not know when this myth first appeared. There is no mention of samurais turning into crabs in the versions of the *Heike monogatari* I have seen. But the legend must be fairly old; although the exact date of the painting depicting this event on the opposite page is not known, the Japanese artist, Utagawa Kuniyoshi, lived from 1797 to 1861. Furthermore, the stylization of this painting indicates that the story on which it was based was not new but had been handed down from previous



The samurai crab, *Dorippe* (now *Heikea*) *japonica*, showing on its back the remarkable resemblance to a scowling human face formed by grooves and elevated areas of the carapace (shell). This specimen is a male collected in Ariake Bay, off Kyushu, Japan, in 1968, on loan to the Natural History Museum from the Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands. Total width across the crab's back at its widest point (the "cheeks" of the face) is only 20.4 mm (0.8 inches). The last two legs on each side are reduced and claw-like for carrying objects. In this specimen, the second walking leg on the left side has been lost and regenerated, accounting for its small size compared to the right side legs.



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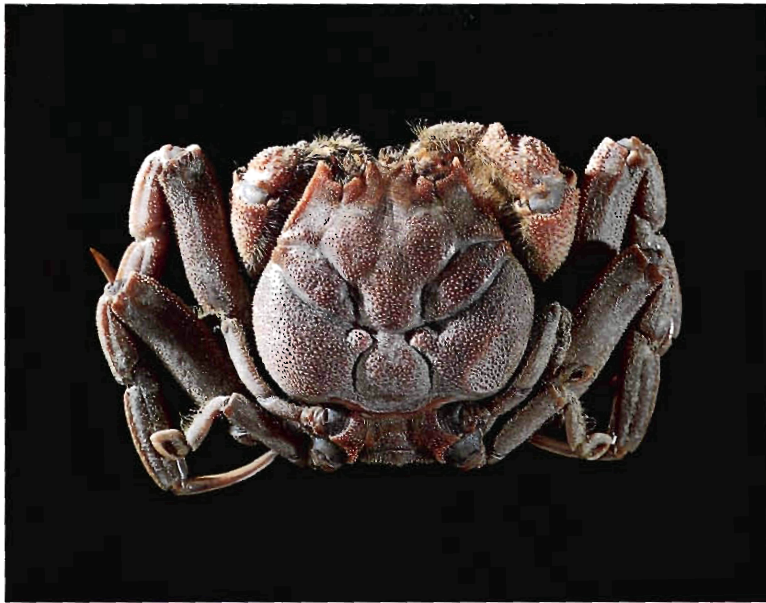
generations. And there are other old references pointing out the similarity of these crabs to human faces. In the *Wakan-sansai-zuc*, the second encyclopedia published in Japan (1716), there are illustrations of *D. japonica*, which at the time was called either *Takebun-gani*, after Takebun, who came to Japan at the time of the Mongolian invasion and was drowned, or *Shimamura-gani*, after Danjo Shimamura, slain in the fourth year of the Kyoroku era and whose spirit was said to hover about the area. Indeed, it seems likely that the man-crab legend even precedes the date of the battle of Dan-nomura, and was merely fitted to those events later, rather than being newly created at that time. And it is not difficult to see how fishermen around the Sea of Japan could see these crabs and envision the reincarnation of the lost Heike samurai. The red coloration of these crabs in life was also thought to reflect the Heike, as some versions of the *Heike monogatari* list red as the color of the flags of the House of Taira.

The second myth is that the crabs did not always look like they do now. Rather, the story goes, the resemblance to a human face, and especially to a samurai face, was created by artificial selection. Artificial selection is man's version of natural selection, where certain lineages survive not because of the forces of nature, but by man's intervention. Examples are very common; all domestic animals are the result of purposeful intervention (selective breeding) by man. According to the samurai crab story, Japanese fisherman, who have plundered these waters for thousands of years, would throw back any crab caught in their net if it resembled a human face, especially the face of the long lost Heike, keeping and eating only those

crabs that did not make them feel cannibalistic. Many years of throwing back faced crabs and weeding out (eating) normal crabs resulted in the faced crabs being the major contributors to the gene pool, with man in the role of a selective force shaping subsequent populations: a very pretty example of evolution over a relatively short time span, and one of sufficient interest to have filtered down to popular articles on natural history. In fact, the well-known evolutionary biologist Julian Huxley (grandson of the more famous T. H. Huxley, who was known as Charles Darwin's "bulldog" for his adamant support of Darwin's then-controversial ideas about natural selection, and brother of the novelist Aldous Huxley) wrote about these crabs in *Life* magazine in 1952, stating that "the resemblance of *Dorippe* to an angry Japanese warrior is far too specific and far too detailed to be accidental; it is a specific adaptation which can only have been brought about by means of natural selection operating over centuries of time. It came about because those crabs with a more perfect resemblance to a warrior's face were less frequently eaten than the others." More recently, samurai crabs were used to illustrate the power of artificial selection in Carl Sagan's popular 1980 book *Cosmos*. Both accounts make for interesting reading, and tell the story of crabs turned into samurai likenesses by human hands.

Interesting reading, but it isn't true.

The grooves and ridges on the backs of crabs have specific purposes and are not merely decorative. The grooves are external indications of supportive ridges, called apodemes, inside the crab's carapace that serve as sites for muscle attachment. Elevated areas between these grooves allow for an increase in internal space, so that the various



Nineteenth-century woodblock Kabuki print by Utagawa Toyokuni III.

Although *Heikea japonica* is the best known of the "faced" crabs, several other species have a carapace (shell) that bears a likeness to a human face when viewed from above. On the top is *Paradorippe granulata*, a northwestern Pacific species that, like *H. japonica*, bears an obvious resemblance to the scowling face of a samurai warrior. In the center is *Dorippe sinica*, known only from Japan, a species with markings that are similar to, but less distinct than, those of *H. japonica* and *P. granulata*. On the bottom is the northeastern Atlantic *Corystes cassivelaunus*, a species unrelated to the dorippids (it is a member of the family Corystidae) but nevertheless bearing markings slightly reminiscent of a human face on its back because of similar functional constraints of the carapace. Perhaps because the similarity to a human face is weak, one of the common names for this species is "masked crab." Specimens courtesy of Dr. Lipke Holthuis and C.H.J.M Fransen, National Museum of Natural History, Leiden, The Netherlands. Photos by Dick Meier.

parts of a crab's viscera — gastric, hepatic, cardiac, branchial, etc. — are reflected externally. This is not to say that these structures are unaffected by selection. They are as subject to evolutionary pressures as any other feature of a crab. The point here is that these ridges and grooves occur in nearly all members of the crab family Dorippidae, whether they live near Japan or not. As pointed out by the great Japanese carcinologist Tune Sakai, there are at least 17 different species of crabs in two families in the Indo-West Pacific that are similar enough to be called *Heike-gani* by local residents, and there are many related species from other far off waters that bear a likeness to a human face. Many Asian countries have vernacular names to account for the similarity of such crabs to a human face, such as the Chinese name Kuei Lien Hsieh (Ghost or Demon faced crab), and in several countries the crabs play a prominent role in local folklore, sometimes being considered sacred, with the face representing that of a deceased relative. In the northeast Atlantic, the crab *Corystes cassivelaunus*, although only distantly related to dorippids (and belonging to a separate family, the Corystidae), bears a similar arrangement of grooves and elevations of the carapace that have resulted in one of its common names, the "masked crab." Additionally, fossils of dorippid crabs or closely related crab species are known from sites predating man's appearance on earth. Furthermore, and most damning to the myth of reincarnated samurai warriors, the fisherman who make their living from the Sea of Japan do not eat *any* of these crabs. Whether they resemble a samurai, a human

face, or merely a crab is a moot point; all are thrown back. For *Dorippe japonica* reaches a maximum size of only 31 mm (1.2 inches) across the back, not at all worth the trouble of retrieving from the nets, let alone sorting through to see which ones resemble a face and which do not.

And yet the Heike will not be forgotten. A recent revision of the crab family Dorippidae found that the species *Dorippe japonica* differs in several respects from other members of the genus *Dorippe* — so much so, in fact, that it was necessary to place the species in a separate higher taxonomic category (genus). And following the rules of priority in handing out scientific names, the name *Dorippe* must remain where it was first used, necessitating that a new name be created to accommodate the samurai crab. Dr. Lipke Holthuis, formerly of the Rijksmuseum in Leiden, and Dr. Ray Manning, of the Smithsonian Institution's U.S. National Museum, performed the transfer and proposed the new name in 1990. And they chose a most appropriate one: the samurai crab will henceforth be known as *Heikea japonica*, in honor of the defeated Heike warriors who drowned at the hands of the Genji in the Inland Sea of Japan in 1185. And so the Heike will indeed be forever remembered in the form of crabs that roam the bottom of the Sea of Japan.

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Map of southern Japan, showing the location of the battle of Dan-no-ura near what is today Shimonoseki, in the southern Inland Sea of Japan.

