This study attempts to explain a traditional form of facial tattooing, called moko, practiced by the Maori until the mid-20th century. The Maori are an indigenous Polynesian culture residing in New Zealand. Moko procedures were irreversible and potentially deadly. Costly Signaling Theory (CST), derived from evolutionary biology, addresses cultural behaviors that are risky or apparently wasteful. The theory asserts that a costly signal can honestly communicate a specific quality about the signaler, such as fitness or wealth. Both signal senders and receivers benefit from an honest signal. Recent studies in anthropology have expanded the application of CST to such phenomena as religious ritual and body modification. By examining historical sources and detailed ethnographic accounts, I evaluate four hypotheses for the explanation of traditional Maori tattoo. I argue that male moko may have signaled commitment and ferocity in war to both allies and enemies. In addition, males signaled mate qualities such as status, wealth, and bravery that were important for females and their guardians to accurately assess. I argue that female moko may have signaled potential mate qualities such as rank, wealth, and sexual maturity/availability. These findings are significant, as they may aid us in understanding the purpose of painful and costly body modification in any human culture.