

Natural history and values of the kanamaluka / Tamar estuary

Formation, function, and ecology

The kanamaluka / Tamar estuary is unique in many ways. Fed by five major river systems, it drains the largest catchment in lutruwita / Tasmania, and is the longest navigable estuary in Australia. Home to many unique and threatened plant and animal species, it is truly a special place.

HOW WAS IT FORMED?

In the early geological history of lutruwita / Tasmania, instead of the Tamar Valley, there was a large peneplain, or dolerite capped lowland area, that had been worn down by millions of years of erosion.

From 95 to 65 million years ago, earthquakes split this peneplain apart, creating the highland areas of Mt Arthur, Mt Barrow and Ben Lomond to the east and the Western Tiers to the west. Between them a deep trough extended from the Bass Basin, which is now Bass Strait, to the midland's plains. Rivers flowed into the trough creating a lake which later became the Tamar Valley. It filled up with unconsolidated gravels, clay, sands, and boulders, and about 55 million years ago the lake was breached and drained.

Over approximately 25 million years, the South Esk River wandered through the old lake sediments. Being unconsolidated, they were easily eroded and carried out into the Bass Basin. This created the Tamar Valley – a low trough ten kilometres wide, bordered by dolerite hills. It stretched beyond present day Launceston as far as Evandale.

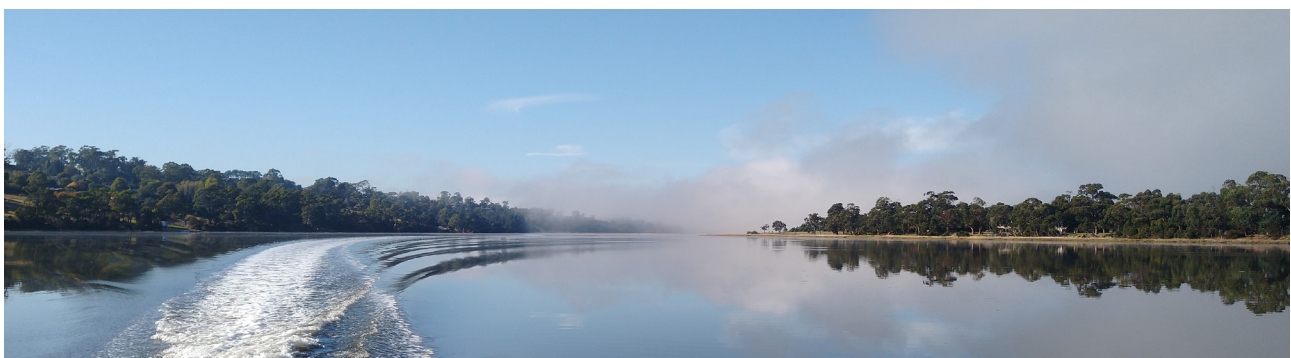
Between 35 and 47 million years ago, several large lava flows occurred throughout the valley. Lava cooled to form basalt, which helped to shape the estuary and its rivers by constraining the flow of water.

DROWNED RIVER VALLEY

About 5 million years ago, seawater entered the Tamar Valley, drowning the lower parts of the valley and turning the kanamaluka / Tamar from a river into an estuary. Changes in sea level occurred frequently, especially over the past 2 million years with the Ice Ages. In times of lower sea level, the kanamaluka / Tamar continued to erode down into the sediments, forming what would later become a shipping channel. Elevated sea levels began to fill the estuary with more sediments as the rivers eroding the sides of the valley deposited silt. The most recent change is sea level rise occurred between 13,000 and 6,500 years ago.

Drowned river valleys exist in many other locations around the world, and the natural process of drowned river valleys is to infill with sediment over long geological time-frames. Tidal influences cause sediment to accumulate on the edges of estuaries, creating mudflats. As they consolidate, mudflats create space for reeds and other vegetation to establish, which in turn creates habitat for various animal species. Mudflats also allow for distinct channels to form, directing flows through these channels. This process establishes estuary banks and stabilises the system.

Below: the kanamaluka / Tamar estuary is the longest navigable estuary in Australia at 70km long.



BIODIVERSITY AND NATURAL VALUES

The kanamaluka / Tamar estuary is home to a diverse range of plants and animals.

Ranked as the second most diverse estuary in lutruwita / Tasmania (out of 111 assessed), the estuary and its foreshore contain numerous habitat types including saltmarsh, seagrass, wetlands, mudflats, soft coral, and sponge gardens. In turn, these habitats are sanctuaries for a myriad of important, and sometimes threatened, flora and fauna species.

Migratory species

Migratory fish species rely on being able to safely pass through estuaries to complete their journey. The kanamaluka / Tamar estuary is used by at least ten migratory fish species – including several species of *Galaxiidae*, the threatened Australian grayling, the endangered Tasmanian mudfish, and the short-fin eel. The short-fin eel is one of the most fascinating migratory species, migrating up the east coast of Australia via the kanamaluka / Tamar estuary, to the Coral Sea to spawn. Larvae must then undertake the arduous return journey to the head water streams to colonise the kanamaluka / Tamar estuary and Esk rivers catchments.

Wetlands and threatened vegetation communities

The upper estuary, including the Tamar Island Wetlands Reserve, is part of the Tamar River Conservation Area and is recognised as an Important Bird and Key Biodiversity Area. Wetlands, including

mud flats and shoals, provide an important habitat for a wide variety of species including migratory birds, such as herons, oystercatchers, and chestnut teals.

The Tamar Island Wetlands Reserve has been an important breeding area for the nationally vulnerable green and gold frog, and home to the endangered striped marsh frog. Reptiles such as the rare glossy grass skink, and the more common metallic skink and lowland copperhead snake, also make their home in the reserve. The common rush dominates the wetland landscape, creating one of the last native grass wetlands in the kanamaluka / Tamar estuary and providing habitat for the rare great bindweed in the summer.

Threatened vegetation communities occur in several places along the kanamaluka / Tamar estuary, including the swamp paperbark and saltmarsh.

Marine habitats

The lower end of the estuary has more of a marine influence and is home to large numbers of endemic species that are not found anywhere else, including seahorses, sponges, and soft corals. Highly productive ecosystems such as seagrass meadows and rocky reefs are also found near the mouth of the estuary; providing important nurseries and habitat for many species including acting as shark nurseries. The entire kanamaluka / Tamar estuary is a Protected Shark Refuge, protecting school and gummy sharks as well as all rays and skates that call the kanamaluka / Tamar estuary home.



Above: the big belly seahorse (*Hippocampus abdominalis*) is just one of the hidden treasures of the lower kanamaluka / Tamar estuary. Photo credit: David Maynard.



Above: bee on great bindweed (*Calystegia sepium*), at the Tamar Island Wetlands. Photo credit: Helen Cunningham.