**Eastern King Prawn Habitat**

*Managing land to grow more prawns*

We now know more than ever about the ways in which healthy habitat and good quality water benefit Eastern King Prawn, helping them survive adversity and thrive in the good times. In NSW, the Clarence, Hunter and Lake Macquarie estuaries are particularly important for Eastern King Prawn. All of these estuaries have lost some of the essential habitat that helps sustain prawn populations, however, in recent years work has started to repair the damage and return important areas to a more natural state. Prawns are just starting to take advantage of these improved conditions, which is good news for the prawns, the commercial fishery and the local coastal communities it supports.

The most important habitat for juvenile Eastern King Prawn (EKP) is the estuary. Juvenile prawns depend on nursery areas in estuaries to grow to adulthood, before moving out to sea to complete their life cycle. The healthier the mangrove and saltmarsh habitat, the greater the carrying capacity of the estuary to support and grow more prawns. However, until now there has been little detail about which parts of the estuary are more important to young EKP. Researchers have spent several years using a combination of methods, including specialised research sled nets and chemical ‘signatures’, to identify where the prawns came from, what they had been eating and where their food was from. This is what they found out.
Good juvenile EKP habitat

- An estuary has different areas that are potential habitat for juvenile EKP. Where EKP are found depends on currents, salinity, and food availability.
- Ideal habitat areas have a supply of food, the salinity isn’t too low, and the temperature isn’t too cold.
- Shallow sand flats with low currents and marsh channels that are submerged across all tides are ideal. In some estuaries, the juveniles are more abundant along the littoral zone of shallow, muddy creeks near mangroves, while in others they were found mainly on seagrass beds.
- Stable temperature and salinity are best. Rapid declines in temperature and salinity levels, such as what can happen during flood events, can result in juveniles dying and any survivors generally don’t grow well.
- Young EKP have a varied diet, eating plant material, crustaceans, microorganisms, small shellfish, and worms. Much of their nutrition is derived from saltmarsh habitats and is transported to the subtidal waters where the prawns live.
- Estuaries need to be connected to wetlands, saltmarsh areas and floodplains. Cutting-off tidal flows and draining wetlands reduces food availability and has had a significant impact on EKP populations. Restoration of more natural tidal flows is having a positive impact on EKP.

Supported by good land management

- Understanding the nursery value of different areas within an estuary, and the processes that make some areas more valuable than others, allows managers to:
  1) prioritise areas for rehabilitation that are likely to result in the greatest benefits for EKP
  2) consider factors that may increase nursery value when engineering rehabilitation works
  3) estimate the potential outcomes of different rehabilitation scenarios.

Keep it all connected

- Hydrological connectivity in estuaries needs to be maintained or restored. This includes both connections along creeks and rivers to the ocean, and connections to floodplain wetlands, both saltwater and freshwater.
- Tidal flow should be as natural as possible. Tidal flushing ensures food supply from saltmarsh and mangroves, helps maintain stable salinity, and enables prawns to move into and out of habitats as their suitability changes or as the prawns’ needs change.

Protect Seagrass

- Reduce the impacts of marine infrastructure on seagrass beds. For example, replace traditional moorings with environmentally friendly designs to reduce scour.
- Water quality affects seagrass. Good quality water means less algal growth on the seagrass, higher productivity and greater resilience to flood and other adverse events.
- Turbidity and sedimentation can reduce the productivity of seagrass. Fencing waterways to better manage livestock access, controlling erosion and managing urban stormwater helps reduce sedimentation and nutrient loads to the estuary.

Give Saltmarsh room

- Saltmarsh wetlands are an important source of food for juvenile EKP. These areas also protect estuary foreshores by absorbing the energy of wind and wave action and providing a natural buffer that helps minimise erosion and play a major role in carbon sequestration.
- As sea level rises, mangroves migrate landward. Areas where these plants can retreat with sea level rise need to be identified and protected to allow mangroves and saltmarsh to adapt.

Saltmarsh has a significant economic value. For example, in the Clarence River, the fisheries harvest derived from saltmarsh productivity is around $25,000 per hectare per year.