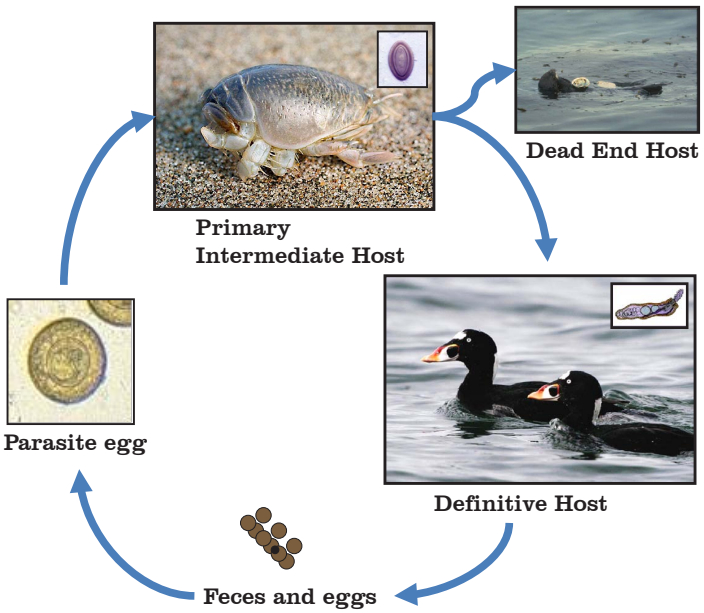
Acanthocephalan Parasites: Fact Sheet



A parasite is an organism that lives in or on a host (another animal or plant) and usually causes harm to its host organism. Nearly all animals have parasites and they are therefore an important part of ecosystems. There are many different types of parasites, including parasitic worms. Members of the phylum Acanthocephala are known as "spiny-headed worms" and are characterized by the presence of an evertable proboscis (a feeding or sucking organ), armed with spines. These parasites have complex life cycles that require multiple hosts. As juveniles, they live in crustaceans such as sand crabs. As adults, they live in the digestive tracts of vertebrates such as sea otters or birds.

Life Cycle

In the ocean, acanthocephalan eggs float freely in the water until they are accidentally ingested by suitable intermediate host. The acanthocephalan *Profilicollis altmani* uses Pacific mole crabs (*Emerita analoga* in California) and spiny mole crabs (*Blepharipoda occidentalis*) as intermediate hosts.

Once these crabs eat an acanthocephalan egg, the eggs develop into a juvenile parasite, called a cystacanth. The definitive host is infected when it ingests an infected mole crab. Various coastal birds are a definitive host for this acanthocephalan, meaning that the parasite develops into an adult and can reproduce. The cystacanth excysts (emerges from its cyst) in the small intestine and matures into an adult worm. Eggs are then produced by the adult acanthocephalans and pass out of the bird in the bird's feces back into the ocean to continue the cycle. Seabirds that are infected by this acanthocephalan include gulls, Willets, Sanderlings and sea ducks such as Surf Scoters and Common Goldeneye. The parasites affect California sea otters as well, but they are called a dead-end host because the parasites are not able to reproduce nor continue their life cycle.

Effects on Organisms

Pacific mole crabs are the primary intermediate host for acanthocephalans. In mole crabs, the parasites are located in the posterior hemocoel near the mid-gut. This parasite is prevalent in mole crabs with many of the largest mole crabs being infected. The parasites are not lethal to mole crabs, although they could affect their behavior, perhaps making them easier prey to fish and birds. In both the definitive and dead-end hosts, Acanthocephalans induce peritonitis, which is inflammation around the abdominal cavity. Peritonitis occurs when larval Acanthocephalan parasites that reside in the intestine migrate through the intestinal wall, allowing bacteria to infect the abdominal cavity.

Acanthocephalan peritonitis can cause death in its final hosts. It is currently estimated that 13–16% of deaths in the threatened California sea otter population have been caused by infection with this parasite. In addition, unusually high loads of acanthocephalan parasites have been linked to episodic deaths of thousands of Surf Scoters. Monitoring helps us to understand the life cycle, seasonal cycles, and prevalence of the parasites in populations of mole crabs and can lead to a better understanding of the prevalence of infection in otters and sea birds.