

western Canada, some genera of which still exist. Of approximately 60,000 insect species and subspecies recorded from Canada, several hundred have not been recorded elsewhere, and many of these (particularly from arctic areas) will prove to be endemic Canadian species.

The arachnida, including the spiders, mites and ticks, harvestmen, scorpions, solifugids, false scorpions and a number of lesser orders, comprise the second largest arthropod group in Canada. Fewer than 10,000 species are known from the region to date but the total number will undoubtedly prove to be several times larger. The mites and ticks (Acari) are by far the largest and most diversified group. Free-living species are common in fresh waters and in marine intertidal habitats. Most species are parasitic on other animals and on plants, and some are vectors of disease (e.g., Rocky Mountain spotted fever). Fewer than 1,000 species of spiders (Araneida) are known from Canada. Most are terrestrial but some live along the seashore and a few (Dolomedes) are aquatic and sometimes prey on small fish. Only about two dozen species of each of the harvestmen or daddy-long-legs (Phalangida) and false scorpions (Pseudoscorpiones) and one each of the sun spiders (Solifugae) and true scorpions (Scorpiones) are known from Canada.

The sea spiders (Pycnogonida) are slender-bodied arachnid-like arthropods that resemble harvestmen. About 50 Canadian species are known, mainly from the Pacific and Arctic coastal regions but some species range into the ocean abyss. The horseshoe crabs (Xiphosura) are not true crabs but are distant cousins of the spiders and scorpions. *Limulus polyphemus* is common on mud flats of the Atlantic Coast north to central Maine, but specimens occasionally turn up in the Fundy region of Eastern Canada.

The centipedes (Chilopoda) and millipedes (Diplopoda) each number about 75 species in Canada. Almost half of the species have been introduced by the early settlers and by subsequent accidental importation with exotic plants. These and a few species of Paupopoda and Symphyla, minute wingless wormlike soil-dwelling arthropods, occur only south of the treeline and the permafrost.

The crustaceans are the largest primarily aquatic group of arthropods. Approximately 1,500 species have been recorded from Canada. The small and microscopic, primitive crustaceans (Entomostraca) including fairy shrimps, tadpole shrimps, clam shrimps, seed shrimps and water fleas, are primarily or exclusively confined to fresh waters, although the seed shrimps (ostracods) and copepods are both marine and freshwater, and the barnacles (cirripedes) are exclusively marine. On the other hand, the larger, macroscopic, more highly evolved crustaceans (Malacostraca), including the nebalicids, mysid (opposum) shrimps, amphipods, isopods, sea mantis, euphausiids (krill) and the decapod shrimps, hermit crabs and true crabs, live mainly or exclusively in the marine environment. However, a few mysids, several families of isopods and amphipods as well as some decapods (e.g., crayfish) are more common in fresh waters, and one group of each of the isopods (sow bugs, pill bugs) and amphipods (beach fleas, leaf litter hoppers) have become essentially terrestrial.

Crustaceans are very important in the economy and ecology of the aquatic environment. In the sea, the copepods are the dominant planktonic animals that feed upon the microscopic phytoplankton of the upper water layers and in turn provide the basic food item for marine fishes, and hence indirectly for man. *Calanus finmarchicus* often swarms at the surface over the Canadian Atlantic shelf region (e.g., Grand Banks) and colours the sea reddish. Crustaceans of wider gastronomic familiarity (copepods are actually edible) are the larger, free-swimming decapod shrimps (*Pandalus borealis*, *P. montagui*) or bottom dwelling crustaceans such as the American lobster (*Homarus*) and larger crabs (*Chionoecetes opilio*, *Geryon quinquegens*) that can be fished in deeper parts of the shelf region. Since 1950, the average value of the Canadian maritime lobster industry has been approximately \$25,000,000 a year and has been holding up well despite a gradual decline in availability of market-size animals. Cancer crabs, frequently captured in lobster pots, are edible but too small to be profitably marketed. On the Pacific Coast, however, the Dungeness crab (*Cancer magister*) is the basis for a valuable crab fishery.