



ARTHROPODS

ARTHROPODS (*bandpāyān*), or ARTHROPODA, largest and undoubtedly most diverse animal phylum, comprising an estimated seventy-five to eighty percent of all known species in the kingdom; representatives of both major extant subdivisions occur within Iran. The subphylum Chelicerata embraces spiders, *'ankabūtīān*, scorpions, *'aqrahā*, and their kin (Class Arachnida) (see [Arachnids](#)). More numerous and varied, however, are the Mandibulata, a subphylum encompassing crabs, *kaṛčanghā*, crayfish, *kaṛčanghā-ye āb-e šīrīn*, and their ilk (Class Crustacea), as well as centipedes, *šadpāyān*, and millipedes, *hazārpāyān* (Classes Chilopoda and Diplopoda, respectively), which, combined with the minor Classes Pauropoda and Symphyla, constitute the convenient but taxonomically outmoded group known as the “myriapods.” However, the other major arthropod subdivision, the [insects](#) or *hašarāt* (Classes Apterygota and Insecta, or Hexapoda), reign supreme among the mandibulates. Fully ninety percent of all arthropods fall within this immense assemblage. Medically and economically, it may be argued, arthropods affect nearly every social, cultural, and geological event and circumstance in Iran.

Invertebrates differing widely in anatomy, physiology, behavior, and habitat, arthropods nevertheless share certain distinguishing group characteristics. Their exoskeletons, formed by a resistant outer cuticle, are composed partly of *chitin*, a polysaccharide chemically analogous to cellulose. The more or less rigid cuticle cannot grow, but must be shed periodically by molting, or *ecdysis*. A segmented, bilaterally symmetrical body adorned with paired, chitinous, jointed appendages (whence the phylum name) is also characteristic, as is an



open circulatory system containing vascular spaces collectively known as a *haemocoel*. Members of this vast phylum exhibit an enormous variety of specialized sense organs, many monitoring environmental factors scarcely imagined before the advent of modern physics.

Mandibulates differ from chelicerates in having heads equipped with antennae, mandibles, and food manipulating appendages known as *maxillae*; thoraxes with paired, single- or double-shafted, appendages, some of which may be associated with mouthparts; and abdomens either undivided from the thoraxes, with appendages, or distinct from the thoraxes, with or without appendages.

Few publications specifically cover Iranian arthropods. Zoogeographically, the Iranian arthropod fauna differs little from that of immediately adjacent regions. General behavior and life history descriptions found in authoritative invertebrate zoology texts apply to Iranian representatives as well.

Within the predominately aquatic and marine Crustacea, *saktpūstān*, certain members of the Order Isopoda rank as the best adapted of the comparatively few terrestrial forms assigned to the class. Iranian isopods, *jūrpāyān*, that is, the lowly pill- or sow-bugs, inconspicuously inhabit environments ranging from surface litter and the undersides of logs in forested regions to protected rock bottoms well inside the country's arid interior. Generally small (13 mm, average length), these innocuous crustaceans may roll up their flattened bodies armadillo-like when disturbed. Many Iranian isopods bear dorsal ornamentation and spines.

Largely restricted to coastal areas, beach hoppers, *meygūhā-ye jahanda*, or scuds (Order Amphipoda) exploit Iranian terrestrial habitats considerably less successfully than isopods, from which their laterally compressed bodies, long thoracic limbs, and platelike gills differ markedly. Also small, these crustaceans rarely attain a length of 140 mm. Most reach less than a third that dimension.

The Decapoda, an overwhelmingly marine crustacean order, are represented in northern Iran by crayfish (Family Astacidae) and crabs (genus *Potomon*). The latter belong to the exclusively freshwater Family Potamidae. Affinities of both groups lie with the Eurasian fauna, and their distribution in Iran reflects suitable environmental conditions created by past drainages and present-day permanent freshwater availability. The Astacidae dwell in mountain streams,



especially in Azarbaijan and along northern Alborz slopes, while *Potomon* burrows dot humid Gīlān and Māzandarān forest floors. In regions where they are abundant, these freshwater crabs emerge and move about on the surface in astonishing numbers during warm spring rains. Although the flesh of few, if any, decapods is provenly poisonous, crabs and crayfish are conspicuously absent from the traditional Iranian diet.

The remarkable brine shrimp, *meygū-ye āb-e namak*, *Artemia salina* (Order Anostraca), thrives in highly saline waters, tolerating even the harsh environmental demands of Lakes Urmia and Baḳtagān. This tiny (13 mm) crustacean, only very distantly related to true shrimp, *meygūhā*, swims upside down, propelled by eleven pairs of flattened, rippling limbs. Each appendage pair rhythmically rows one-sixth beat ahead of its predecessor. *Parthenogenesis*, the phenomenon of sexual reproduction without male fertilization, eggs capable of remaining viable after years of virtually complete desiccation, and a short life cycle characterized by rapid growth and development, partly account for this species' success in inland Iranian waters notorious for high salt concentrations and fleeting seasonal existence. In particularly abundant periods, hemoglobin pigments visible through the tiny crustaceans' nearly transparent bodies render large stretches of Lake Baḳtagān markedly pink. Brine shrimp ingest minute suspended organic particles and are themselves an important item in the diet of flamingos nesting on major Iranian inland lakes.

Chiefly nocturnal, the predatory centipedes are the only venomous representatives of the secretive, seldom seen, myriapod aggregate. Large (150 mm or more) Iranian forms are assigned to the Order Scolopendrida, the only group with members adapted to arid or semidesert environments. These inhabit portions of southern Iran and can inflict severely painful, but not normally lethal, bites. Short-bodied house centipedes, characterized by extremely long, fragile legs, belong to the widespread Order Scutigera. Essentially harmless, they exploit dietary and other environmental opportunities within Iranian urban dwellings. Structurally, centipedes approximate the ancestral, or least specialized, myriapods, with elongated, more-or-less flattened, chitinous bodies divided into segments, each bearing a single pair of legs. Appendages of the first trunk segment, however, are modified into a pair of forceps-like fangs commonly mistaken for jaws. Chiliopod mouthparts, situated ventrally and well back from the anterior edge of the flat, plated head, are relatively small and fragile.



The nearly cylindrical millipedes are even more elongated than the preceding and possess calcified body walls, producing unique, rigidly brittle exoskeletons. An indefinite number of primitively fashioned double segments, supporting two pairs of legs each, together with distinctively modified mouthparts, further separate these herbivorous, non-venomous myriapods from superficially similar forms. Some Iranian examples may secrete volatile fluids capable of warding off predators, killing fungi, and staining the hands of unwary humans. Most Iranian millipedes require the sustained coolness and moisture provided by the forest litter and soils in Gīlān and Māzandarān. Only representatives of the diplopod Order Spirostreptida have adapted to arid or semi-desert conditions.

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