



The Infraorder Coccoomorpha (Insecta: Hemiptera)

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The scale insects (infraorder Coccoomorpha) are the most morphologically specialised members of the Hemiptera. They form a monophyletic group within the suborder Sternorrhyncha, having one-segmented tarsi and a single claw (all other hemipterans have a double claw). They show extreme sexual dimorphism: the more-or-less sessile adult females are wingless and larviform, whereas the motile adult males mostly are winged and lack mouthparts. Within the Coccoomorpha, 54 families are currently recognised, of which 20 are known only from fossils and 34 are extant (García Morales *et al.* 2016).

Scale insects are small (adult females are mostly 0.01–2.0 cm long) and live mainly in crevices or on the undersides of plant structures, feeding on plant sap. Some members of the infraorder are extremely important economically and can attack any part of a plant, injecting toxic saliva as they feed, and sometimes spreading plant virus diseases. The resulting sap depletion initially causes wilting, reducing photosynthesis, and can lead to the death of plant tissues and eventually to death of the host plant.

Within the period 2001–2020, 194 papers on Coccoomorpha were published in *Zootaxa*, of which 13 were Monographs (separate volumes over 60 pp long). These papers were almost entirely taxonomic, introducing 29 new genera and 244 new species and publishing 46 new synonymies; but a few also discussed predation, parasitism and nomenclature. The number of Coccoomorpha papers published in *Zootaxa* each year is shown in Table 1. There has been an average of 12.6 papers published in each of the last 14 years. Whilst this represents only a small proportion of the total number of papers published on scale insects during this time (ca. 4.5%)—a very large proportion of which were on biological and chemical control, faunal lists and identification in the field—a much larger proportion of those on descriptive and molecular taxonomy were published in *Zootaxa* (12.8% of all new genera and 19.5% of all new species described during in this period). Of the manuscripts submitted, only 4 were rejected.

TABLE 1. Number of papers on Coccoomorpha published in *Zootaxa* between 2001 and 2020.

Year	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
No. papers	0	0	1	2	9	6	15	13	5	13	15	14	10	11	12	9	16	14	13	16

Of the 54 currently recognised families within the Coccoomorpha, species within 19 extant families were included plus one fossil family (indicated by * below). The families with the greatest number of papers were the four largest: Pseudococcidae (52), Coccidae (38), Eriococcidae (26) and Diaspididae (21). Of the remaining families, Kermesidae had 9, Rhizoecidae 6, Kerriidae 5, Ortheziidae and Monophlebidae each had 4, Weitschidae* 2, and Xylococcidae, Stigmatococcidae, Marchalinidae, Putoidae, Dactylopiidae, Cerococcidae and Asterolecaniidae were each covered once.

Geographically, the papers gave international coverage (Table 2).

TABLE 2. Geographic coverage of papers on Coccomorpha published in *Zootaxa* between 2001 and 2020.

Geographic Region	Countries	No. of papers
Australasian	Australia, Papua New Guinea, New Zealand	15
Sino-Japanese	China, Japan, Hong Kong	24
Afro-tropical	Madagascar, South Africa, Tanzania	6
Mediterranean	Greece, Italy, Egypt, Turkey, Malta	20
Middle East	Iran, Israel	10
Nearctic	Greenland, Canada, United States	13
Neotropical	Colombia, Brazil, Chile, Mexico, Argentina, Patagonia, St. Lucia, Uruguay, Hispaniola, Falkland Is., Belize	30
Oriental	India, Laos, Pakistan, Thailand, Malaysia, Philippines, Java	18
Pacific	New Caledonia, Fiji	3
Western Palaearctic	Europe in general, Portugal, Bulgaria, France	11

Reference

García Morales, M, Denno, B.D., Miller, D.R., Miller, G.L., Ben-Dov, Y. & Hardy, N.B. (2016) *ScaleNet: A literature-based model of scale insect biology and systematics*. Database. <https://doi.org/10.1093/database/bav118>