

CHAPTER I

INTRODUCTION



The Cyclophoridaea are the largest superfamily of extant land operculate snails and include over 600 species ranging from temperate to tropical regions of Asia, Australia, Africa and the Americas (Kobelt, 1902; Morrison, 1955; Alcalde and Jacobson, 1959; Thompson, 1969; Burch, 1976). The Cyclophoridae, as defined by Tielecke (1940) are confined to peninsular India and Sri Lanka, the Himalayan region east through Southeast Asia and the Indonesian archipelago to Northeastern Australia and north into much of Japan. The cyclophoroidean *Caspicyclotus* Forcart, from the southern Caspian region, appears to be known only from shells and it is not clear if it should be placed in the Cyclophoridae *sensu stricto*. Within the Cyclophoridae, the majority of species belong in *Cyclophorus* Montfort, 1810, which contains over 100 species with a distribution concentrated in sub-tropical and tropical Asia (Reeve, 1861; Nevill, 1881; Möllendorff, 1894; Blandford, 1903; Gude, 1921; Bentham Jutting, 1948, 1949; Zilch, 1956; Habe, 1964; Solem, 1966; Minato and Habe, 1982) (Fig. 1.1). Previous studies of the Cyclophoridae were based mainly on shell morphology but a combination of homoplasy and variability in shell form limits the conclusions there can be made about species limits. This is equally true for the genus *Cyclophorus* and in order for progress to be made it is necessary to examine shells in combination with additional morphological characters. Although *Cyclophorus* exhibits considerable intra-specific and inter-specific variation in shell characters such as shell height and width, rate of expansion of whorls, and colour pattern, the shell form is in fact rather conservative and does not exhibit the complexity of form found in some other cyclophorid genera.

Taxonomic question of *Cyclophorus* is still the priority to be resolved. The present objectives are to study taxonomy and systematics of operculate land snails genus *Cyclophorus* using morphology, radula, genital system and karyotypic analysis. The snails were collected from various localities throughout Thailand. Shell morphology, anatomy of genitalia and radula characteristics were used for dichotomous key construction. Cytogenetic analysis was focused at the karyotypic arrangement level. Shell morphology, anatomy of genitalia, radula morphology and cytogenetic based phylogenetic tree were also constructed. The results are able to imply in other disciplines like terraculture, biogeography and evolution. Conservation and biodiversity resources management will also be the benefit from the study in the near future.

Objective

To study taxonomy and systematics of Thai operculate land snails genus *Cyclophorus* using morphology, anatomy and karyotypic analysis.

Anticipated benefit

The results from this study can provide and improve taxonomic system, and an initial phylogeny of Thai cyclophorids land snails.



Figure 1.1 Distribution of *Cyclophorus* in sub-tropical and tropical Asia.