CHAPTER - 1
GENERAL INTRODUCTION
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1.1 Introduction:

The purple swamphen *Porphyrio porphyrio*, Linnaeus, (family Rallidae) is one of the common residential bird, (Plate-1) abundantly found in the wetlands and low lying agricultural lands of Brahmaputra Valley of Assam (Ali and Ripley, 1983). Out of the seven species of rails distributed in the valley (Perennou et al., 1994), *Porphyrio porphyrio* is considered to be a serious pest in many parts of the valley because of its high destructive potential to all varieties of the paddy crop, In some wetlands, marshylands and swamps the population density of the species exceeds some unacceptable arbitrary threshold level, resulting serious economic damage.

Though the species is omnivorous and able to sustain themselves on a wide range of vegetables and animal food (Ali and Ripley, 1983), yet it prefers paddy grain and ultimately can adversely effect the economy of the agriculture dependent rural local people.

Among the various avian depredators of paddy crop in Brahmaputra Valley the purple swamphen *Porphyrio porphyrio*, because of its abundance and flock feeding habit has established itself as the most serious pest. The bird is known to cause serious damage in the paddy crop even at moonlit night. Though the species is considered as prst since long but the the role of this bird in agricultural economy has not yet been determined under the agroclimatic conditions of the valley. No scientific assesment of the economic loss to the crop by any avian depredators have ever been made. Verma (1980) opined that the granivorous birds cause severe grain losses particularly in arid and semiarid tracts of India and Africa.

Under the prevailing conditions the people living in various localities of the
'Chaparis' (meadow) on both the banks of river Brahmaputra reported serious economic damage by the species during the paddy cultivation season. Instances of total crop depredation by this bird was also been reported from some parts of the valley. Total bird depredation in rice was reported from Nigeria (Funmilao and Akinwade 1979) by *Quelea* sp. In India, problems of depredatory aves have so far received meagre attention. However, the extensive works of Bhatnagar (1976, 1980); Mehrotra and Bhatnagar (1979); Shridhara et al (1982); Hussain and Bhalla (1937); Jotwani (1969); Ramjan and Toor (1972, 1973); Anonymous (1992) revealed that Parakeet, Crow, Munia, Sparrow, Weaver birds are the common depredators of crop in India. Except Ali and Ripley (1983) no worker has mentioned about *Porphyrio porphyrio*’s depredatory activities. In Brahmaputra Valley very little attention has been paid to investigate the role of birds in crop depredation.

Another aspect of the ornithological pest studies which require attention in the grouping of Rallidae with other families of birds which are the depredators of paddy crops, as it has been seen that a number of other species belonging to other groups also partly or wholly depend on the agricultural crops, which include both migratory and nonmigratory species, and are often clubbed as waterfowls. The evaluation of the waterfowl in this respect expected to give a better idea about the pest status of the birds in the valley.

Ramsar Convention (1971) referred the birds belonging to the groups of Gaviformes, Podicipediformes, Pelicaniformes, Ciconiformes, Anseriformes, Gruiformes, Ralliformes and Charadriiformes as ‘waterfowl’. Waterfowl are the birds dependent on wetlands (Fog and Lampio, 1982). White and Janes (1978); Thomas (1980, 1982 a); Nudds (1983) and Poysa (1983 a, b, c, ;1984 a, 1986) included the members of the family Anatidae and Rallidae in their studies on waterfowl. Water birds are functionally integral part of various aquatic ecosystems. This indicates that they may be used as indicators of the ecological status of the wetland ecosystems (Reichholf, 1976; Utschik, 1976). Serious interests in waterfowl and wetlands in Asia began in 1964 (Savage 1987
a). Iran, Pakistan, Turkey, Jordan, Afghanistan and India are making huge progress in the aspect of interrelationship between the waterfowl and wetland and wetland conservation.

It has been observed that there is no comprehensive account on the status, diversity and conservation of wetland birds in Assam. However, some aspects of the avifauna of Assam, particularly on distribution, status, ecology are available (Hume 1877, 1880, 1888; Koelz 1925; Persons 1939; Beltz 1947, 1956; Dey 1982; Ali & Ripley 1983). Certain ecological aspects of the equatic birds have also been worked out by Raj et al., (1987); Saikia et al. (1987, 1988, 1989, 1990a, b) and Bhattacharjee et al. (1988 and 1996).

Under the background of the strong interactions between the waterfowl and wetland specific study related to only one species will hopefully provide a much better picture about the status of the ornithological pest in the region.

1.2 Objectives:

Rice is a major crop and staple food of the tribal and non tribal people of the Brahmaputra Valley. Here the people cultivate six types of paddy crop. (Table-1) Some costly sub varieties of high economic value of ‘Sali paddy’ such as ‘Jaha’, ‘Ijong’ ‘Malbhog’, ‘Prasadbhog’, ‘Suagmoni’, ‘Karsholi’, ‘Pankaj’ and ‘Bahadur’ are also being cultivated.

Almost every year a major portion of the crop is damaged due to early or late flood or occasionally by draught in some areas. Moreover, a sizable quantity of the crop is also destroyed by different animal and avifaunal depredators which adversely effect the economy of the people in various degrees in different areas. The normal practice of the control of the depredators are related to insect and rodent pests only mainly by using chemicals. The three regions of the valley - the upper, the central and the lower Brahmaputra Valley witnesses the depredation of the crop by water birds particularly the
Hence, the present study was initiated to understand their ecology and to help plan a more meaningful and efficient control method giving special emphasis on the wetland areas with the following main objectives.

(1) To determine the distribution and present status of this paddy pest species *P. porphyrio* in Brahmaputra Valley of Assam and also to study the distribution of the allied species in the valley.

(2) To study the population density and the pattern of distribution of the species in the valley.

(3) To analyse the habitat requirements and preference of the species.

(4) To study the breeding biology and the survival rate of the bird with respect to the food and feeding requirements of the species, in the agroclimatic conditions of the valley.

(5) To study the time activity budgets of the species in breeding and non-breeding periods to evaluate the ecological and behavioural adaptations of the species. The bird showed various activities in specific proportion in a specific habitat set up as well as during pre and post breeding seasons.

(6) To ascertain the pest status of the species and estimation of damage done to the paddy crop. Also to formulate the controlling measures without the use of pesticides by using mechanical methods without effecting the bird population and habitat quality.

Hope, this study will provide the insight of the serious economic problem faced by the rural poor population of the valley and open a vista for the effective control of the pest in the field.