Fishes of the order Perciformes are the most diversified group of fishes and the largest order of vertebrates (Nelson, 2006). They are characterized by having skin commonly with ctenoid scales; head and cheeks with pores and muciferous canals; bones of head commonly with numerous pungent spines; preopercle entire or serrated; upper and lower pharyngeals well developed and toothed. Teeth may be present or absent on vomer and palatines, villiform on jaws with or without canines. Pseudobranchiae present. An adipose fin never present; pectoral fins inserted laterally and vertically on the sides; pelvic fins if present, thoracic or jugular, with spines, usually with five rays. Anal fin with spines. Two dorsal fins: first spinous followed by soft rays. Pleural ribs well developed. A subocular shelf present on the infraorbital series in many species. Infraorbital bones frequently in contact with preoperculum. Air bladder mostly physoclistic. Principal caudal fin rays never more than 17, often fewer (Jayaram, 1999).

The perciform fish fauna of north-east India is of great interest as the region is drained by the three river basins namely Ganga-Brahmaputra, Chindwin-Irrawaddy and Koladyne basins.

This group includes several genera of academic and commercial importance. Many of the species are endemic to north-East India. As many as ten species of *Channa* are found in the region. However, phylogenetic relationships among the different perciform species have rarely been studied, both with morphological and molecular approaches. Thus, there is need for such studies.
on the fishes of the region. The generic description of *Chanda, Trichogaster, Badis* on morphometry is confusing since there are many overlapping characters. Studies on the fishes of South-East Asia have become a matter of great interest because of the lack of data on one hand and on taxa evolution due to recent geomorphological changes on the other hand.

Scientists working on this group have been concerned with describing new forms and preparation of artificial keys to identification. As many as thirty species under eleven genera and eight families are so far known from north-East India (Vishwanath et al, 2007). However, detailed study on their morphology, anatomy, and comparision between taxa, their interrelationship and phylogeny has not been carried out.

Although there are several recent reports on the morphology of perciform fishes, no satisfactory arrangement of families is at present possible due to lack of data of many fishes of this region. Interrelationships of the fishes of this order are poorly known. Phylogenetic relationships among the major snakeheads were established by Li et al (2006). However their work did not include species like *Channa aurantimaculata* found in North East India.

Thus, the need for studies on the morphology and anatomy of the fishes has been felt so as to establish phylogenetic relationships of the perciform fishes. So, the work was carried out.

Materials and Methods

Fishes were collected during the period from November, 2006 to September, 2009. Fishes were collected using different techniques, viz., cast nets, diverting of a stream by damming a branch and drying up, localized stupefying devices, viz., electro fishing. Collections were also made from markets.

Fishes were fixed and preserved in 5% to 10% formalin following "Wet preservation" technique of Ayappan and Satyamurthi (1960). In larger fishes, concentrated formalin was injected within their abdominal cavity. While fixing
specimens obtained from markets, attention was paid to the fins to ensure that they are extended at the beginning of the fixation, when the tissues are still soft. Fins were kept erect with forceps and pure formation brushed over them.

Specimens from different localities were preserved in separate containers. A label with the following information: river basin, river name, local name, coordinates, name of collector(s) and data, color in fresh state, type of habitat etc. written with a soft pencil were placed inside the container. For osteological study, the specimens will be cleared and stained with Alizarin Red S by using modified method of Hollister (1934),

Measurements were made with a dial caliper to the nearest 0.1mm. Head length and measurements of body parts are given as proportions of standard length (SL). Subunits of head are presented as proportions of head length (HL). Counts and measurements were made on the left side of specimens under a PC-based binocular stereozoom microscope (OlympusSZ 40) with transmitted light. General counts and measurements for Ambassid fishes followed Kottlats (2001), for Johnius, Oreochromis, Anabas and Belontids were carried out using Hubbs and Lagler (1946), for nandid fishes followed Kullander and Britz (2002), for the family Gobiidae followed Miller (1988), for the family Channidae followed Musikasinthorn (1998).

**Phylogenetic Analysis:** Phylogenetic characters representing plesiomorphic (generalized) and apomorphic (derived) characters were used. Plesiomorphic and apomorphic characters dealt in the present study were taken mostly from the data given by previous workers. Other newly adopted characters were coded into multistates viz. plesiomorphic state was code “0” and apomorph, “1”.

**Result**
A total of 32 species belonging to order Perciformes were collected from the three drainages: the Chindwin-Irrawaddy, Ganga-Brahmaputra and Koladyne of north-east India. They belong to 12 genera and 8 families. Out of these, eleven

The present study establishes keys to species of perciform fishes of northeast India and describes a new genus Mizogobius and a new species M. koladytynae from the region. The new genus is endemic to Koladyne basin only. The study also describes three more new species, Badis dibruensis, Channa melanostigma and Parmbassis ornatus.

Osteology of Channa reveals that in the caudal skeleton studied, the last three caudal vertebrae support the caudal fin. The last fused centrum bears one parhypural, five hypural plates, one urostyle and one epural. The epural bone is thin, backwardly curved and located anteriorly to the urostyle. An elongated bone which has no connection with any of the centrum is present between the hemal spine of preuralcentrum two and preuralcentrum three (i.e., anterior to parhypural). Distal tip of this bone supports the caudal-fin ray ventrally. The bone is referred here as “interhemal spine”. The presence of interhemal spine is a very specific character found in all the species of Channa under study.

Regarding the fishes of the genus Badis, osteological study reveals that the genus of the region is specific in having a hidden basibranchial which lies beneath the hypohyal. This basibranchial can only be seen after removing the hypohyal. The last abdominal centrum bearing the parapophysis is devoid of pleural ribs and this character is found in all the badid species under study.
The hemal spine i.e. the hemal spine on PU2 is bifurcated. Although this bifurcation of the hemal spine on the second preural centrum is shared uniquely with the genus *Nandus*. Gill rakers are absent in badid fishes studied. Instead, branchial toothplates are present on the gill arches. The number of tooth plates ranges from 6-10 in different badid species. Toothplates count is highest in *B. blosyrus*.

In case of the family Osphronemidae, the posterior part of the basihyal lies beneath the basihyal. This is a character found in all the four valid species of Osphronemidae of northeast India. Another important character is that a free bone is present on the lower lobe of the caudal skeleton which helps in supporting the caudal fin. The bone is referred here as "parahypural".

The morphological and osteological comparison of 12 families of perciform fauna establishes four phylogenetic trees for families namely Ambassidae, Nandidae, Osphronemidae and Channidae.