significantly among the three years. Average territory size was close to 1ha, and distance to the nearest active nest was approximately 93m. Breeding pairs actively defended their territories all year round, although they also formed foraging flocks in the winter. Molecular sexing revealed that offspring sex ratio was slightly male-biased in early nests and female-biased in late nests. Considering that early-fledged birds generally have higher dominance ranks than late-fledged ones, this result suggests that getting high dominance by fledging early may be more advantageous in males.

A107

Cognition of Shapes in the Female White Mouse (ICR, *Mus musculus*)

Gook Jin Yang* and Jae Chun Choe
School of Biological Sciences, Seoul National University, Seoul 151-742

We studied changes in visual cognition in female white mouses (ICR, *Mus musculus*) as a result of situational change, with a focus on the capability of discrimination among geometrical shapes such as circle, triangle, and quadrangle. Mouses performed a series of passive avoidance tasks accompanied by mild electrical shock(aversion) and a series of water-finding Y-mazing tasks(affection). They discriminated all geometrical shapes on passive avoidance tasks. However on water-finding Y-mazing tasks, they could not discriminate between triangle and quadrangle. These results suggest that female white mouses have the capability of discriminating among certain geometrical shapes and that discriminating degrees differ in aversion and affection situation.

A108

Is Courtship Behavior of Male Fiddler Crab, *Uca Lactea*, Affected by Food Supply?

Taewon Kim* and Jae Chun Choe
School of Biological Sciences, Seoul National University, Seoul 151-742

For the fiddler crab, *Uca lactea*, living on the upper-tidal mud flat in Kanghwa island, food is available mainly during the spring tides. Food-carrying water does not reach the habitat during the neap tides. Thus we hypothesized males, even in their mating season, would invest more time in feeding than courtship display during the early spring tidal periods and the amount of food supplied in these periods would influence male courtship intensity. Through the observation on male behavior from July to early August in 2000, we found that feeding behavior followed semi-monthly tidal cycle with peaks near the time of spring tides, whereas waving and low semidome (LSD) building did with peaks 5-6 days later. Food-supplemented males built significantly more LSDs than food-removed and control males. Our results suggest that feeding during the spring tides affects condition-dependant courtship display of *U. lactea* males.

A109

The genus *Burmoniscus* (Crustacea, Isopoda, Philosciidae) from Philippines.

Mal Hee Kim and Do Heon Kwon
Department of Biology, Inje University, Kimhae, 621-749

The Oriental genus *Burmoniscus* is a terrestrial isopods and shows high species abundance in the tropical area. Previously only a single species, *Pseudotyphloscia alba* (Dollfus, 1898), has been recorded from Philippines. We examined the terrestrial isopod specimens which were collected from

1992 to 2000 by ourselves and our collegues in Philippines, and identified 14 species of *Burmoniscus* including 7 proposed new species. The list of all the species and the figures and brief descriptions are presented.

A110

A New Species of *Littorophiloscia* (Crustacea, Isopoda, Philosciidae) from Philippines.

Mal Hee Kim and Do Heon Kwon
Department of Biology, Inje University, Kimhae, 621-749

A new species of the genus *Littorophiloscia* is described based on specimens from Philippines. *Littorophiloscia* is a member of terrestrial animal and contains 18 valid species. It is halophilic and distributes mainly tropical and subtropical coasts. In this contribution, we describe a new species of the genus based on the specimens collected in the Philippines. The proposed new species differs from its congeners especially in the morphology of pereopod 1 and pleopod 1 of male.

A201

Hybridization and Introgression of *Aconitum* subgenus *Aconitum* (Ranunculaceae) at Mt. Sobaek in Korea

Chae Eun Lim* and Chong-Wook Park
School of Biological Sciences, Seoul National University, Seoul 151-742

We have examined the morphology and the flavonoid chemistry of 11 putative hybrid populations of *Aconitum* subgn. *Aconitum* at Mt. Sobaek in Korea to understand the origin and structure of these populations. Five major morphological types were found among the individuals of these populations; these include individuals (1) with completely glabrous pedicels, (2) with micropapillate curved hairs on the upper half of pedicels, (3) with a mixture of micropapillate curved hairs and spreading glandular hairs on the upper half of pedicels, (4) with few curved hairs on the uppermost part of pedicels, and (5) with few curved hairs and spreading glandular hairs on uppermost part of pedicels. All five types of individuals co-occur in most populations but with varying proportions. Fourteen flavonoid compounds were isolated and identified from 86 individuals from 11 populations representing these five morphological types. The flavonoid profiles of these individuals consisted of glycosylated and/or acylated derivatives of the flavonols quercetin and kaempferol. The five morphological types showed differences in flavonoid composition, and they were distinguished by the marker compound(s). Considering the nature of chemical differences among these types, in conjunction with evidence from the morphology, it is suggested that the populations at Mt. Sobaek were originated from the multiple hybridization events and the repeated introgression, involving, *A. japonicum* subsp. *napiforme*, *A. jaluense* subsp. *jaluense*, and another unknown *Aconitum* species with glabrous pedicels.

A202

여뀌속 *Echinocaulon*절(마디풀과)의 털 및 꽃 미세구조

김민하*, 곽명해, 송진성, 이상준, 유미정, 박종욱
서울대학교 생명과학부

여뀌속 *Echinocaulon*절은 계통학적으로 많은 문제점이 누적되어 있는 분류군으로 전세계에 걸쳐 21종이 포함되어 있다. 본 절 분류군들에 대해 주요 영양 및 생식기관에 분포하는 털의 미세구조, 수술과 밀선, 수과의 크기, 형태 및 표면의 미세구조 등의 해부학적 형질을