

FEATURE ARTICLES

ECOLOGICAL AND PHYSIOLOGICAL VARIANCE IN T-CELL MEDIATED IMMUNE RESPONSE IN CORY'S SHEARWATERS

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Abstract. T-cell mediated immune response (CMI) has been widely studied in relation to individual and fitness components in birds. However, few studies have simultaneously examined individual and social factors and habitat-mediated variance in the immunity of chicks and adults from the same population and in the same breeding season. We investigated ecological and physiological variance in CMI of male and female nestlings and adults in a breeding population of Cory's Shearwaters (*Calonectris diomedea*) in the Mediterranean Sea. Explanatory variables included individual traits (body condition, carbon and nitrogen stable isotope ratios, plasma total proteins, triglycerides, uric acid, osmolarity, β -hydroxy-butyrate, erythrocyte mean corpuscular diameter, hematocrit, and hemoglobin) and burrow traits (temperature, isolation, and physical structure). During incubation, immune response of adult males was significantly greater than that of females. Nestlings exhibited a lower immune response than adults. Ecological and physiological factors affecting immune response differed between adults and nestlings. General linear models showed that immune response in adult males was positively associated with burrow isolation, suggesting that males breeding at higher densities suffer immune system suppression. In contrast, immune response in chicks was positively associated with body condition and plasma triglyceride levels. Therefore, adult immune response appears to be associated with social stress, whereas a trade-off between immune function and fasting capability may exist for nestlings. Our results, and those from previous studies, provide support for an asymmetrical influence of ecological and physiological factors on the health of different age and sex groups within a population, and for the importance of simultaneously considering individual and population characteristics in intraspecific studies of immune response.

Key words: body condition, breeding density, *Calonectris diomedea*, immunocompetence, physiological parameters.