

CHAPTER I

THE PRINCE EDWARD ISLANDS IN A GLOBAL CONTEXT

STEVEN L. CHOWN AND P. WILLIAM FRONEMAN

The history of the planet is one of change. Continental positions have moved, sea-levels have advanced and retreated, mountains have been formed and eroded, climates have varied from warm to cool and back again, and life has responded to and sometimes driven these processes, with species and higher taxa waxing and waning for the last several billion years (Stanley 1989; Behrensmeyer *et al.* 1992). More recently, humans have come to influence these changes. Our recent history has been one of significant effects on the abiotic environment, including elevation of atmospheric greenhouse gas concentrations, depletion of stratospheric ozone, and alterations to the global climate (Watson 2002; Domack *et al.* 2005). In turn, changing climates have had and continue to have profound effects on biodiversity, ranging from population and species loss (Pounds *et al.* 2006) to alterations in species distributions, changes in phenology, and shifts in ecological regimes (Walther *et al.* 2002; Parmesan & Yohe 2003; Root *et al.* 2003).

Humans have also had profound direct effects on landscapes, populations and species. Habitat destruction and transformation have been responsible for considerable biodiversity loss, with co-extinctions exacerbating the scale of the problem (e.g. Beier *et al.* 2002; Brooks *et al.* 2002; Koh *et al.* 2004; Dunn 2005; Millennium Ecosystem Assessment 2005). Likewise, direct and indirect

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