Seabirds are the most conspicuous and mobile of all pelagic marine organisms. Because most species breed colonially, researchers can study statistically large samples with relative ease. These attributes have long made seabirds valuable for interpreting conditions in the surrounding oceans (Furness and Camphuysen 1997, Boyd et al. 2006, Piatt et al. 2007). Until recently, such studies were usually based on data obtained at breeding colonies or from vessels, but in the past two decades, advances in electronic technology have greatly changed the way we study seabirds, providing unprecedented insights into their locomotion, physiology, foraging behavior, migration, demographics, and exposure to anthropogenic risks at sea. In oceans that are rapidly changing as a result of human activities and global climate change, this information from tagged birds is timely and essential for developing conservation and management strategies for such wide-ranging organisms. In addition, seabirds are increasingly being viewed as tools for oceanography and climatology—capable of providing essential physical and biological information on the sea itself.

Here, we highlight some of the exciting new techniques and data that are emerging, discuss some current and future applications, illustrate the roles that seabirds might play in monitoring this watery planet, and discuss the application of new technology in the conservation and management of seabirds. We focus here on Lagrangian approaches, concerned with a sequence of data values at points occupied by an individual organism (Schneider 1994), in contrast to studies of populations or communities made at colonies or from vessels or aircraft.

**Advancing Technology**

The burgeoning market for consumer electronics and communication (e.g., satellite and cell-phone communication) is partly responsible for the advances and miniaturization of sensors, memory storage, and batteries that are revolutionizing marine ornithology (see reviews in Wilson et al. 2002a, Ropert-Coudert and Wilson 2005). We review some recent developments, focusing on devices that tell us where birds go (satellite tracking, geolocators, global positioning system [GPS] loggers, and depth recorders) and what they are doing (sensors coupled with data loggers).

**Tracking devices.**—Before 1990, conventional VHF radio tags were used to monitor colony attendance and near-colony foraging...