XXXVI ANTARCTIC TREATY CONSULTATIVE MEETING
Brussels 2013

Agenda Item:	CEP 9a
Presented by:	Korea (ROK)
Original:	English
Submitted:	17/04/2013

Management Report of Narębski Point (ASPA No. 171) during the 2012/2013 period

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Information Paper submitted to the 16th meeting of the Committee for Environmental Protection (CEP XVI Agenda Item 9a) by Republic of Korea

1. Introduction

In accordance with management plan for ASPA No. 171 (Measure 13, ATCM XXXII), ecological studies on the biological communities and management activities were carried out during the 2012/13 period.

Monitoring studies were carried out on the penguin colonies and other bird colonies in the area, and surveys on fauna and flora in the vicinity of the designated area have been conducted for the scientific purposes for three consecutive years (Fig. 1).

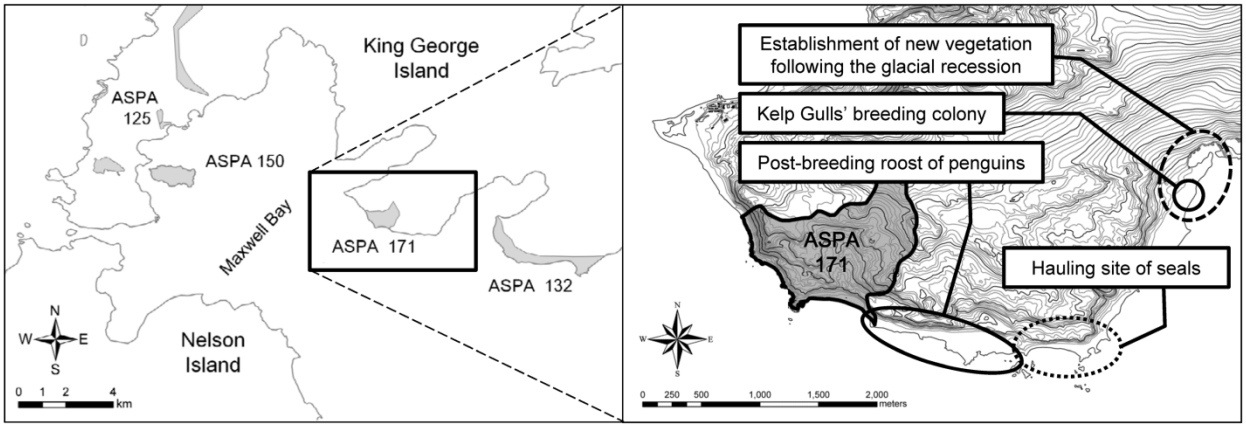

Figure 1 - Map of ASPA No. 171 and adjacent areas surveyed during the 2012/13 period

2. Monitoring on avifauna in ASPA No. 171

Monitoring on the bird fauna including two penguin species, the most abundant breeding species at this area, was conducted from 15 December 2012 to 12 February 2013.

A total of nine avian species bred in the area during the 2012/13 period: two species of penguins (Gentoo Penguin *Pygoscelis papua* and Chinstrap Penguin *Pygoscelis antarcticus*) along with additional seven species such as Brown Skua *Stercorarius antarcticus*, Southern Giant Petrel *Macronectes giganteus*, Snowy Sheathbill *Chionis albus*, Kelp Gull *Larus dominicanus*, Antarctic Tern *Sterna vittata*, Wilson's Storm Petrel *Oceanites oceanicus*, Black-bellied Storm Petrel *Fregetta tropica*. South Polar Skuas *Stercorarius maccormicki*, that had annually bred in the area (27 nests in 2006/07, 18 nests in 2010/11, and 22 nests in 2011/12), did not make any nest in the period possibly due to the large snow cover in potential nesting sites.

In the penguin rookery, 2,366 nests of Gentoo Penguins and 3,304 nests of Chinstrap Penguins were counted. During the study period, 154 Gentoo Penguin nests and 143 Chinstrap Penguin nests have increased after the previous summer in 2011/12, but the number of survived chicks has decreased by 383 chicks in Gentoo Penguins and 34 chicks in Chinstrap Penguins because of the extreme blizzards in the early January and the higher predation by non-breeding skuas. The population size of breeding Gentoo Penguins shows general trend of increasing (Fig. 2), while the number of Chinstrap Penguin nests has decreased and then recovered

after the initial survey for the designation of ASPA in 2006/07 (Fig. 3). Although the overall breeding performance of penguins as well as other birds were lowered in 2012/13, both penguin species in the 2012/13 periods recorded the highest number of nests since the designation of ASPA in 2009 as well as 1990s.

Several Adelie Penguins *Pygoscelis adeliae*, Macaroni Penguins *Eudyptes chrysolophus* and Antarctic Fur Seals *Arctocephalus gazella* were also observed in the penguin rookery and on the east sea shores of the ASPA No. 171. These results may suggest that the deceased number of visitors after designation of ASPA and visitors' compliance to all the obligations delineated in the access permit and management plan have resulted in the decreased human disturbances in the ASPA.

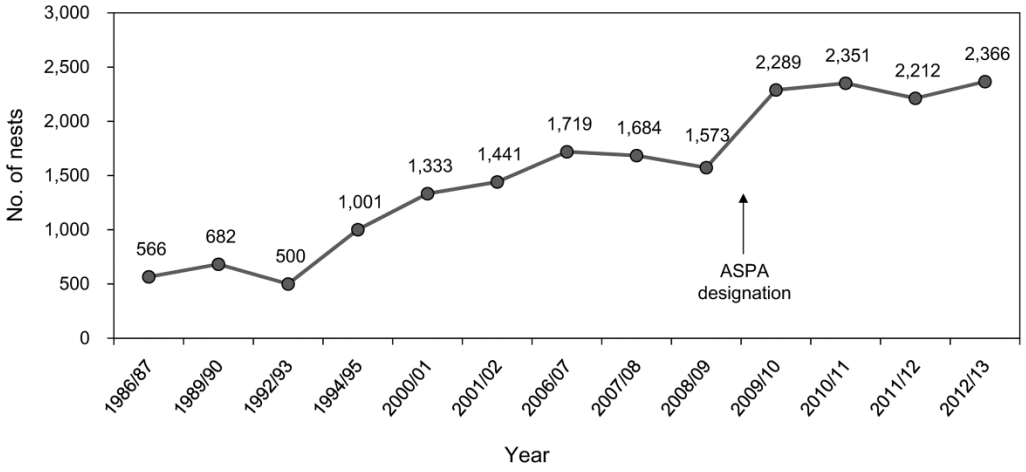

Figure 2 - Changes in the number of Gentoo Penguin nests in ASPA No. 171

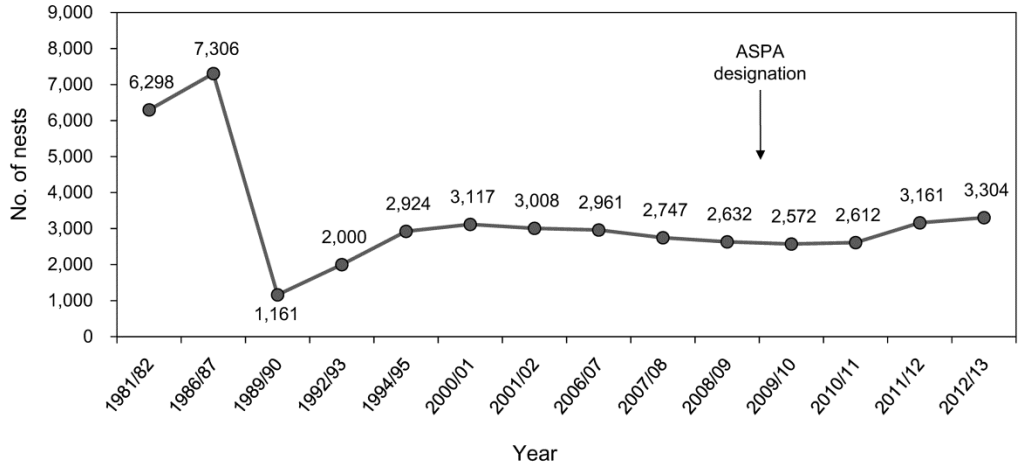

Figure 3 - Changes in the number of Chinstrap Penguin nests in ASPA No. 171

3. Management activities

King Sejong Station nearby the ASPA No. 171 has rigorously monitored and managed the access to the protected area. The management plan for the area has been placed at the station since it has been designated. The education programs and seminars have been carried out according to the management plan at the station every Antarctic summer season.

Research activities were carried out only by the researchers with access permission to the protected area and researchers have performed researches in accordance with permission and management plan. During the 2012/13 season, thirty-eight scientists were permitted to access the ASPA No. 171 by national authority for planned research programs. The programs were related with the studies on breeding ecology and population dynamics of penguins and other birds, biodiversity and ecosystem changes, vegetation mapping using remote sensing, and freshwater ecosystem monitoring in the protected area. The visiting period for each scientific activity was not overlapped as far as possible to avoid weighting impact to the fauna and flora in the area.

4. Survey results in the vicinity of the ASPA No. 171

4.1 Backgrounds

The boundary of ASPA No. 171 has been designated largely based on a watershed that includes the penguin rookery, but the adjacent areas are also important as buffer areas for the ASPA as well as parts of ecological components in the Barton Peninsula, King George Island.

4.2. Flora

To understand vegetation structure in the vicinity of the protected area, 50 cm x 50 cm quadrate survey was conducted at a total of 423 points as used in the previous floral monitoring for ASPA. At each point, habitat conditions that may affect vegetation, including the occurrence of breeding birds, altitude above sea level, distance from coast, gradient, substrate type, and geomorphology were described. Survey in this period focused on how bird nests impacts on the distribution of vegetation, particularly at the recent recession site of glaciers (Fig. 1). Preliminary results suggest that breeding birds possibly enhances new colonization of vegetation at bare lands in the Antarctic environments by dispersing plants as nesting materials.

Therefore, the survey area has important ecological value as reference site to understand the vegetation establishment and succession after the glacial recession and new colonization of birds.

4.3. Fauna

Five surveys were conducted in the southern and eastern coast of the Barton Peninsula from December 2012 to February 2013 (Fig. 1).

A total of 14 species of birds and three species of mammals were recorded in the survey area. Two avian species that had not observed in ASPA No. 171 such as Southern Fulmar *Fulmarus glacialoides* and Arctic Tern *Sterna paradisaea* were found, and a colonial nesting site of 36 Kelp Gull pairs was also recorded.

During the surveys, 110 Southern Elephant Seals *Mirounga leonina*, 22 Weddell Seals *Leptonychotes weddellii* as well as 21 Antarctic Fur Seals were cumulatively counted along the coast. In particular, five Southern Elephant Seals (four adults and one young) tagged at the Stranger Point in ASPA No. 132 were observed in the study area, suggesting the connectivity of ASPA No. 132 and the hauling sites in the study area (Fig. 1).

4.4. Ecological value of the surveyed area

The vicinity of ASPA No. 171 may play an important role as a post-breeding habitat and a molting site for the penguins that bred in the protected area. These areas also serve as colonial nesting sites for Kelp Gulls as well as roosting or hauling sites for skuas and pinnipeds (Fig. 1). Therefore, the surrounding areas of Narębski Point also need sound monitoring and management to minimize the negative effects of human disturbances on penguins' life cycles including post-natal seasons, to understand the ecological interaction between birds and vegetations, and to recognize faunal connectivity between specially protected areas in the Antarctica.

5. Lessons Learned and Recommendations

Many survey activities in the area have been focused on the changes in the number of fauna and the distribution of vegetations only during the short breeding season. To ensure the sound protection and management of Antarctic fauna, ecological values of habitats throughout the life-cycle of target species/group should be considered. Therefore, it is recommended to expend the study period into pre- and post-breeding seasons as long as weather condition permits, to establish automatic recording or archiving systems for monitoring during the non-favorable periods, and to avoid possible human impact by monitoring activity.

According to three years of monitoring conducted around ASPA No. 171, its surrounding coastal areas are also important in the ecosystem perspectives to understand the ecological values and functions of the protected areas in the maintenance of fauna and flora in the Barton Peninsula. Therefore, it is recommended to take holistic approach in future studies on fauna and flora both in terrestrial and marine environments considering ecological interactions and to prove the connectivity of fauna in ASPA No. 171 with other ASPA and ASMA on King George Island. Cooperative studies and information sharing between the parties managing ecologically linked protected areas are also required to develop and update effective management plans for protected areas.