Agenda Item: CEP 9f
Presented by: Korea (ROK)
Original: English
Submitted: 01/03/2014

Monitoring and Management Report of Narębski Point (ASPA No. 171) during the past 5 years (2009-2014)

Attachments:

1. Introduction

According to the existing management plan for ASPA No. 171 (Measure 13, ATCM XXXII), ecological monitoring and management activities have been carried out since 2009/10. Monitoring studies have been performed on the penguin colonies and other bird colonies in the area (Fig. 1). According to the management plan, environmental education, entrance and exit control and checking condition of the establishments of ASPA signs have been carrying out by Korea Polar Research Institute and the Korean Ministry of Environment.

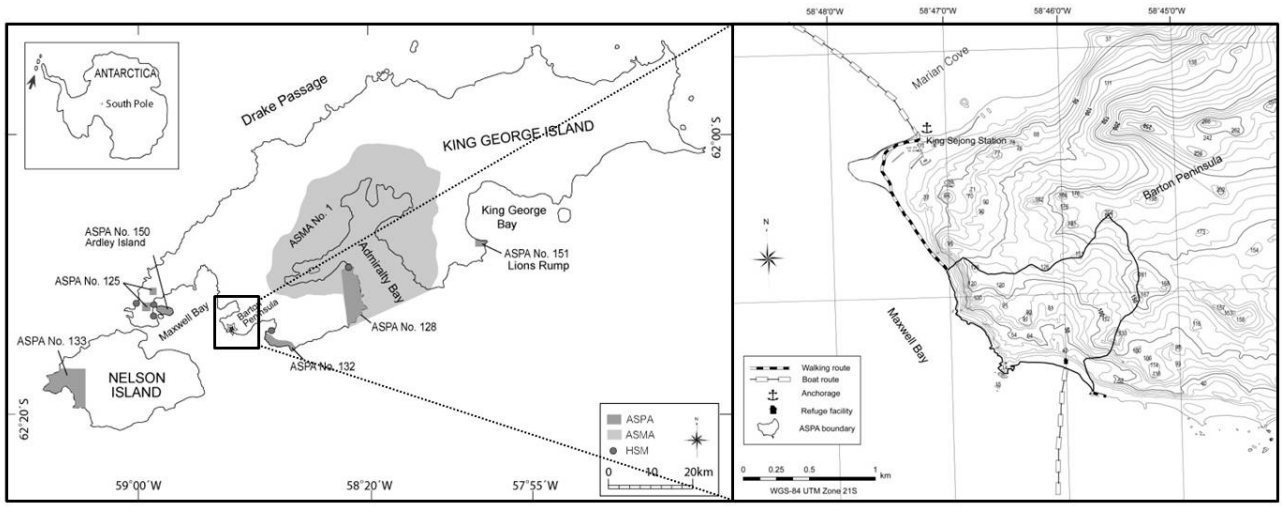


Figure 1 - Map of Narębski Point, ASPA No. 171

2. Monitoring on avifauna in ASPA No. 171

The population sizes of breeding Gentoo and Chinstrap Penguins show a general increasing trend (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 of other birds were lower 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 in the 1990s.

Monitoring on the avifauna including the two penguin species, Chinstrap Penguin (*Pygoscelis antarcticus*) and Gentoo Penguin (*Pygoscelis papua*), has been conducted from December to February. At the onset of the breeding season, 2,378 nests of Gentoo Penguins (2,366 nests in 2012/13) and 3,157 nests of Chinstrap Penguins (3,304 in 2012/13) were counted during the 2013/14 season (Table 1). Owing to the good weather condition in the early breeding season, the general breeding performance of the two penguins was better in 2013/14 than that in 2012/13 when the lowest performance was recorded over the recent years. In particular, the mean hatching date of Gentoo Penguins was significantly earlier by 17 days while that of Chinstrap Penguins was advanced only by 6 days. The number of Chinstrap Penguin nests reached a plateau over 3,000 nests (Fig. 2A), and the population size of breeding Gentoo Penguins continued to generally increase (Fig. 2B).

A total of nine avian species bred in the area during the past four years (Table 2): two species of penguins along with additional seven species such as the Brown Skua (*Stercorarius antarcticus lonnbergi*), South Polar Skua (*Stercorarius maccormicki*), Kelp Gull (*Larus dominicanus*), Southern Giant Petrel (*Macronectes giganteus*), Snowy Sheathbill (*Chionis albus*), Wilson's Storm Petrel (*Oceanites oceanicus*), and possibly Black-bellied Storm Petrel (*Fregetta tropica*). A few Adelie Penguin (*Pygoscelis adelie*), Macaroni Penguin (*Eudyptes chrysolophus*) as well as Southern Elephant Seals (*Mirounga leonina*) were also recorded in the ASPA No. 171. Although the favorable weather during the 2013/14 season enabled the penguins to afford a good breeding performance, the extensive snow cover in potential nesting sites resulted in a complete failure in nesting attempts of other birds such as the South Polar Skua (*Stercorarius maccormicki*), Kelp Gull (*Larus dominicanus*) and Antarctic Tern (*Sterna vittata*) in the ASPA No. 171.

Table 1. Changes in the breeding performance of the two species of penguins represented as the number of nests, mean hatching date, the number of juveniles survived to the creche period, and the number of survived juveniles per nest since 2009 in the ASPA no. 171.

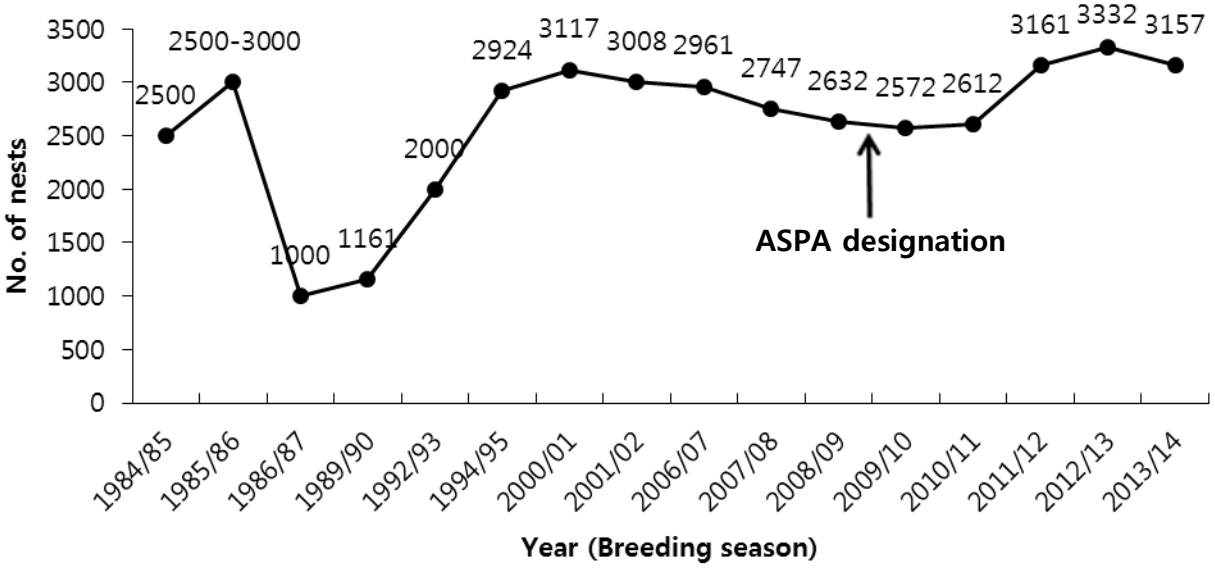
Species	**Parameter**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**
Gentoo Penguin	No. of nests (A)	2,289	2,351	2,212	2,366	2,378
	Mean hatching date*	n/a	n/a	n/a	358.35	341.19
	No. of juveniles (B)	n/a	2,796	2,939	2,556	2,876
	Juv./nest (B/A)	n/a	1.19	1.33	1.08	1.21
Chinstrap Penguin	No. of nests (A)	2,572	2,612	3,161	3,304	3,157
	Mean hatching date*	n/a	n/a	n/a	362.44	356.85
	No. of juveniles (B)	n/a	3,963	4,426	4,392	4,438
	Juv./nest (B/A)	n/a	1.52	1.40	1.33	1.41

*Julian date: 1 = Jan 1

Table 2. Estimated number of nests, by species (except for penguin species) past four years (2010-2014)

Species		**Number of nests**			
		2010/11	**2011/12**	**2012/13**	**2013/14**
Brown Skua	*Stercorarius antarcticus lonnbergi*	5	5	4	7
South Polar Skua	*Stercorarius maccormicki*	18	18	22	-
Kelp Gull	*Larus dominicanus*	5	5	3	-
Antarctic Tern	*Sterna vittata*	38	21	15	-
Southern Giant Petrel	*Macronectes giganteus*	12	11	15	5
Wilson's Storm Petrel	*Oceanites oceanicus*	>50	-	>5	>10
Snowy Sheathbill	*Chionis albus*	1	1	1	2

A)



(B)

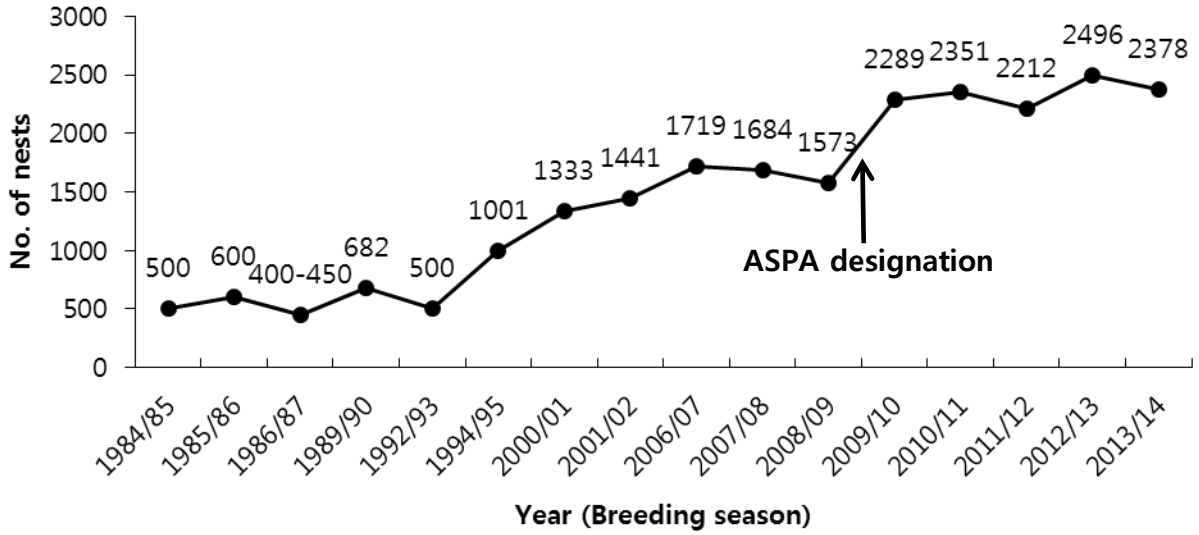


Figure 2 - Changes in the number of two penguin nests in ASPA No. 171. (A) Chinstrap and (B) Gentoo Penguins

3. Management activities

King Sejong Station, the Korean base nearby the ASPA No. 171, has supported diverse scientific activities and rigorously monitored and managed access to the protected area. Education programs and seminars have been offered according to the management plan before departure (Fig. 3A) and upon arrival to the King Sejong station (Fig. 3B) every austral summer season. In accordance with the permit conditions and management plan, research activities were carried out only by authorized personnel who were issued relevant permits to the protected area.

During the 2013/14 season, 34 scientists accessed the ASPA No. 171 74 times. Main scientific programs that have been conducted in the ASPA No. 171 include the monitoring on breeding penguins and other birds, biodiversity and ecosystem changes, remote sensing, microbial surveys, vegetation mapping, freshwater ecosystem monitoring, and disease/contaminant survey in the protected area.

Korea Polar Research Institute and the Ministry of Environment have supplied visitors to ASPAs with brochures (Fig. 4) and have checked condition of the establishments of ASPA signs erected at the entrance of ASPA No. 171 since 2009 (Fig. 5).

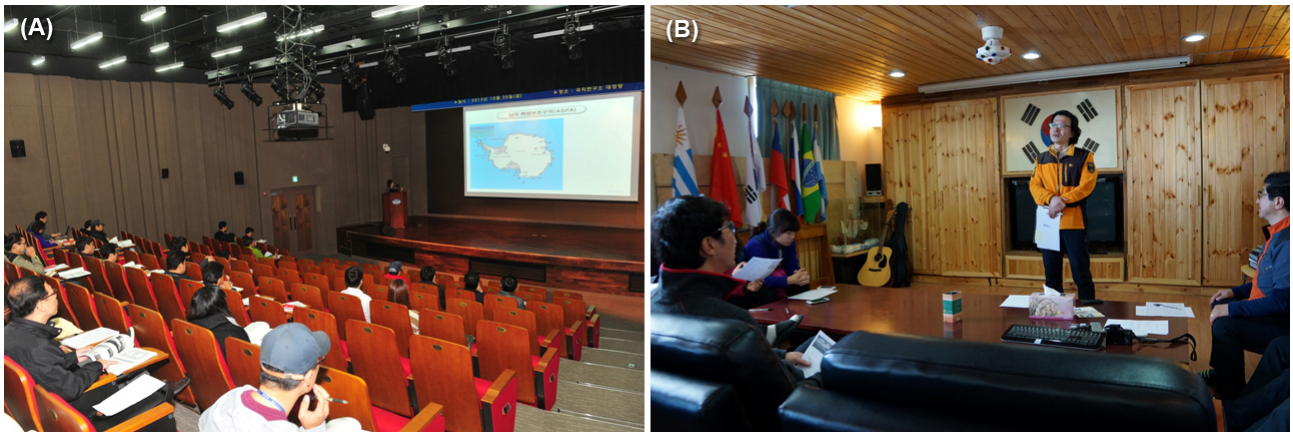


Figure 3 – Environmental education programs implemented according to the management plan at Korea Polar Research Institute (A) and the King Sejong station (B)

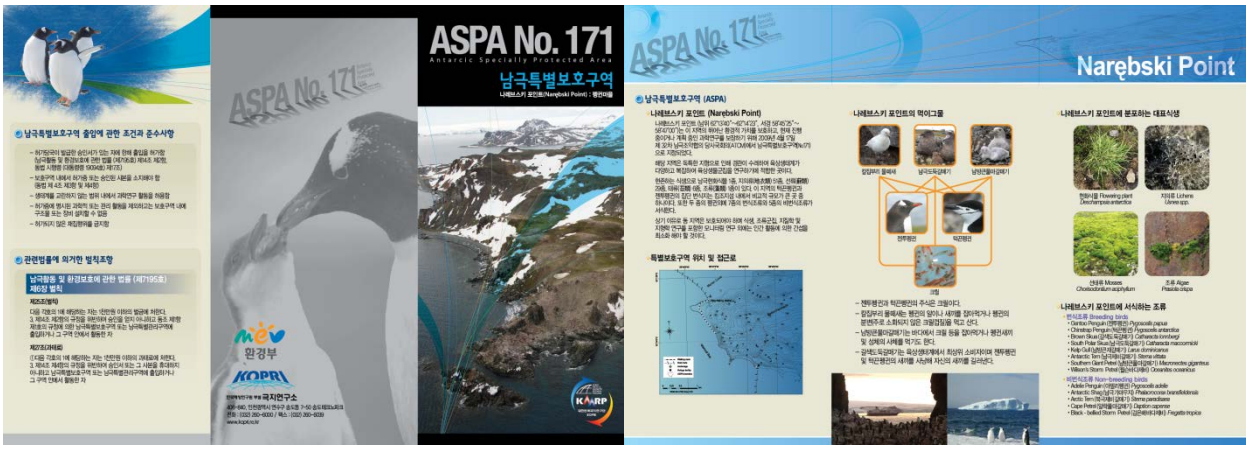


Figure 4 – Brochure on Antarctic Specially Protected Area No. 171 providing information on environmental education

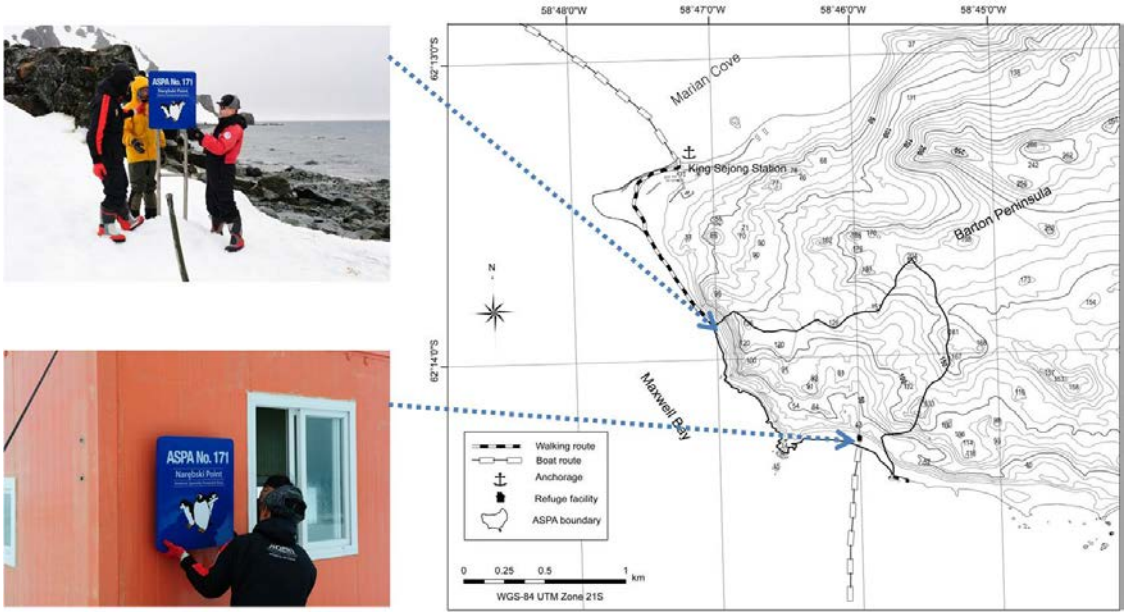


Figure 5 – Checking the ASPA signs erected at the entrance of Narębski Point, ASPA No. 171

4. Future plan

Monitoring the change in abundance of fauna has been conducted in the ASPA No. 171. However, in order to adequately understand the fluctuation in the abundance of wildlife, studies on environmental changes in the habitat should be paired with ecological monitoring. Since the number of nests, clutch size, and breeding success in seabirds are sensitive to food availability, Korea Polar Research Institute will introduce ocean color remote sensing and biologging for measuring the movement, activity, and diving depth of penguins to understand how climate change affects food availability (distribution, abundance of prey, etc). During the 2013/14 season, trial use of GPS logger and depth logger (Fig. 6A) was carried out for Chinstrap Penguin (Fig. 6B and C).

The current management plan simply suggests the access routes from the outside to the ASPA No. 171, but there is no specific information on passage routes within the area. Although scientists visited ASPA No. 171 74 times during the 2013/14 season, some of them merely passed through the area (15 times) to reach their research locations only accessible through this protected area or the Potter Cove to conduct scientific activities. To minimize disturbance caused by human approach to vegetation and breeding birds (penguins, skuas, etc.), a recommendation on appropriate passage(s) within ASPA No. 171 will be drafted on the basis of vegetation map and nest distribution data of seabirds for those visitors who will transit without any major activities in the area.

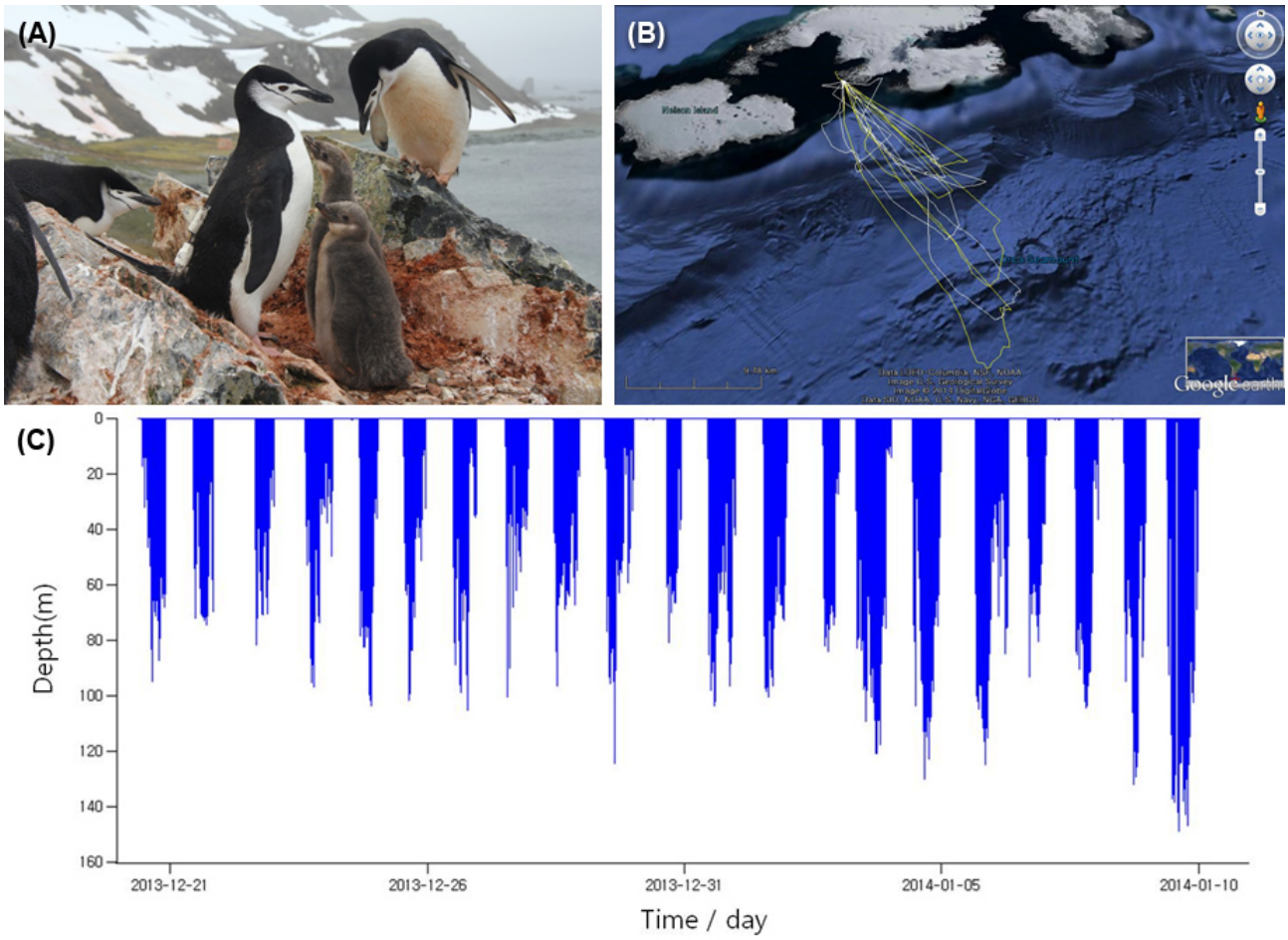


Figure 6 – Test results of GPS and depth loggers for Chinstrap Penguin (A). (B) and (C) show the trajectory of the foraging trip and diving depth of Chinstrap Penguin, respectively