Summer Habitat Geometries of the Black-faced Spoonbill

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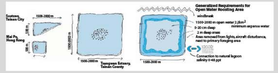
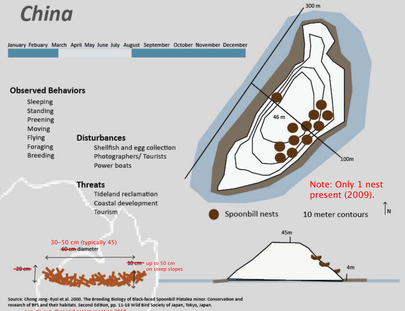
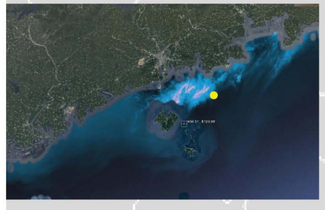
Wintering Habitat Geometries



1. Xing-ren tuo, Liaoning Province, China

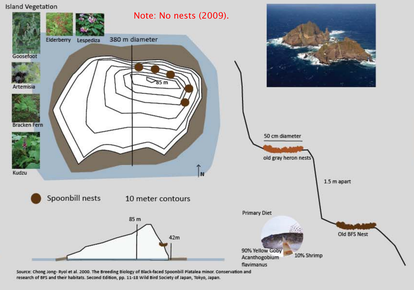


Source: Chong-ong- Ryol et al. 2000. The Breeding Biology of Black-faced Spoonbill Platalea minor. Conservation and research of BFS and their habitats. Second Edition, pp. 11-18 Wild Bird Society of Japan, Tokyo, Japan.
Left: K'-ssop. Personal communication 2010.



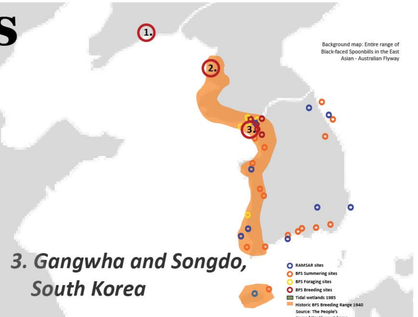
2. Dokdo Island, North Korea

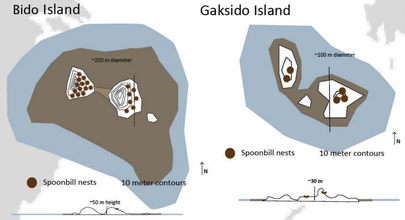
Note: Shapes and contours of breeding islands are conjectures, based on photographs.



Source: Chong-ong- Ryol et al. 2000. The Breeding Biology of Black-faced Spoonbill Platalea minor. Conservation and research of BFS and their habitats. Second Edition, pp. 11-18 Wild Bird Society of Japan, Tokyo, Japan.

3. Gangwha and Songdo, South Korea





Source: Kristen Podolak, July 8 2010

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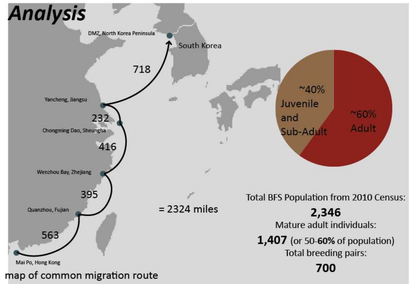
Case Study Sites

Analysis



map of common migration route

Total BFS Population from 2010 Census:
2,346
Mature adult individuals:
1,407 (or 50-**60%** of population)
Total breeding pairs:
700

Behavior Types

Foraging: the act of looking or searching for food or provisions
Copulating: courtship behavior between a pair resulting in reproduction
Nesting: creating shelter to hold its eggs and young
Incubation: sitting on or brooding bird's eggs in order to hatch them
Broodings: to warm, protect, or cover (young) with the wings or body
Loafing: idle time spent
Roosting: the act of sleeping or resting

Foraging

BFS Forage distribution and traces
BFS forage in flocks of 2- tens of individuals, but rarely single. BFS walk an average of 3.87m. per 10 seconds with 15.6 sweeps

Bout Phases

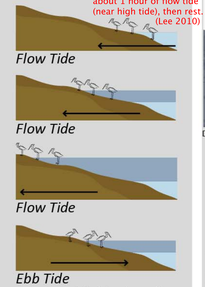
1: Locate prey
BFS will search for prey for no more than 1-10 minutes before moving off if unsuccessful. Locating prey has to do with being in a tidal feeding environment.

2: Attempt to catch
Sweeping and walking usually stopped or became irregular when prey was encountered. The pursuit followed by running when with one wing or both wings partly or wholly opened for balance. It could even suddenly jump after which the pursuit was immediately switched.

3: Handling and swallowing

Ebb Tide: flow to the sea
Flow Tide: flow to the land

~~Ebb tide is more conducive to BFS foraging due to water height and availability of food. BFS forage when the ebb tide is leaving to ensure a good forage.~~ BFS forage intensively for about 1 hour of low tide (near high tide), then rest. (Lee 2010)



Food species varied in length from about 2 cm (less than half the diameter of the "spoon") to about 21 cm (somewhat more than bill length).

Copulating

Diagram of BFS Copulation

BFS Copulation starts with the male preening the female on the cheek, head and neck. During copulation, the male holds the beak of his mate with his own. The routine lasts between 4-5 minutes, with copulation accounting for 7-8 seconds and typically takes place in the nest. Courtship behaviors and copulation continue throughout the pre-laying period until the eggs are laid.

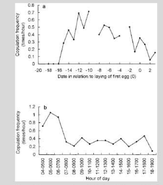
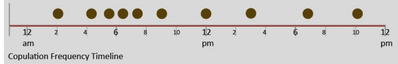


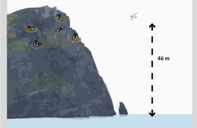
Figure 3. Frequency of copulation in relation to: (a) the female's laying date and (b) to the hour of day. Figures represent the number of copulations during observation hours.
Source: Nesting and Disturbance of the Black-faced Spoonbill in Liaoning Province, China. Wei-Guo-An et. al.

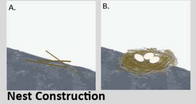
Copulation has been studied to occur .38 +/- times per hour, occurring most frequently in the morning.



Copulation Frequency Timeline

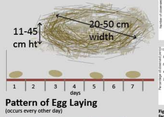
Nesting





Nest Construction
A. When initially constructing the nest, 1-2 twigs are layed on the substrate
B. Twigs are slowly added during the incubation period to protect the eggs

nest plant materials
Artemisia selengensis
Chenopodium album
Dueraria lobata
Fraxinus rhynchophylla
Lespedeza cyrtobotrys
Pteridium aquilinum
Sambucus coreearia
Weigelia subsessilis



Pattern of Egg Laying
(occurs every other day)

69.2%	30.8%
Male	Female typically at night

Time Spent in Incubation

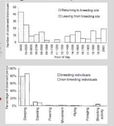


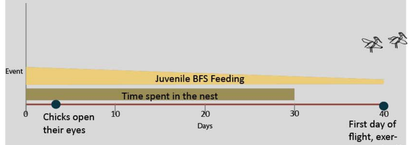
Figure 5. Time budget of diurnal activities of the Black-faced Spoonbill on Yong-Ho-Tae from 5-19 April 2010. Sampling was from 5 to 19 April 2010 and included four focal breeding individuals. Breeding birds were observed during a total of 356 hours and non-breeding individuals for 48 hours.
Source: Nesting and Disturbance of the Black-faced Spoonbill in Liaoning Province, China. Wei-Guo-An et. al.

Other nesting preferences (source: Lee 2010):
Rock surface, not earth (muddy in the rain); best if between 2 rocks for stability.
Slope: not so steep as to be hazardous for the chicks.
Grass, no forest (trees would hide predators). Shelter from wind. Gulls as neighbors.
Absence of human disturbance (surrounding water too shallow for boats to approach).

Brooding

Juvenile BFS are fed 4.1 +/- times per day with feedings deceasing during late nesting

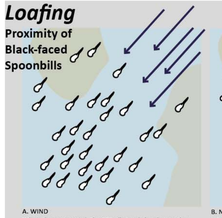
Brooding Period = 40 days



Brooding Events Timeline

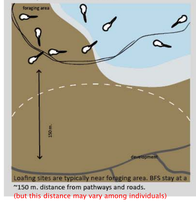
Loafing

Proximity of Black-faced Spoonbills

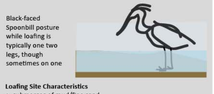


A. WIND
When there is a wind, the BFS all stand closely together facing the direction of the wind.

B. NO WIND
When there is no wind, BFS stand closely in a random and chaotically looking position.

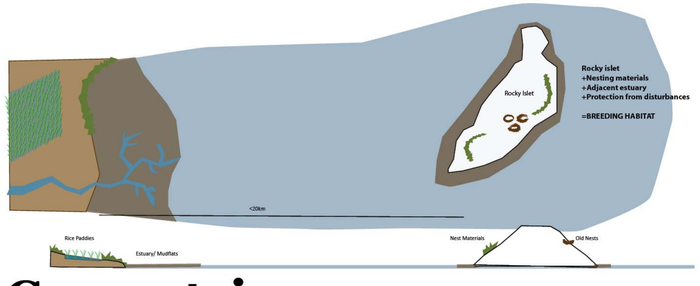


Black-faced Spoonbill posture while loafing is typically one two legs, though sometimes on one



Loafing Site Characteristics
- submerges of mud/fine sand
- dry cracked mud
- sandy mud
- stones
- trees
- manmade structures
- tidal or non-tidal

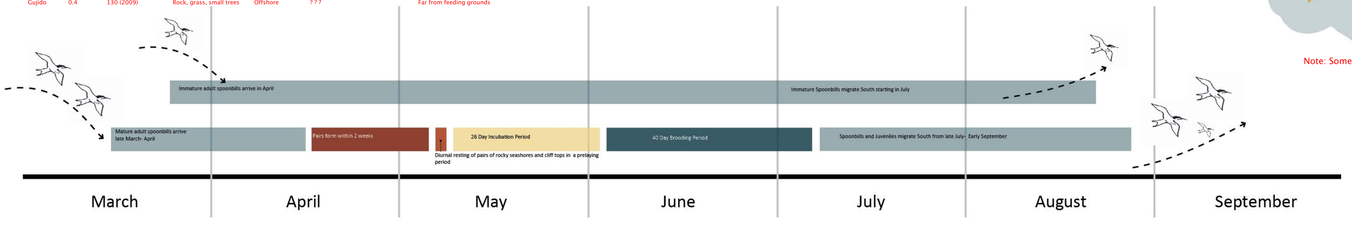
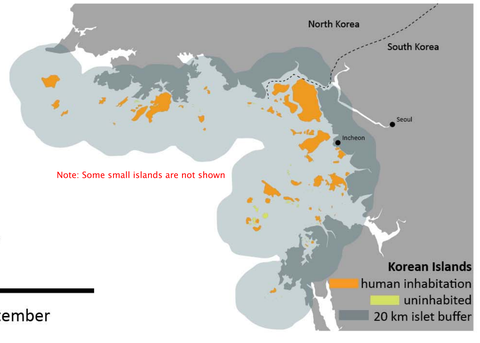
Behaviors



Geometries

Breeding Islands

Name	Area (ha)	# of breeding pairs	Vegetative cover	Surroundings	Predators/threats	Other
Yudo	20	100 (2004); 0 (2009)	Wooded	Estuary	Raccoon dogs, cats, herring gulls	
Gaksiam	0.07	6-10	Rocky; no vegetation	Tidal mudflat	Tourists, Fishermen, wind	Important roosting site 150 birds
Suhaam	0.06	10-20	Rocky; no vegetation	Tidal mudflat	Passing boats, tidal power plants	Important roosting site 50-80 birds
Yodo	0.4	60-80; 150+ (2009)	Grassy; 50% vegetation	Tidal mudflat	None	Breeding / roosting site
Suribong	0.12	4-10	Rocky; 15% vegetation	Seacoast	Tourists, Fishermen	Important roosting site 20-30 birds
Bido	1.1	100	Grassy; 60% vegetation	Offshore	~~None~~ Target practice (soldiers)	
Sokdo	0.7	15	Rocky; 10% vegetation	Offshore	None	
Chilsando	2.0	1-2	40% vegetation	Offshore	Rabbits, tidal reclamation	
Gujido	0.4	130 (2009)	Rock, grass, small trees	Offshore	? ? ?	Far from feeding grounds

Feeding and Roosting Areas

Name	Area (ha)	# of Birds	Vegetative cover	Surroundings	Predators/threats	Other
Gangwhado	3000	100-200	10% salt marsh	Intertidal flat	Tidal power	Important feeding ground
Yeongjongdo	3000	80-150	30% salt marsh	Intertidal flats	Tidal power	Important feeding ground
Han River	10000	20-50	5% reed cover	Intertidal flats, estuarine	Urbanization	
Songdo	8000	20-30	No vegetation	Artificial, reservoir, reclaimed area	Water pollution	Also includes Sihwa-ho
Hwahong-ho	4500	20-30	No vegetation	Artificial reservoir	Development	reclaimed area
Jeju Island	142 / 40 / 60	N/A	Coastal marsh	Shallow inner-bay bet. fish farms	Habitat loss, degradation	Use abandoned fish farm