Bolinas Lagoon
Heron and Egret Summary 2010

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Picher Canyon

Great Egret:

Egrets were first seen in the canyon on March 9, and pairs had begun incubating by March 17. The peak number of nests was 86, which occurred on May 24. The first chicks hatched on April 19, and at least 106 chicks fledged from the colony. An average of 1.0 ± 0.12 (SE) chicks fledged per nest attempt. The last day that egret chicks were observed in the canyon was August 3.

Great Blue Heron:

There were three nests attempts by two pairs of herons this year. The first pair showed up on March 17. They hatched chicks, which disappeared about three weeks after hatching due to an unknown cause. A pair re-nested and fledged two chicks. The other pair showed up on April 19 and unfortunately their eggs were not viable and did not hatch. The pair incubated the eggs for 73 days, and finally abandoned the nest on July 5.

Snowy Egret:

A single snowy egret first appeared in the canyon the week of May 24. Two snowy egrets were present in the canyon on May 31. At least one of the individuals had bright magenta lores, which indicates they were in breeding condition and ready to mate. No copulations, nest building, or other breeding behavior was observed. The last day a snowy egret was observed in the canyon was June 4. The last year that snowy egrets successfully nested in Picher Canyon was 2006.

Predation:

No predation was directly observed in the canyon this year. No predatory species were observed nesting in the canyon either. Common ravens and red-tailed hawks were present in the canyon and in the vicinity of the nesting trees. Although predation was not directly observed, loss of nests to predation can be inferred for a portion of failed nests (see Nest Failure below). Nocturnal predators, including great horned owl and raccoon, have been implicated in predation at Picher Canyon in the past, either through direct observation or strong anecdotal evidence. Because no observations of predation were made during diurnal periods, it is possible that some nests were lost to nocturnal predators. It is also possible that chicks were lost to diurnal predators, such as ravens, who have consistently been predators in Picher Canyon in past years, but that the predation occurred at times when no one was observing the colony.

Disturbance:

On April 6 a bald eagle flew through the canyon and flushed the colony. ACR staff that observed the event stated that the entire rookery was flushed, and the eagle dove after one the egrets. The eagle left and the adults eventually returned to their nests. All nests were in the incubating stage at this time. A raptor again flushed the colony on April 7, but observers were not able to identify the bird to species.

Great Egret Nest Failure:
Thirty-five (35) nests, or 34% of all nest attempts, failed to fledge any chicks. Of these nests, 16 (46%) were lost to abandonment either before or after eggs hatched and two nests (6%) failed to lay eggs. For the remainder of the failed nests, the reason for failure could not be positively determined. For eleven (31%) of the failed nests, predation of chicks could be inferred based on available evidence. When nests are lost due to predators, multiple young disappear between observation periods with no trace. Additionally, the majority of egret chick mortality occurs between two and four weeks after hatching, with egret chicks being most vulnerable three weeks after hatching. This coincides with the time when chicks are first left unattended by parents and are therefore especially vulnerable to attack from predators. Therefore, nests where multiple chicks disappeared with no trace between two and four weeks after hatching can be reasonably assumed to have failed due to predation. It should be noted that without direct observations, these estimates of loss to predation are speculative. For the remaining 11 nests that failed, the reason for failure could not be determined because the nest was hidden. Other potential causes of nest failure include starvation, disease, parasites, and accidents.

Kent Island and Bolinas Mainland

There were four great blue heron nests on Kent Island this year. All nests were successful, fledging a total of nine chicks. There were five nest attempts on the Bolinas mainland, three of which were successful and fledged a total of four chicks. There was a Common Raven (*Corvus corax*) nest on Kent Island, approximately 100m from the heron nest tree. No disturbance from the ravens was observed.

Variable	Year				
	2006	2007	2008	2009	**2010**
PICHER CANYON					
(a) Great Blue Heron					
Arrival date	January 30	January 30	February 14	March 2	**March 17**
Peak nesting date	May 19	March 30	April 1	May 1	**April 23**
First egg laid	March 17	March 22	March 17	May 21	**March 17**
First chick hatched	April 21	April 20	April 11	n/a	**April 16**
First chick fledged	June 19	June 8	June 13	n/a	**August 13**
Peak nests	9	8	6	1	**2**
Nest attempts	12	8	6	1	**3**
Successful nests	6	8	6	0	**1**
% nest success	50%	100%	100%	0%	**33%**
Min. chicks fledged	13	14	11	0	**2**
Avg. chicks fledged per nest attempt	1.3 ± 0.34	1.6 ± 0.29	1.8 ± 0.20	0	**0.67 ± 0.67**
Avg. chicks fledged per successful nest	2.2 ± 0.17	1.8 ± 0.25	1.8 ± 0.20	0	**2.0 ± 0**
Final fledge date	> July 28	July 16	July 12	n/a	**August 13**
(b) Great Egret					
Arrival date	March 20	March 12	March 13	March 20	**March 9**
Peak nesting date	May 19	May 18	June 3	May 18	**May 24**
First egg laid	March 31	March 27	March 25	April 6	**March 17**
First chick hatched	May 1	April 27	April 22	May 4	**April 16**
First chick fledged	June 19	June 8	June 13	June 29	**June 7**
Peak nests	106	73	66	59	**86**
Nest attempts	124	82	78	63	**106**
Successful nests	60	59	35	46	**48**
% nest success	48%	72%	45%	73%	**45%**
Min. chicks fledged	115	105	70	100	**106**
Avg. chicks fledged per nest attempt	0.9 ± 0.09	1.3 ± 0.10	0.9 ± 0.12	1.6 ± 0.14	**1.0 ± 0.12**
Avg. chicks fledged per successful nest	1.9 ± 0.05	1.8 ± 0.06	2.0 ± 0.10	2.2 ± 0.08	**2.2 ± 0.08**
Final fledge date	>July 28	August 8	August 11	August 6	**August 15**

Variable	Year		
	2008	2009	**2010**
BOLINAS			
Arrival date	n/a	March 6	**March 6**
Peak nesting date	n/a	May 19	**May 4**
First egg laid	n/a	March 20	**April 13**
First chick hatched	n/a	April 25	**May 4**
First chick fledged	n/a	June 14	**June 17**
Peak nests	1	4	**5**
Nest attempts	n/a	4	**5**
Successful nests	1	3	**3**
% nest success	n/a	75%	**60%**
Total chicks fledged	2	5	**4**
Avg. chicks fledged per nest attempt	2.0 ± 0	1.25 ± 0.75	**1.00 ± 0.71**
Avg. chicks fledged per successful nest	2.0 ± 0	2.5 ± 0.5	**1.7 ± 0.67**
Final fledge date	n/a	> July 3	**>July 5**
KENT ISLAND			
Arrival date	February 29	March 6	**March 6**
Peak nesting date	March 21	April 6	**April 3**
First egg laid	March 21	March 18	**March 13**
First chick hatched	April 28	April 25	**April 19**
First chick fledged	June 12	June 14	**June 14**
Peak nests	1	6	**4**
Nest attempts	2	6	**4**
Successful nests	1	4	**4**
% nest success	50%	67%	**100%**
Min. chicks fledged	1	7	**9**
Avg. chicks fledged per nest attempt	0.5 ± 0.50	1.4 ± 0.40	**2.25 ± 0.25**
Avg. chicks fledged per successful nest	1 ± 0	1.75 ± 0.25	**2.25 ± 0.25**
Final fledge date	June 12	July 1	**June 30**