1988

TAKEN from the narratives and the "Anaho Island NWR - White Pelican Items" file

NOTES ON ANAHO ISLAND-COLONIAL NESTERS

1949 No mention of any trips to Anaho in the narratives.

1950 Trips were made on May 15, June 26 and July 3. Another trip was made on September 21 to check on nesting mortality and the results of the banding done on July 3.

	Nests	Young	Colonies
DCCO	1028	1650	5
CAGU	Not given	400	1

AWPE: On July 3 a total of 4,160 young were counted, they were divided among 14 colonies, or pods, containing from 10 to 850 individuals each. It was believed that our presence caused the death of some of the smallest young through excessive exposure to the sun, as the adults were quick to take to flight as we approached a colony. The backs of several naked young were found pierced with blood running from the punctures. Possibly this injury was caused by California Gulls. Pierced eggs with only part of the contents remaining also indicated gull predation. On July 3 we banded 50 young pelicans. On September 21 only 12 live pelicans were noted and these were scattered around the edges of the island. The colonies were abandoned. No attempt was made to count dead young of this species, but in the lower colonies, which were the only ones checked, mortality did not seem high when compared to that of the gulls and cormorants. We checked all dead young in the colonies where 50 well grown young were banded on July 3rd. We conclude banding had no detrimental effect on the young pelicans when banded at a late stage and the 2 young found with bands probably represented natural mortality. In addition to the 2 bands found on dead birds, we found 1 band on the ground, the bird having rotted away. This band later proved to have been 1 placed on a young pelican in 1940.

DCCO: 1 deformed young cormorant was noted; the bird had a deformed beak with mandibles that did not meet, was excessively hooked, and a missing eye. An estimated 1,650 young were produced from 1028 nests over 5 colonies. Out of 25 bands placed on young cormorants in July we recovered 7 on young which never left the nest. At the time of banding, these young were fully feathered and able to scamper from nest to nest, but could not fly. Despite their well developed stage, the recovery of 7 of 25 bands indicates that our banding had a detrimental effect on these birds. Of the 4 rookeries, mortality among the young in the rookery where banding took place was more than 2x that which occurred in the rookeries that were not banded. Because of this high mortality rate, we do not anticipate banding young cormorants in the future. The skeletons of very young birds that died at the time of hatching or shortly afterwards had disappeared by the time we did our September count, therefore they are not included in the table below. Banding took place in rookery 1. On July 3 1,650 young were counted in these rookeries; a count of 1650 young when compared to the total of 1028 nests indicates that many nests were abandoned at an early stage or eggs were destroyed by gulls.

	Nests	Dead Young
Rookery 1	211	48
Rookery 2	296	12
Rookery 3	250	19
Rookery 4	271	24

TOTALS 1028 103

CAGU: On May 15 an estimated 2,000 adults were at the colony; on June 26 most young were hatched approximately 300 young hatched but at least 200 were later found dead. Mortality was high, of the 600 young estimated to have hatched at the colony, the ground was littered with the pieces of an estimated 500 dead. These birds were at the same stage as when banded, able to run around but not yet able to swim. A total of 17 of the 50 bands put on were recovered. We believe heat was a significant mortality factor; our presence scared the adults away thereby subjecting the young to the high temperatures. We do not anticipate banding gulls in the future.
CATE: This bird has not been noted nesting on the island by previous observers. Apparently it is a new-comer. 25 nests were found at the gull colony.

1951 Two trips were made to Anaho, 1 on May 15 and the other on July 6.
AWPE: 11 colonies were counted this year; none were on the summit and the stage of nesting was not in all cases correlated with elevation. The number of nests indicates 5,650 paris, or a nesting population of 11,300; and estimated 3,742 young were produced.
DCCO: The May 15 trip was too early for counting cormorant young because laying was in progress; on July 7 almost all young had left their nests. A count of adults seems unfeasible but a nest count appears to provide a reliable indicator of the nesting population. 1,300 nests were counted in 4 colonies.
GTBH: At least 16 nests were present in brush along the shore next to the cormorant colonies. Nesting extended over a lengthy period.
CAGU: Counts of young, nests, and adults were made. 1,706 nests produced an estimated 684 in the single colony on the south shore.
CATE: 15 adults and 4 or 5 young were noted in the gull colony.

1952 Three trips were made, on May 18, July 1 and July 23.
AWPE: About the same number of pelicans using the area as there was in 1950 however, no colonies were present at the summit. Nesting was more advanced in the colonies at higher elevations while the reverse was true in 1950. In 1951 there was little correlation between nesting stages and elevation. A total of 5,862 nests were counted this year and an estimated 4,053 young were produced in 15 colonies. Assuming 2 adults to a nest the estimated nesting population for this year was nearly 12,000 adults.
DCCO: On June 7 a boat trip was made to the Pinnacles; only cormorants (of the colonial nesting species) were using the area, no attempt was made to count nests but there were undoubtedly well over 1,000.
GTBH: Nothing reported.
CAGU: An estimated 1500 nests were counted with about 1,400 young produced in the traditional colony on the south shore. The high mortality seen in 1950 and '51 was not seen this year. As usual, adult gulls worked over the pelican and cormorant colonies while we had the parents scared off. They ate eggs, disgorged fish, and on several occasions were observed killing young pelicans for a few choice parts, after which the rest was left.
CATE: The tern colony is just barely hanging on; we counted 8 young on July 1.

1953 Trips were made on June 18 and July 6.
AWPE: Colonies were located from the shore to the summit; there appeared to be no correlation between elevation and nesting stages. The count of young

was made about a week late and may be a little low because some of the young may have been on the water. The number of young was estimated at 3,803.
DCCO: Colony sites were the same as last year. There was a record number of nests, 1389, and a record number of young, 3000, produced.
GTBH: Nothing recorded.
CAGU: There appears to be little evidence of change in the status of nesting gulls from last year. An estimated 1,500 nests produced 900 young.
CATE: Terns failed to show up this year.

1954 The island was visited 3 times, twice by boat on June 24 and July 9, and once by plane on April 21.
AWPE: On April 21 observations indicated that the nesting colonies of pelicans had increased in size. An estimate of 7,000 adults was made for the whole island. The size of the pelican colony near the summit is the best indication of an increase in nesting birds. There were 59 nests at this site in 1950, none in '51 or'52, in '53 this nest count was not distinguished from the total count but was about twice as large as in 1950. The aerial observations of April 21, 1954 revealed the presence of perhaps 250 pelicans at this summit site, indicating that it may increase in size some 4 times greater than in 1950. This year, nests were not counted but the number of young indicated the presence of a number greater than at any time since 1950. Total young was estimated to be 5,340. Banded 566 pelicans.
DCCO: Recorded the largest number of nests ever found, 1,443. (No estimate of the number of young was provided).
GTBH: In the past these birds have always nested in the alkali weed along the lake shore. This year no nests were found in the alkali weed; instead the birds built nests on top of greasewood bushes farther inland. This is our first observation of the use of greasewood for a nest base. A total of 6 nests were found (no estimate of the number of young was provided).
CAGU: No noticeable change in the gull colony. Nest mortality and loss of young seems so high that the colony does not increase. Space may be the limiting factor, though crowding appears to be a preference, for nests are more thinly spaced around the periphery. 1,500 nests were counted (no estimate of young was provided).
CATE: The terns again nested among the gulls. They were concentrated at the upper limit of the nesting area away from water; in the past they have tended to nest almost at the waters edge. 17 nests were found (no estimate of young was provided).

1955 On April 8 a trip was made to Anaho to check out nest initiation. Two more visits were made in June. (Incomplete and confusing data were presented, couldn't determine if some of the counts represented young or adults).
AWPE: A total of 2,800 nests were counted; this is a reduction from previous years when nest numbers varied from 4,000 to 5,000 or more. An estimated 3,500 pelicans.
DCCO: There was a decline in this species; a total of 1,080 nests were counted as compared with last years nest count of 1,443. Estimated 500 cormorants.
GTBH: Only 1 adult was seen on April 8; assumed others were out foraging. In June only 2 nests were observed; the usual congregation of feeding birds was lacking.
CAGU: In April an estimated 1,000 gulls were present. In June, 2,000 adults

were at the nest site. High juvenile mortality was again noted.
CATE: Six nests were found in the gull colony.

1956 Visited 4 times; aerial reconnaissance on April 23 and boat visits on May 2 and 23, June 6 and 27.
AWPE: On April 23 it was estimated that 8,000-10,000 pelicans were in the colony; eggs could be seen in nests. Nested in 3 general locations; atop the island, the main colony on terrace along the northeast side of the island, and a new colony about 400 yards below the main one. The new colony began hatching 3 weeks before the main one. There was a slight increase in the size of the colony over a year ago; there were an estimated 3,600 nests.
DCCO: There were 3 colonies along the east side; 1 of 330 nests, one of 560 nests, and 220 nests in the 3rd. This year we had a total of 1,110 nests as compared to 1,080 nests counted a year ago.
GTBH: Three nests were found among the nests in the "new" pelican colony. The most herons seen during any visit were 14, observed on June 27.
CAGU: The gull population was estimated to be 2,600 birds at the nests. There were an estimated 1,750 nests, an increase over previous years. Young were seen in the nests on June 6.
CATE: Terns again nested within the gull colony; 11 nests were found on June 6.

1957 Visited May 15 and June 1.
AWPE: The nesting population was smaller this year; pelicans did not nest on top of the mountain this year. There were only 2 colonies; the large 1 contained approximately 2,400 nests, and a colony just below the main one that was new last year included 400 nests.
DCCO: Cormorants increased this year; they nested in 3 colonies totaling 1,580 nests.
GTBH: Herons were more abundant; they nested on greasewood within the "new" pelican colony. A total of 8 nests were seen this summer as opposed to the 3 seen last year.
CAGU: The gull population increased from 1,750 nests last year to an estimated 1,950 nests this year. The first young had appeared on June 1st.
CATE: No terns were found nesting within the gull colony this year.

1958 The island was inspected by air on April 16; visits were made by boat on April 26, June 17 and 20, and July 23.
AWPE: Pelican population increased considerably over last year; there were 4 colonies with an estimated 4,700 nests. Some 6,400 young were counted in July. April 16 pelicans were nest building, by April 26 approximately 65% of the nests contained 2 eggs. On June 20 pods totalling 4,300 young were observed. An additional 1100 nests containing young and eggs were noted (giving the total production estimate at 6,400 young). On July 23 it was apparent that some of the earliest hatched young were already able to fly. The majority of nesting was along the high terrace from the south to the north end (where they've nested for the past 4 years). A new colony of 150 nests was found at the north end of the tufa ridge which extends to the northeast at the north end of the island.
DCCO: Nested in only 1 area; colony contained an estimated 1,600 nests that produced about 3,200 young. They were incubating on April 25, and by June 20 about 500 young were on the water. A group of 300 new nests were found adjacent to the north end of the previously established colony.

GTBH: A colony of 33 nests was found along the northeast ridge where the new pelican colony was established.
CAGU: Colony was located on the south shell-sand beach. Nest building was just beginning on April 25. An estimated 1,700 nests, a 13% decrease from last year, were observed in June. On June 20, 3,000 young were counted most of which were 1/3 grown. By July 23, many of the young were flying, and only 550 adults and 600 young just reaching flight age remained in the nesting area.
CATE: No terns were observed at the gull colony as had been in the past.

1959
AWPE: Pelicans began showing up at Anaho in March but little nesting activity was observed until late May and early June. On June 26, 500 pelicans were banded; banding data on pelicans banded in previous years shows little erratic movement. Virtually all recoveries have been from an area directly to the south. A total of 3 colonies with an estimated 2,500 nests produced 3,500 young.
DCCO: Approximately 1,000 young were produced on the low cliffs on the east shore of the island; there were 3 colonies with approximately 1,500 nests. A number of dead cormorants about 1/3 grown were observed in the nests in mid-July; cause of death could not be determined. 90 cormorants were banded on June 26.
GTBH: One colony of 50 nests produced approximately 80 young.
CAGU: The colony on the south shore prospered; 2,000 nests produced an estimated 3,000 young.
CATE: One colony of 70 nests produced approximately 70 young.

1960 Aerial photos of the colonies were taken on May 4. (No map outlining colony locations was provided).
AWPE: A count of pelicans at nest sites (from aerial photos) indicated 3,468 nests on the lower slopes and an additional 132 nests on the top of the mountain for a total of 3,600 nests. On July 29, 4000 young pelicans were estimated to be reaching maturity. A few very young birds were also seen.
DCCO: By April 28 full scale nesting operations were underway; nests in the rookery contained from 1 to 5 eggs (most contained 3-5). Approximately 2,000 adults were seen at the rookery. 1,095 cormorant nests were counted from the photos. On June 12, a large percentage of the young birds were dead in the nests; size varied from newly hatched to 1/2 grown. Some efforts at renesting were noted on cliffs just north of the main rookery. This is the second season of significant loss for the cormorants; heavy lice infestations in the nests suggest this as a potential cause of the mortality. On July 29, a check of the nests in the pinnacles revealed that a die-off had occurred there earlier in the season. Disturbance caused by increasing levels of motor boat traffic is considered the most plausible explanation for cormorant mortality. Ground counts result in severe losses to the cormorants, flushing adults from their nests often results in losses of 100-300 cormorant eggs to the gulls.
GTBH: 50 nests were counted from the photos.
CAGU: On April 9, gulls were just starting to nest; a few eggs were observed but most nesting efforts were centered on nest building and territorial defense. Approximately 2,000 nests were counted from the aerial photos.
CATE: No tern nesting was noted.

1961 Aerial photos of the colonies were taken on May 8. (No map outlining

colony locations was provided).
AWPE: Count from the aerial photos indicate 3,650 pelicans were on nests. On June 2 production was well advanced with some nests still containing eggs and some with young up to 1/3 grown. Nesting was concentrated on the ridge extending to the north rather than along the bench on the east side of the island; no birds nested on top of the mountain as in previous years.
DCCO: Third consecutive year of poor nest success; boat traffic is the most reasonable culprit. On several occasions it was noted that a boat passing offshore within 400-500 yards would flush the birds off their nests resulting in the eggs and young being exposed to the sun and gulls. On March 24, 900 cormorants were present at the usual nesting cliff, only 1 egg was observed at that time. On June 2 approximately 1,000 nests were occupied, mostly with eggs, some just hatching. (Approx. 2,000 adults were in the area). When the cormorants were disturbed the gulls first consumed the regurgitated fish then gorged themselves on eggs; later observation in June indicated nesting efforts were largely unsuccessful.
CAGU: An estimated 2,150 adults were counted (from the photo). On June 2 hatching was just beginning. An estimated 2,000 young were produced.
GTBH: On April 21, 9 active nests were located on the north end of the island; nests contain 4-5 eggs each. 7 active nests were observed in June, estimate 20 birds were produced. Herons nested along the east side of the rocky ridge at the north end of the island.
CATE: About 50 terns attempted to nest within the gull colony; success is unknown.

1962 Aerial photos were taken on May 24 to provide a consistent (third successive year) means of estimating production. (No map outlining colony locations was provided).
AWPE: 3,235 active pelican nests were counted from the photos taken May 24th; this is based on crediting each pelican within the nest site as having an active nest. Ground observations indicate this to be a rather solid basis for an estimate, as there does not appear to be more than an average of 1 pelican on the ground for each active nest at this critical period in the production cycle. On May 29 2,198 nests were counted; believe some of the nests may have been destroyed by gulls. At this time several stages of production were evident. Some young were two-thirds grown with all intermediate gradations down to fairly new eggs. Stage of development appeared to be fairly well synchronized within local groupings. From observations of the number of clutch size and development they concluded that 1 young pelican was the maximum number produced from a single nest. Production was estimated at 3,000 young.
DCCO: The cormorant colony moved its location from near the east shore of the island (on the low bluff adjacent to the east shore of the island) to the high rugged cliffs on the west side. At their former nesting site the cormorants had suffered severe losses of young for 3 successive seasons--presumable as a result of molestation by boaters and death of young by exposure. On May 29 a ground count of the lower portion of the colony revealed 216 nests. The young from 136 nests had already matured, some were near mature, and 60 of the nests contained a total of 669 eggs. The total of young in 20 nests was 42. An aerial photo count of nests and adults on the high and fairly inaccessible cliffs revealed another 600+ nests. Early in the nesting season cormorants were seen nesting on several of the pinnacles on the north end of the lake.
CAGU: A ground count on 11 July indicated that a total of no less than

3,500 young were produced; many were already flying and out using the water. Predation by the gulls on other nesting species is still a serious concern. When pelicans leave the nests gulls first consume the remnants of fish lying around the nest, then go for the eggs, but were even seen to peck into the body cavity of young pelicans.
CATE: Seem to be on the upswing even though they nest in the midst of the gulls. A total of 250 adults were noted on nesting locations on May 29. On July 11 an incomplete count of young indicated at least 200 were produced. When disturbed the young terns and gulls head for the rocks for concealment.
GTBH: On May 29, 56 young herons were counted in nests in the greasewood on the south side of the island. Young were 1/2 to 2/3 grown, averaging 2.5 birds/nest.

1963
AWPE: Used both ground counts and aerial photos to determine estimates of young produced; approximately 2,500 young were produced from 1,000 nests in 3 colonies. On June 18 400 young pelicans were banded; on August 1, 115 young pelicans were marked with green dye. 20 other young-of-the-year were captured and taken to the Univ. of California where the were used in the study of the effects of pesticide levels. The dyed birds have been observed locally (Stillwater and Lahontan) and from Topaz Lake, Sacramento Refuge, Battle Mountain, and on the Minidoka Refuge (Idaho). When the birds were color-marked it was believed that they were approaching flight capability but at least 1 bird was capable of sustained flight; a bird was seen on Tule Lake NWR the same day it was dyed at Anaho. By the end of the year a total of 185 observations of dyed birds were made over a wide geographical area.
DCCO: Estimated 2,000 young produced from 1 colony of 800 nests. Again nested on the east side of the island. Evidence suggests that this site was abandoned last year in favor of the cliffs on the west side of the island.
GTBH: An estimated 50 young were produced in a single colony from 20 nests.
CAGU: Refuge personnel banded 500 gulls on June 25 (cooperation with Fred Gallup, Escondido, CA). 100 also received green leg bands in addition to aluminum bands. An estimated 2,500 young were produced from the traditional colony on the south side of the island.
CATE: Production is down significantly from last year; An estimated 60 young were produced; appears that a portion of the nests were not found during the ground counts, only 25 nests were located. 24 terns were banded.

1964 (No map of the colonies was provided).
AWPE: Pelican populations remained relatively stable this year compared with '63; 2,314 young birds were produced from 1,608 nests. The only significant changes from '63 to '64 was the colony structure, in '63 there were 3 large colonies, in '64 we had 6 smaller and widely dispersed colonies. 726 were banded over 2 days of effort (June 23 and August 4). Pelicans were color-marked for the third year this year in cooperation with the pesticide studies. 103 pelicans were marked with green dye (green dye was used in '63 with greater success than the pink dye used in '62). 185 observations were made of the 115 birds marked with green dye in '63. The bulk of the observations were made in the inland valleys of California but they ranged from Fort Peck, Montana to Salton Sea, California.
DCCO: Estimated 1,000 young produced from 415 nests. DCCOs had a substantial reduction in production from '63 they nest relatively close to the water's edge and are subject to continually increasing harassment from boaters.

GTBH: Estimated 80 young produced from 40 nests.
CAGU: Estimated 2,100 young produced from 1,000 nests. Gulls also had a significant reduction in production, they too nest close to the water's edge and are subject to harassment from boaters. 519 gulls were banded on June 23.
CATE: Estimated 70 young produced from 30 nests.

1965 (No map of the colonies was provided). Two trips were made to the island; 1 on June 21 to band pelicans and the other on July 15 to census colonial birds and trap mammals.
AWPE: On June 21, 452 pelicans were banded. 2,700 young pelicans were counted on July 15; 1,600 nests were reported.
DCCO: An estimated 900 young were produced form 375 nests.
CATE: Estimated 60 young from 30 nests.
CAGU: Estimated 2,500 young from 1,200 nests.
GTBH: 75 young from 40 nests.

1966 A trip to the island was made on 27 May to check on nesting progress. (Little info provided in the narrative, no map of the colonies, and very little descriptive text.
AWPE: Many pelican eggs had hatched at one site while none had hatched at another. 1,500 nests produced an estimated 2,550 young.
DCCO: An estimated 840 young were produced from 350 nests. On May 27 hatching of cormorant eggs appeared to be near its peak.
CAGU: On May 27th no gulls had hatched as yet; 1,200 nests produced an estimated 2,500 young.
CATE: No terns were seen on the 27th. 30 nests produced an est. 60 young.

1967
AWPE: Pelican nest sites vary from year to year. In '66 1 group nested near the top of the mountain, this year there was no nesting activity there. There was an increase in the number of colonies but a drop in production from last year. Total production from 7 colonies was 1,655. 2,286 adults were counted from aerial photos however this number only represents the number of adults in the colony when the photos were actually taken, other birds were definitely out feeding on the Delta. Author recommends that more research is needed in regards to the establishment of colonies. A new colony was established.
DCCO & GTBH: The location of these colonies remains relatively constant from year to year. DCCOs had 500 nests each with 2 to 4 eggs. Est. production 1,200 young; on June 8 they were just beginning to hatch. GTBHs nesting activity was confined to greasewood at south end of the island. Est. production 60 young; on June 8 both young and eggs were observed.
CAGU: Gull production increased. Production from 3,000 nests was estimated to be 4,500 young. Most nests contained 3 eggs; on June 8 there were still some unhatched eggs but there were also chicks that were able to run. The colony nests on the south shoreline.
CATE: A colony nests in the middle of the gulls, terns production decreased while gull production increased. . There was little antagonism observed between the 2 species. 20 terns were produced.

1968 All nesting activity was several weeks earlier than last year.
AWPE: Pelican production was up 87% with 3,090; more successful than last

year. They believe a major reason for increased production was less human disturbance during the nesting season. Little evidence was found of nest mortality. Hatching dates over several colonies appeared to be close together, on July 8 there were only 2 general size classes; 1 group was nearly grown (almost capable of flight) the other was still down-covered but highly mobile. Instead of seven distinct colonies as there were in 1967 this year nesting occurred all along the base of the mountain with two small outlying colonies.
DCCO: Production was about the same as last year, with 1,140 produced.
GTBH: Production was about the same as last year, with 66 produced.
GULLS & TERNS: Gull production was estimated to be 4,200 and tern, 24. Location and size of colonies were the same as in '67 (both nested on the beach area, on the south shore near the end of the peninsula.

1969
AWPE: On April 9, there were 3 groups within the main colony area, the largest group of ~1,200 were incubating eggs. A second group of 800 was laying eggs; some breeding activity was apparent and incubation had not yet begun. The third group of ~900 birds were still pairing and breeding. Most of the nesting occurred in 1 area, some was attempted on the southern portion of the island but was unsuccessful. Estimated production was 3,400 young, about 10% higher than last year.
DCCO: On April 9 3 groups of cormorants (200, 60, and 35) were observed in the traditional area. On June 30, found that the nests in this area had been abandoned, skeletons of young and adults were found. For the first time cormorants were found nesting in the greasewood among the pelicans. Uncertain as to why the traditional area had been abandoned but the inland site appears to offer better chances for nest success (adults are not forced to leave their nests each time a boat passes, thereby reducing the amount of time the young will be exposed to predation). Total number of nests was estimated at 200 (compared with 475 last year), approximately 600 young were produced.
GTBH: Herons also changed colony locations this year. On April 9 some nesting had begun at the old site (see map); of 12 nests checked 4 had 1 egg. On June 30 a few nests remained active in the traditional colony but most activity had shifted to the greasewood on the east side of the island. Estimated 50 nests averaged 4 young/nest.
CAGU: On April 9 gulls were defending territories but no eggs were found. Production was estimated at 4,000 young (~14% below last year).
CATE: 15 terns were sitting in the gull colony on June 30, but no nests were seen. No evidence that they nested.

1970
AWPE: Used 7 small colonies, deserted the northernmost colony early in the season. Several deserted nests were noted with crushed eggs. Data was collected by Don Knapp; Division of Wildlife Research has used colored patagial wing tags for the last 4 years in an attempt to determine the breeding history of pelicans. 1 pelican, wingtagged at one of the CA refuges, was sighted in the breeding colonies. 1,822 nests were counted over 5 colonies were considered successful. 150 other nests in a separate colony were abandoned. Appears that 1 young was fledged per nest therefore assume that an estimated 1,822 young were produced.
DCCO: Used their original nesting colony on the shoreline. Previous yr. they deserted this site and nested among the pelicans on the interior of the

island. Prod. was not ground checked because human disturbance increases the losses from gull predation on eggs and young.
GTBH: Most nested in greasewood on east side, some used the old site on the south side.
CAGU: Continue to nest on the gravel bar at the southeast corner of the island.
CATE: 25 were present in the gull colony but no nesting was known.

1971 Refuge personnel made no trips to Anaho in the summer of '71. Data were taken from aerial photographs taken by the Division of Wildlife Research.
AWPE: Birds were counted at nests from photos, 2975 nests were counted. Nesting success est 80% w/1.25 young/nest.
DCCO: Nested at their usual site on eastern shoreline. 496 nests were counted, nesting success est. 60% w/ 2.5 young/nest.
GTBH: Continue to nest in greasewood.
CAGU: Nested in their usual site on southeastern tip. 1,931 nests were counted. Prod est down 38%.
CATE: No production data available.

1972
AWPE: Complete count of breeding pop not made. April 26 est 2800 pelicans on island; July 12 2500 young pelicans counted (16% below last yr). 2 colonies this yr on upper flats east of hillsides.
DCCO: Some nests in shoreline colony being destroyed by wave erosion of the shoreline, new nests being established inland along the perimeter of colony only 30-40% of the original colony in use. Production down 9% (675 young), nest success 60% w/ 2.5 y/nest.
GTBH: Early July a few young in the nests but most in the surrounding greasewood.
CAGU: Est. 2% increase in production over last yr. Est. 70% nest success w/ 2 young/nest. By July 12 most young nearly full grown and moved to water.
CATE: No production this year, none seen around the colony where they nested last yr.

1973
AWPE: An estimated 6,800 adults produced 2,500 young.
DCCO: An estimated 640 young were produced.
GTBH: An estimated 50 nests produced 165 young.
CAGU: An estimated 3,050 young were produced.
CATE: No terns were produced.

1974
AWPE: In May chicks were just beginning to hatch in colony A, many of the adults in the area had lost their knobs. Production was down 46% from last year. An estimated 1,725 pairs were recorded as producing 1,725 young.
DCCO: Nesting success was 50% with an average of 2 young/nest. 350 pairs of cormorants produced an estimated 350 young.
GTBH: Production was down.
CAGU: Production increased 18% over last year. With 80% nest success and an average of 2.5 young/nest.
CATE: Approximately 70 adults were seen on May 21, however, no nests were found. Production was estimated to be 55 young.

1975 One record was found in the pelican file giving some information about nesting activities on Anaho in June.
AWPE: 1,600 nests were counted. Very few pelicans have hatched, most adults still incubating.
DCCO: 325 (does not specify wether this number represents nests or birds.
GTBH: 67 (does not specify wether this number represents nests or birds but because of where the value exists on the data sheet my best guess is that it represents the number of breeding pairs of herons.
CAGU: No estimate was made, colony was similar in size to 1974's nesting population.
CATE: No estimate was made, colony was similar in size to 1974's nesting population.

1976
AWPE: An estimated 7,000 adults produced 2,500 young.

1977
AWPE: July, Estimated numbers of nesting adults 3,000, non-breeders 1,000, and young produced 1,400.
DCCO: July, Estimated number of adults 700 and young produced 300.
GTBH: July, Estimated number 30 (does not specify adults or young).
CAGU: July, Estimated number 1,500 (does not specify adults or young).
CATE: No terns were seen using the island.

1978
AWPE: July, estimated number of nesting adults 3,420 and young 1,540. There is 1 main colony actually composed of 3 smaller colonies. 80% of the young are nearly grown while 20% are still downy.
DCCO: July, estimated number of adults 1,950 and young 850.
GTBH: July, 10-15 nests with a total of 60 herons (does not specify if the number of herons is adults, adults + young, or young.
CAGU: July, estimated total 800 (adults, adults + young, or young?).
CATE: No mention of terns in the notes.

1979
AWPE: July, estimates of total nesting adults 3,500, non-breeders 700, and young produced 1,575.
DCCO: July, estimates of total adults 2,300 and total young produced 1,250.
GTBH: July, 100 heron nests were counted.
CAGU: July, a total of 3,275 adults (2,975 breeders) were counted as well as 900 young.
CATE: No mention of terns was found in the notes.

1980
AWPE: Did not visit Anaho until late June. Few pelicans were incubating most hatching had occurred 2-6 weeks earlier. The pelicans had shifted their nesting colonies back to the benchland on the northeast side of the island. No colonies were found using the saddle on the mountain top as reported in 1979.
CATE: No nesting was noted by terns.
DCCO: Cormorants abandoned their previous nest site on the rocky tip of the northeast side of the island and nested amongst the pelicans on the benchlands.

1981

AWPE: May 27, an estimated 3,500 adults were nesting and another 320 non-breeders, estimate a potential for 4,227 young but only 1960 were actually counted. June 16, 370 adults and 3,020 young were counted. June 30, a estimated 3,785 young pelicans were counted.

DCCO: May 27, an estimated 1,460 adults were in 6 colonies, no estimate was given for the number of young. June 16, 1,510 adults and young cormorants were counted. June 30, no count of cormorants was provided in the notes however, they did note that most cormorants were down at the shoreline or on the water.

GTBH: May 27, 127 herons were nesting in the tops of greasewood along the east shore, young were not clearly visible and were therefore not counted.

CAGU: May 27, gulls (3,500) were beginning to nest but no young were yet visible. June 30, many adults had left the colony and most of the young were in very advanced stages of development; on average there was 1 young produced per brood but on occasion we did note the presence of 2. An estimated 650 young were produced.

CATE: May 27, 54 terns were establishing nest sites within the gull colony but no young were visible as yet. June 30, 5 young terns were counted, this was the first time terns production was positively documented in 5 years.

1982

AWPE: Results from a masters thesis study on pelicans were reported:
Anderson, J. 1982. Breeding biology of the American White Pelican at Pyramid Lake, Nevada. San Francisco State Univ.
Summary: Clutch size ranged from 1 to 4 eggs with a mean of 1.97. Approximately 1 chick fledged per clutch (corresponds with our method of estimating production). Peak mortality occurred during the first 3 weeks after hatching. Primary cause of chick loss appears to be dehydration or starvation of the second chick in 2 chick clutches. Predation by California Gulls does not play a significant role in chick loss. Anderson estimates that in recent history, the Anaho colonies may have supported a population of from 16,000 to 20,000 pelicans. Deliberate destruction of colonies by fishermen up until the 1930's reduced populations to about 10,000. The population eventually recovered to an average of 10-11 thousand in the early 50's. During that time production varied from 3,742 to 5,340, with a high of 6,400 young produced in 1958. Afterward the population varied, but generally declined between then and 1980. Since then, prod. has increased to 2,880 in 1981 and 3,350 in 1982, the latter being the highest record since 1959. Declines were probably caused by a variety of factors: pesticides, human disturbance, reduction in Pyramid fish populations, and droughts and changes in water and fish populations in feeding areas.

1983 NOTE: Came across a memo in the files entitled "Report on Dead Pelicans" that states that by May 27 of 1983 the number of pelicans is almost double from normal years with peak numbers near 2,000 birds. In normal years mortality during the spring period averages 10-15 dead pelicans, in 1983 40 pelicans were found. 6 pelican heads were sent in for contaminant analysis.

AWPE: Several factors influenced nesting and hatching success; there was also a significant shift in the use of colonies. Lake level was higher than normal thereby exposing at least 1 colony to view; boating may have added sufficient disturbance to promote nest abandonment. Fish runs at Pyramid were delayed which stressed the birds nutritionally; at Stillwater normal

spring levels of pelican feeding doubled and mortality tripled.
DCCO: Nesting was down from last year, inadequate food supplies and boater disturbance were assumed responsible.
CAGU: The colony increased in size and there was a corresponding increase in production.
GTBH: Production was down 42% from the previous year; subject to recreational disturbance.
CATE: Production was down 8% from the previous year.

1984 NOTE: I came across an interesting letter in the pelican file written by Brian Sharp (USFWS) to Steve Brechtel (Habitat Biologist, Edmonton Alberta) about a "management proposal" for pelicans where Brechtel quotes Markham that the non-breeding pelican population is estimated to be 5-10 times greater than the breeding pop. Sharp was interested because of the sudden sharp increase in the number of breeding birds on Anaho.
AWPE: Colony D, the largest in 1982 and on the initial 1983 count, only contained scattered groups of pelicans. colony B, the largest in subsequent counts in 1983 contained the most pelicans. This shift from colony D to B by nesting pelicans the latter part of 1983 and use this year is probably due to rising lake levels. Pyramid Lake elevation rose 11 feet since May of 1983. Last year, rising lake levels made colony D more visible to boaters which also may have produced significant disturbance. On May 16, 1984 6,175 adults were counted, an estimated 4,680 were nesting. Nesting is later this year than last; spring pelican use was reduced compared to 1983. This reduced use corresponds with earlier initiation of fish runs at Pyramid Lake, however, some refuge Marsh units were dewatered this spring to provide easier feeding for returning pelicans. Only 2 dead pelicans have been observed to date (19 May) on Stillwater. On June 19 approximately 4,080 young pelicans were counted with 2,946 adults.
DCCO: On May 19, 1,860 adult cormorants were counted, an estimated 815 of those were nesting. On June 19, 1,510 adults were counted on 955 nests.
GTBH: 80 nests were counted in greasewood between colony D and the east shoreline. An estimate of young/nest was 1.8. Approximately 115 adult herons were observed.
CAGU: On May 19, approximately 3,200 gulls were counted on the south side of Anaho at the traditional nesting site. June 19, almost 5,000 adults and 830 young were counted.
CATE: On May 19 and June 19, no terns were seen in the area.

1985 NOTE: the data records for this year are very confusing, I have tried to make the most sense out of them but I'm certain the reader will be confused.
AWPE: Count was made June 13, it was evident that nesting was ahead of schedule this year, a lot of chicks were 3/4+ grown and hanging around the shoreline. A total of 5,030 young were counted and 4,475 adults. Count was made July 10; 6,100 young were estimated to have been produced. Many of the adults appeared to be absent, not unusual considering that so many of the young were nearing flight stage. Some losses of adults occurred this spring in May as foraging was difficult at the delta due to water depth.
DCCO: On 30 May 1,140 cormorants were counted. On the 13th of June an estimated 2,600 young and 1,800 adults were counted.
GTBH: Some young were observed on June 13 but no count was given.
CAGU: On 30 May 1,900 gulls were counted. June 13th 900 young gulls and 1,800 adults were counted.

CATE: None were seen.

1986 The island was censused according to procedures in the Stillwater WMA station Wildlife Inventory Plan. Counts of nesting birds was conducted from a vantage point ~3/4's of the way to the top of the island, on the northeast side. Counts were done with a 20-60X spotting scope beginning around 1000. Exceptionally wet conditions in the Lahontan Valley have created almost ideal conditions for many species of colonial birds which nest on Anaho and feed in Lahontan.

AWPE: A record year with an estimated 10,700 nests and 21,500 adults. It was difficult to determine,without disturbing the nesting birds, if all the adults were actually incubating eggs or brooding young. It is possible that the numbers were actually higher than those estimated this year because the colonies were not well synchronized. This resulted in some birds fledging while other pairs were still brooding young. The number of young produced was estimated at 7,500 but the actual number may have been closer to 10,000. Since 1980, the number of young produced at Anaho Island has increased at an annual rate of 28%. Much of this increased production may be a result of an increase of nesting adults from other colonies. Perhaps adults displaced in the recent flooding in the Great Salt Lake are now nesting at Anaho. On May 14, 15,100 pelicans were counted (13,900 nesting adults and 1,200 loafers).

DCCO: Cormorants also had a good year with an estimated 2,500 nests and 5,000 adults.

GTBH: The nesting population of herons has been increasing steadily according to our population estimates. 135 nests and 270 adults were counted for Anaho, this may represent both a population increase and shifting of nesting areas. In 1986, we didn't find any herons nesting at the Pinnacles on the north end of the lake; and I am unaware of any nesting at the mouth of the Truckee River.

CAGU: Gulls were the second most abundant nesting species using Anaho. On May 13 there were an estimated 2,660 nests were counted with 3,550 adults at the nests; on June 12 there were 4,500 adults at nests but we were unable to ascertain the number of nests.

CATE: No evidence of tern nesting was found; in fact, no terns were even recorded in the area on any of the visits to the island.

1987 The exceptional conditions for fish eating colonial species of 1983-1986 began to decline in 1987. Fish die-offs from several thousand to over 7.5 million occurred at almost regular intervals on Stillwater.

AWPE: The nesting season was initiated 1-2 months earlier than most previous seasons. During the winter of 1986-87 between 20-30,000 pelicans wintered on the Carson Sink. They took advantage of the 7.5 million fish that were trapped in the receding sink. In 1986 on May 13, we had about 7,000 nests but no visible chicks. On the same date in 1987 we had almost 5,000 nests but the young (4,619) were very large and roaming the island. While collecting eggs for contaminant analysis on May 12 we noted 80 dead young pelicans. By June 18, we counted 5,840 young and estimated that a minimum of 6,000 would reach flight stage. Many birds from our last trip have fledged and probably departed from the island. We noted many more dead pelicans than in 1986. Estimate that a minimum of 200 chicks have died so far this season. At peak we estimated that 13,800 adults produced 5,500 young from 6,000 nests. In July we picked up a severely deformed pelican chick. It was almost ready to fly and represents the third bill deformity

we've seen this year. All of these birds were alive but will not be able to survive when the parents stop feeding them.
DCCO: 2,000 nests produced 5,400 young, this may be a slight underestimation since the colony is not totaly synchronized in nesting chronology. At best 6,000-6,500 might have reached flight stage. On July 15, most of the young cormorants had fledged. It became obvious that those cormorants which nested early were mostly successful, while those that nested at more normal dates or late were unsuccessful. We found 436 dead young, mostly entire broods, which indicated adults had abandoned nesting efforts.
GTBH: By June 18, we had 175 fledged young from 140 nestsor 1.25 fledged young/nest. This appears comparable with previous years.
CAGU: On May 13, 2,800 adults were counted in the nesting colony, we estimated that approximately 2,100 nests were established.
CATE: No terns were seen nesting this year.
BCNH: We found about 20 nests on several of our walking trips, but they were not observed form our elevated censusing points. This is a species that would be easily missed using the standard censusing methods. On balance it probably isn't worth disturbing the other nesting birds to get an accurate Night-heron count. Night lighting should be used to census this species, which will eliminate gull predation. Perhaps 25 nests with 50 birds are using the island.
SNEG: On July 14 we located a minimum of 2 nests, 1 with 3 small young and 1 with 1 small young. This is a first nesting record for Snowy's on Anaho.

1988 In general 1988 has been a tough year for fish eating birds in the Lahontan Valley. They are in poor body condition almost 1/2 of their normal body weights. The most common birds found dead at Stillwater are Pelicans, Black-crowned Night-herons, Western Grebes and Great Blue Herons.
AWPE: On our first offi ial count on May 26 we found that almost all of the nesting birds had abandoned their nesting efforts. At first we thought the abandonment might be caused by our egg collecting activities, but colonies that we didn't visit also abandoned nesting. We are now down to 325 birds with about 50 active nests. Birds loafing along the shoreline (1370) far outnumbered active breeders. At peak we estimated that 4,000 adults produced 35 young from 50 nests.
DCCO: There seemed to be good hatching success for those that did nest. 1,500 adults were seen on nests in April. On May 26, 975 adults were on nests and by June 15 there were 575 adults on nests. We estimate that the number of nests was probably around 575.
GTBH: Heron numbers appeared low as compared to 1986 & 87. On April 22 most of the 125 adult birds were attending nests but we didn't record any nests with eggs. By May 26 only 25 adults with 15 nests were seen. We estimate that 15 young were produced.
CAGU: On May 26, 3,300 adults were counted in the nesting colony, we estimated that approximately 2,500 nests were established.
CATE: No terns were seen nesting this year.