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Nest Density, Nest Survival, and Habitat Use of Tundra-Nesting Birds, Point Thomson, Alaska, 2002



Prepared for

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Environmental Studies Group
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Anchorage, Alaska 99519-6612



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Cover photo of Pectoral Sandpiper by Robert Rodrigues.

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Abstract

To characterize the avifauna of the Point Thomson area prior to proposed oil and gas development, twenty-eight 10-hectare study plots were established in 2001. The project was continued in 2002 as part of a cooperative study to investigate the effects of predation on tundra-nesting birds at various locations on the North Slope of Alaska. On a local scale, the collection of predevelopment data at Point Thomson may allow us to draw conclusions regarding the effects of oilfield activities and infrastructure on tundra-nesting birds as development progresses. To comply with the protocol of the cooperative study, 24 new study plots were established in a systematic random manner in 2002. Four nest searches were conducted on each plot between 11 June and 10 July. Nest searches were of 2 types: (1) a "W" search that was accomplished by 1 biologist making 4 passes through each grid cell of each study plot, or (2) a rope-drag that involved 3 biologists dragging a rope through the plot to flush tight-sitting birds from their nests. Two "W" searches and 2 rope-drags were conducted on each plot. All birds using the plots were censused during the nest searches. Known nests were monitored every 3 to 6 days from 16 June through 14 July. Predator counts were conducted on study plots during the "W" searches and during nest monitoring visits. Data were used to calculate nest density and survival, species composition, and habitat use by tundra-nesting birds. Predator counts provided indices of predator abundance. Tundra bird nest densities were within the range reported for other North Slope areas. Nest densities were highest on moist and dry habitats, and lowest on wet habitats. The average density of birds using study plots in the Point Thomson area was similar in 2001 and 2002, although red phalaropes and parasitic jaegers were more abundant in 2002, and pomarine jaegers were more abundant in 2001. Because of predation, nest survival in 2002 was on the low end of the range reported for other North Slope studies. Arctic foxes and parasitic jaegers were probably responsible for most of the predation. Observations suggested that predators may have shifted from their main prey species (lemmings) in 2001 to alternative prey (bird's eggs and young) in 2002.

Key words: arctic fox, *Calcarius lapponicus*, *Calidris melanotos*, *Calidris pusilla*, jaeger, Lapland longspur, oilfield development, pectoral sandpiper, *Phalaropus fulicaria*, predation, red phalarope, semipalmated sandpiper, tundra habitats

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Introduction

The Point Thomson Unit Owners (BP Exploration (Alaska) Inc. [BPXA], ExxonMobil Corporation, Conoco-Phillips Alaska Inc., and Chevron-Texaco) are considering development of an oil and gas field in the Point Thomson Unit, about 80 km east of the Prudhoe Bay oilfield. Current plans for the proposed development include the construction of gravel roads to production sites east and west of the existing Point Thomson Unit 3 gravel pad (Figure 1). The length of the roads to the proposed east and west well pads would be approximately 7 km and 10 km, respectively. In addition, a gravel airstrip oriented northeast to southwest would be constructed approximately 3 km south of the Point Thomson Unit 3 pad. A gravel road would connect the airstrip to the road connecting the well pads. An elevated pipeline to transport produced oil would be constructed parallel to the road system from the east well pad to the west well pad and would continue west to connect with the Badami Pipeline. Gravel for construction of the infrastructure would be mined from a site near the northeast end of the airstrip, and a gravel storage area would be established north of the mine site (Figure 1).

Oilfield developers and wildlife managers are concerned about the effect of North Slope development on wildlife populations. Numerous studies in the Prudhoe Bay area have described the responses of wildlife to oilfield operations and development (Troy 1988; Pollard et al. 1989; Troy and Carpenter 1990; Maki 1992; Rodrigues 1992; Truett et al. 1994, 1997; Cronin et al. 1998). Frequently, these studies have been conducted during the production phase of oilfield development after construction of oilfield infrastructure has occurred, and comparisons of pre- and post-development wildlife activity are not possible. Pre-development data may be helpful in determining placement of facilities and assessing the responses of wildlife to oilfield development.

Several studies have already been conducted in the Point Thomson Unit. In 1983, an environmental report described the vegetation/land forms, birds, mammals, and fish of the Point Thomson Unit (Hampton et al. 1983). Wright and Fancy (1980) reported on the responses of birds and caribou to exploratory drilling operations at the Point Thomson Unit 4 pad. Fechhelm et al. (2000) collected data on fish resources in the coastal waters near Point Thomson in 1999, and that study was continued during summer 2001 (Griffiths et al. 2002). Winters and Morris (2002) sampled fish in fresh water streams in the Point Thomson Unit. Noel and Funk (1999) produced a vegetation/land cover map for portions of the Point Thomson Unit. Annual systematic aerial surveys of molting waterfowl have included the marine waters of the Point Thomson Unit (Noel et al. 2002), and systematic aerial surveys of large mammals have been conducted over terrestrial habitats in the Point Thomson area (Pollard and Noel 1995; Noel and King 2000; Noel and Olson 2001). Aerial surveys to study movements and distribution of polar bears in the Point Thomson Unit and adjacent areas have also been conducted (Amstrup 2000; Kalxdorff et al. 2002). LGL et al. (1999) produced an environmental report for the Point Thomson area.

Other studies conducted on the Arctic Coastal Plain near the Point Thomson Unit have included fish and bird studies in the Badami Unit west of Point Thomson (Fechhelm et al. 1995; TERA 1995) and an environmental assessment of the Badami Unit (BPXA 1995). South of the Point Thomson Unit, TERA (1993a) characterized the breeding season bird community for the Yukon Gold project. East of Point Thomson, the U.S. Fish and Wildlife Service (USFWS) has conducted numerous studies in the Arctic National Wildlife Refuge (ANWR) (e.g., Oates et al. 1987), and Martin and Moitoret (1981) conducted a study of tundra-nesting birds in the Canning River delta.

In 2001, LGL Alaska Research Associates, Inc. (LGL) was contracted by BPXA, on behalf of the Point Thomson Unit Owners, to collect pre-development baseline data on tundra-nesting birds in the area proposed for development in the Point Thomson Unit (Rodrigues 2002). On 5 March 2002, the USFWS hosted a meeting in Fairbanks, Alaska that addressed concerns regarding predation on shorebird nests and shorebird productivity on the North Slope. The Point Thomson tundra-nesting bird study was continued

transferred to computer spreadsheets. After each nest was no longer active, a Garmin 12XL GPS receiver was used to determine the nest location (Appendix B).

Monitoring visits to determine the status of previously discovered nests were conducted from 16 June through 14 July. During monitoring visits, a biologist walked the length of the study plot to check the status of known nests. During this procedure, the plot was not systematically searched for nests, although new nests were discovered and marked opportunistically. Previously discovered nests were also monitored during subsequent "W" searches and rope-drags. Known nests were monitored every 3 to 6 days. During monitoring activities nests were classified as still active, hatched/fledged, depredated, abandoned, or status unknown. If predators were observed in the area during searches or monitoring activities, the activities were discontinued until the predators had departed.

During the first "W" search and the first rope-drag, an egg-floatation technique (Sandercock 1998) was used to estimate the age of each nest. Two eggs from each discovered nest were floated in water in a plastic jar and the age of the nest was estimated from the position of the eggs in the water. After approximately 8 days of incubation, egg age can no longer be reliably estimated using the floatation technique and egg floatation was discontinued after the first rope-drag was completed (22 June). Eggs from nests discovered on or before 22 June during nest monitoring visits were also floated. In a few cases, nest age could be determined when nests were discovered during the laying stage.

During "W" searches and monitoring visits, predator counts consisting of three 10-min point counts were conducted on each study plot. Point counts were performed at different locations on the study plot that were a minimum of 200 m apart. During the point counts the observer scanned the surrounding terrain for any visual or auditory detections of potential nest predators and recorded whether the predator was on or off the plot. Incidental observations of predators made while the observer was on the plot, but were not recorded during the point counts, were also noted. An effort was made to prevent duplicate counts of individual predators during the three 10-min point counts.

Censuses were conducted 4 times on each study plot, once during each "W" search and once during each rope-drag, to enumerate bird use of each plot. During the rope-drags, the biologist walking behind the rope recorded species, numbers of individuals and their behavior, grid cell within which the bird was observed, and general habitat characteristics for all birds observed during the census period. These data were also collected by the individual biologist conducting "W" searches.

Data Analysis

Nest density (total number of nests/km²) was calculated and presented in two ways for each species on all study plots combined. First, to comply with the protocol established for the cooperative study, only nests discovered during "W" searches and rope-drags were used to compute density. Second, to permit better comparisons of nest density in the current study with that of other North Slope studies, nest density was calculated using all nests regardless of the method of discovery (i.e., nests discovered during "W" searches and rope-drags plus nests discovered incidentally during nest monitoring visits or other "non-search" activities). Nests that were thought to be a second nesting attempt by a bird whose first nest had failed were not included in nest density calculations.

A Mayfield analysis (Mayfield 1975) with suggested modifications (Johnson 1979; Manolis et al. 2000) was used to estimate daily nest survival during the incubation period for all species combined, for all shorebird species combined, and for each of the four most common nesting species. Shorebird nests were considered successful if at least 1 egg hatched. Success or failure of a nest was determined using the criteria of Troy and Wickliffe (1990). A nest was considered to have failed if the initiation date was known and the nest was empty before the normal incubation period was completed, or if signs of

predation, such as fox scat or scent, were present. A nest was considered successful if chicks were found in or near the nest, or if the normal incubation period had been completed and tiny, eggshell fragments ("egg bits" originating from egg shell pipping) were present in the nest cup. The status of a nest was considered to be unknown if the age of the nest was unknown and there was no evidence indicating success or failure of the nest, or if there was contradictory evidence as to the fate of the nest. Daily survival rates were used to calculate survival during the incubation stage for the 3 common shorebird species and Lapland longspur (*Calcarius lapponicus*). For Lapland longspur, the only altricial species (i.e., species with naked, helpless, nest-bound young), daily survival rate was also used to calculate survival for nests during the nestling stage.

Survival rates for the incubation period were not calculated for all species combined or for all shorebird species combined because of differing incubation times among species, and only daily survival rates were calculated for these groups. The number of nests discovered during the laying period was too low to calculate survival during the laying stage for any species. Survival estimates included all nests discovered both on and off plots.

The average number of each predator species on all plots combined for each 30-min count period (the sum of the three 10-min point counts) was calculated for predators recorded both on and off plots. To examine potential differences in the numbers of predators early vs. later during the nesting season, the averages were separated into 2 periods; period 1 included the first "W" search and monitoring visits through 22 June, and period 2 included the second "W" search and monitoring visits after 22 June.

The total number of birds sighted during each "W" and rope-drag survey was recorded for each study plot. The average bird density (birds/km²) was calculated for each species on all plots combined during each of the 4 sampling periods (i.e., first and second "W" searches and rope-drags). Jaegers, gulls, and raptors seen flying over plots were considered to be hunting and were included in density calculations. Birds flying over study plots that did not appear to be actively using the plots were not included.

The percentage of each vegetation/land cover category in each study plot was determined. The average percent of each vegetation/land cover category was calculated for all study plots combined. The vegetation/land cover category at each nest site was determined by overlaying nest coordinates onto the existing vegetation/land cover map (Noel and Funk 1999). The number of nests of each species in each vegetation/land cover category was determined for all study plots combined and the nest density for each species in each vegetation/land cover category was calculated. A chi-square contingency table was used to compare the number of nests observed vs. the number expected based on the amount of habitat available for the common species and for all species combined in the most abundant vegetation/land cover categories.

Results

Nest Density

Most nests were discovered during systematic nest searches, although 20 nests were discovered during monitoring visits or other activities (Table 2, Appendix C). Based on the total number of nests discovered, shorebirds dominated the nesting avifauna in terms of number of species and number of nests. Of the 12 species nesting on Point Thomson study plots, 8 were shorebirds, and shorebird nests comprised approximately 58% of the total number of nests found. Pectoral sandpiper (*Calidris melanotos*) and semipalmated sandpiper (*Calidris pusilla*) were the most common nesting shorebird species followed by red phalarope (*Phalaropus fulicaria*) (Figure 3). However, the single most abundant nesting species on all study plots combined was Lapland longspur, which accounted for almost 40% of all

nests (Table 2). Other species nested in lower numbers. Waterfowl and loons nested in much lower densities than other groups. Nest density calculations include only nests found on study plots and do not include nests found on tundra adjacent to plots.

Nest Survival

During the incubation period, red phalarope had the highest daily survival rate of all species, although nest numbers were lower than for other species (Table 3). Based on the daily survival estimate, the nest survival rate was approximately 0.59 during the incubation stage for red phalarope compared to approximately 0.36 and 0.31, respectively, for pectoral and semipalmated sandpipers (Table 3). Numbers of nests of other shorebird species were too low to compute daily survival estimates. Daily survival estimates for Lapland longspur during the incubation stage (0.47) and the nestling stage (0.51) computed to a combined survival rate of approximately 0.24 for longspur nests. Nest survival estimates include not only nests found on study plots, but also nests found on adjacent tundra.

Predator Counts

Ten species of predators along with unidentified jaegers and raptors were recorded on or off study plots during predator counts (Table 4, Appendix D). Parasitic jaeger (*Stercorarius parasiticus*) and glaucous gull (*Larus hyperboreus*) were the 2 most common predators observed. Parasitic jaeger was the most common species recorded on study plots, and glaucous gull was recorded with slightly more frequency than parasitic jaeger off plots. Numerous jaegers that could not be identified to species were recorded off plots. Most of these unidentified jaegers were probably also parasitic jaegers. Although more predators were observed during the second portion of the nesting season, there was little difference in the average numbers of predators recorded during the first and second portions of the nesting season. Arctic fox (*Alopex lagopus*) was recorded in small numbers both on and off plots.

Bird Use

Some bird species that were observed in the area of the campsite at Point Thomson Unit 3, or while observers walked between the study plots and camp, were not recorded during nesting surveys. Appendix E lists all species seen in the Point Thomson area during the study period.

A total of 29 species was observed on all study plots combined during the 4 census periods (Table 5, Appendix F). The average bird density on all study plots combined decreased from the first census (first "W" search) to the third census (second rope-drag), and then increased during the final census (second "W" search). The 4 most common nesting species (Lapland longspur, pectoral and semipalmated sandpipers, and red phalarope) were also the 4 most common species reported during plot censuses, followed by parasitic jaeger, which did not nest on any study plots. Other shorebird species were recorded in lower numbers. Waterfowl and loons were also recorded in low numbers.

Habitat Selection

In all study plots combined, 3 vegetation/land cover categories as described by Noel and Funk (1999) dominated the landscape (Table 6, Figure 2). Vegetation/land cover category IIIId (wet sedge/moist sedge, dwarf shrub tundra complex) covered a slightly larger area than category IVa (moist sedge, dwarf shrub/wet graminoid tundra) and over twice the area of category Va (moist sedge, dwarf shrub tundra complex). These 3 vegetation/land cover categories accounted for approximately 78% of the area of all study plots combined.

Including water classifications, 17 different vegetation/land cover categories were represented on all study plots combined (Table 6). For all tundra-nesting bird species combined on all study plots combined, nests occurred in 10 different vegetation/land cover categories (Table 7). Approximately 84% of all nests occurred on 1 of the 3 most abundant vegetation/land cover categories. For the 3 most abundant vegetation/land cover categories, nest density for all species combined on all study plots combined was highest on categories IVa and Va (Table 8). Nest density on category IIIId was approximately half that observed on the other 2 categories. In the 3 most common vegetation/land cover categories, tundra birds nested less frequently than expected based on the amount of habitat available on vegetation/land cover category IIIId and more frequently than expected on category IVa ($P < 0.05$). When considering habitat selection for each of the 3 most common nesting species and nests of all shorebird species combined, this scenario held true only for Lapland longspur. For pectoral and semipalmated sandpipers and for all shorebird species combined, no difference in vegetation/land cover category use was apparent. For other species and for other vegetation/land cover categories the number of nests and the amount of available habitat were too small to calculate habitat preferences.

Discussion

Nest Density

Observed nest density on the Point Thomson study plots in 2002 (59.2 nests/km²) was slightly higher than the nest density reported on plots in the 2001 study (52.2 nests/km²; Rodrigues 2002). The slightly higher density reported in 2002 may reflect an increased search effort in 2002 when 4 systematic searches along with monitoring visits were conducted on each study plot compared to only 2 searches on each plot in 2001. However, actual nest density at Point Thomson in 2002 may have been lower than in 2001. If nest density calculations in 2002 are based on data from only 2 searches, as was the case for the 2001 study, then densities range from approximately 20 to 41 nests/km², depending on which combination of "W" searches and rope drag is used for the calculations. Relative to the search effort, nest density on study plots at Point Thomson in 2001 was higher than that of the 2002 study.

Nest density on the Point Thomson plots in 2002 was within the range of nest densities reported for the Prudhoe Bay area since the 1980s, although nest densities have generally been higher at Prudhoe Bay (e.g., Troy and Carpenter 1990; TERA 1991a,b, 1993b, 1996; Rodrigues 1992). Some of the higher nest densities reported in the Prudhoe Bay area (140.8 nests/km²) occurred in the Colville River delta (Johnson et al. 2000).

Nest densities at Point Thomson Unit 3 in 2002 (59.2 nests/km²) were lower than those reported at the Kadleroshilik River (69.7 nests/km²) and Badami areas (74.3 nests/km²) for studies conducted in 1994, but higher than those reported at Yukon Gold (28.3 nests/km²; TERA 1993a). Nest densities at Point Thomson Unit 3 were generally slightly higher than those reported at coastal and inland sites in ANWR (Oates et al. 1987), although nest densities averaged 83.5 nests/km² on study plots in the Canning River delta (Martin and Moitoret 1981). Wright and Fancy (1980) reported approximately 80 nests/km² in the western portion of the Point Thomson Unit, although the method of calculating nest density in this study differed slightly from that of other studies.

On tundra study plots on the Arctic Coastal Plain, waterfowl generally nest in lower densities than other groups (TERA 1995). This was the case at Point Thomson in 2002 (Table 2) and also in 2001 (Rodrigues 2002). The nesting density of waterfowl at Point Thomson in 2002 (1.3 nests/km²) was the same as that reported for the Badami area (TERA 1995). However, waterfowl nest densities in the current study were lower than those reported for the Point Thomson area in 2001 (2.5 nests/km²; Rodrigues 2002), and by TERA (1995) for the Kadleroshilik area (5.0 nests/km²), the Prudhoe Bay area

(6.0 nests/km²), and the Milne Point area (6.3 nests/km²). No threatened or endangered waterfowl were found nesting on Point Thomson study plots in 2002 or in 2001, and no threatened or endangered species were observed in the area during the course of either study.

Species Composition

TERA (1993a, 1995) noted that species composition of tundra-nesting birds differs among areas across the Arctic Coastal Plain of Alaska from Prudhoe Bay to ANWR. Lapland longspur is generally the most abundant nesting species in all areas, and pectoral sandpiper is also common (5–10 nests/km²) to abundant (>10 nests/km²) in all locations. In the Prudhoe Bay area, these species are joined by semipalmated sandpiper and one of the phalaropes, either red or red-necked (*Phalaropus lobatus*), forming a group of 4 species that are all common nesters at most locations. In most areas of ANWR and at the Yukon Gold area south of Point Thomson, semipalmated sandpiper and the phalaropes are uncommon (<5 nests/km²) nesting species, and only 2 species, longspurs and pectoral sandpiper, are common. Waterfowl are uncommon at all locations, but in general they are about twice as common in the Prudhoe Bay area when compared to ANWR (TERA 1993a). However, the species composition of tundra-nesting birds in the Canning River delta of ANWR resembles that of Prudhoe Bay in that the 4 common nesting species at Prudhoe Bay are also common nesting species there (Martin and Moitoret 1981).

The differences in the distributions of bird communities appear to be related to the distribution of the Flat Thaw Lake Plain (FTLP) and Rolling Coastal Plain (RCP) communities across the Arctic Coastal Plain (TERA 1993a, 1995). The FTLP is a band of wet tundra containing many lakes and ponds that includes all of the Prudhoe Bay area but becomes very narrow east of the Shavirovik River and is essentially absent in ANWR. The Point Thomson study area is located in the narrow band of the FTLP community along the coast that transitions into the RCP communities to the south. The Yukon Gold area, about 15 km south of Point Thomson, is located in the RCP community (TERA 1993a).

Rodrigues (2002) reported that the Point Thomson area appeared to be intermediate between the Prudhoe Bay area and ANWR in terms of diversity of common nesting species. Point Thomson was similar to ANWR in that phalaropes were uncommon nesting species; however, semipalmated sandpiper, which is not a common species at most ANWR locations, was a common nesting species at Point Thomson. The presence of semipalmated sandpiper as a common nesting species at Point Thomson was similar to what might be expected for the Prudhoe Bay area, although the low number of phalaropes nesting at Point Thomson distinguished that area from Prudhoe Bay.

The density of red phalarope nests in the Point Thomson area in 2002 (5.4 nests/km²) was much higher than in 2001 (0.7 nests/km²; Rodrigues 2002). Using the criteria of TERA (1993a), red phalarope was a common nesting species at Point Thomson in 2002. Red phalarope sightings during plot censuses were also higher in 2002 (9.3 birds/km²) than in 2001 (1.95 birds/km²). Consistent with these data, biologists that worked at Point Thomson during both seasons had the impression that red phalaropes were much more common during 2002 than 2001. Troy (1996) also reported inter-annual variation in the density of red phalaropes in the Prudhoe Bay area. With the addition of red phalarope as a common nesting species in 2002, the Point Thomson area avifauna more closely resembled the FTLP bird communities described for the Prudhoe Bay area and the Canning River delta in 2002 than in 2001. However, this resemblance is probably confined to a narrow area within a few km of the coast.

Nest Survival

Nest survival for 3 of the 4 most common species (Lapland longspur, pectoral and semipalmated sandpipers) on Point Thomson study plots in 2002 was in the lower end of the range of values for nest success reported in other North Slope studies (e.g., Hohenberger et al. 1980, 1981; Troy and Carpenter 1990; TERA 1991a,b, 1993a,b; Rodrigues 1992). Nest success in these studies was a simple calculation of the number of successful nests divided by the total number of nests, and did not take into account daily survival rates. This method tends to inflate estimates of nest success because the amount of time that a particular nest is under observation is not taken into account (Mayfield 1975; Custer and Pitelka 1977; Johnson 1979). For example, nests found in the latter stages of incubation would likely have a higher survival rate than nests discovered during the early stages of incubation due to the shorter amount of time that these nests were under observation. This creates a tendency to understate mortality and overstate success (Mayfield 1975). However, while not entirely comparable with the results of other North Slope studies, nest success at Point Thomson in 2002 appeared to be low for the 3 most common species. Nest survival for red phalarope was much higher than that of the other common species.

Nest survival for Lapland longspurs through the incubation and nestling stages at Point Thomson in 2002 was approximately 0.24 (0.47 survival rate during incubation x 0.51 survival rate during nestling stage; Table 3). This is lower than longspur nest success reported in other North Slope studies, which ranged from 0.31 to 0.90 (Troy and Carpenter 1990; TERA 1991a,b, 1993b, 1997), but is similar to longspur nest success of approximately 0.22 reported by Hohenberger et al. (1980) during the first year of a 2-year study south of Prudhoe Bay. Longspur nest survival at Point Thomson in 2001 was also low. Of 63 nests discovered, 37 (0.59) were known to have been depredated, and 2 (0.03) were known to be successful when percent success is based on simple calculations of the number of successful or failed nests divided by the nest total. The fate of the remaining 24 nests was unknown and longspur nest success at Point Thomson in 2001 was somewhere between 0.03 and 0.41.

Survival of semipalmated sandpiper nests at Point Thomson in 2002 (0.31; Table 3) was within the range reported for other North Slope studies (0.13 to 0.89; Troy and Carpenter 1990; TERA 1991a,b, 1993b, 1997), although it was below the median of the range. In a study in Manitoba, the proportion of semipalmated sandpiper nests in which at least 1 egg hatched varied from 0.13 to 0.74 (Gratto-Trevor 1992). Survival of pectoral sandpiper nests at Point Thomson in 2002 (0.36) was also within the range reported for other North Slope studies (0.20 to 0.83) but was also below the median. Red phalarope nest survival at Point Thomson in 2002 (0.59) was in the middle of the range reported for other North Slope studies (0.37 to 0.83).

Nest survival rates of tundra birds have wide annual variation (TERA 1993b) and studies have indicated that more losses of arctic and sub-arctic shorebird nests are probably due to predation than other causes (Custer and Pitelka 1977; Helmers and Gratto-Trevor 1996; Troy 1996). Troy (1996) felt that arctic foxes were the main predators in the Prudhoe Bay area, while Custer and Pitelka (1977) implicated jaegers as the most important predators on bird eggs and young in the Barrow area. Hohenberger et al. (1980) implicated both arctic fox and parasitic jaeger as important nest predators. Other factors that can influence nest survival are abandonment due to severe weather conditions, disturbance, and partial clutch predation.

Summers and Underhill (1987) proposed an alternative prey hypothesis as a partial explanation of inter-annual variation in survival of goose and wader nests on the Taimyr Peninsula. This hypothesis suggested that predators that usually feed on lemmings switch to eggs and young of tundra-nesting birds when lemming populations decline. Bêty et al. (2002) also reported that predation by arctic foxes and parasitic jaegers increased in a goose colony in the Canadian High Arctic during years following peaks in the lemming population, and Sittler et al. (2000) reported that numbers of king eider (*Somateria*

spectabilis) nests were correlated with high densities of lemmings in Greenland. Troy (1996) suggested that shorebird eggs served as alternative prey in years following crashes in the microtine rodent populations at Prudhoe Bay.

In 2001, lemmings were often observed in the Point Thomson area, and pomarine jaegers and short-eared owls (*Otus flammeus*), which are known to feed on lemmings, were common during the first half of the nesting season (Rodrigues 2002). Lemmings and pomarine jaegers were observed with much less frequency in the Point Thomson area in 2002, and short-eared owls were absent. Densities of pomarine jaegers, short-eared owls, and other predators fluctuate with changes in lemming populations (Pitelka et al. 1955; Maher 1970, 1974; Holt and Leasure 1993). Although not conclusive, these observations suggest a scenario involving an apparent decrease in abundance of lemmings, pomarine jaegers, and short-eared owls in 2002, and a possible shift from lemmings to bird eggs and young by predators remaining in the Point Thomson area in 2002. The relatively low nest survival in the Point Thomson area in 2002 may support the hypothesis of Summers and Underhill (1987) that survival of tundra bird nests is poor after a decline in the lemming population.

There has been speculation that the activities of researchers studying avian nest survival may influence the results by inadvertently attracting predators to nest sites (Bart 1977). Numerous studies have been conducted to investigate the effects of researchers on avian nesting success (e.g., Armstrong 1996; Westemeier et al. 1998; Bêty and Gauthier 2001). Some studies have suggested that researchers have had an influence on nest success, while others have reported little or no impact due to researcher's activities (Götmark 1992). Although precautions (i.e., discontinuing survey activities when predators were in the area, avoiding dead end paths that lead to nests) were taken at Point Thomson to minimize possible observer effects, nest visits and nest markers may have provided some predators with cues for finding nests. C. Hohenberger (pers. comm.) felt that arctic foxes may have followed the trails left by researchers to locate tundra-bird nests during some studies in the Prudhoe Bay area. The effect that researcher activities may have had on nest survival at Point Thomson is unknown. Future studies that focus on the activities of arctic foxes and other predators may help to quantify the effect, if any, of researcher's activities on nest survival.

Predators

Besides observations during predator counts and study plot censuses, predators were also observed denning or nesting in the study area. A natal fox den was located in the northwest portion of the study area in an overburden pile at the Point Thomson Unit 1 gravel pad (Den 1, Figures 1 and 4). This den was also active in 2000 (Perham 2001). This den was approximately 1 km northeast of the north end of study plot 2. The den had approximately 12 openings, and 2 adult foxes and at least 5 kits were observed there on 7 July (Figure 4). A second active fox den was located in a riverbank approximately 50 m east of the southern portion of study plot 21 at the east end of the study area (Den 2, Figure 1). This den had at least 10 active openings, and depredated eggs and bones were scattered near the openings. It is not known whether this was a natal den. Fox diggings were also noted on the riverbank near the south end of study plot 21 and on a large overburden mound approximately 500 m east of the north end of study plot 24.

A pair of parasitic jaegers nested on tundra approximately 50 m west of the central portion of study plot 18 (Figures 1 and 5). A pair of glaucous gulls nested on an island in a large lake between study plots 12 and 13. In addition, short-tailed weasels (*Mustela erminea*, Figure 4) were observed on 3 occasions during the course of the study. Short-tailed weasels are known to be predators on bird nests (Custer and Pitelka 1977; Helmers and Gratto-Trevor 1996).

Arctic foxes are efficient predators of bird eggs and young, particularly in isolated waterfowl colonies on islands and on gravel causeways (Johnson et al. 1993a,b; Noel et al. 2001). Observations at Point

Thomson in 2002 indicated that arctic foxes are also efficient predators on tundra habitats. During a rope-drag, an arctic fox was observed hunting on tundra several hundred meters west of study plot 8 and appeared to successfully depredate 2 nests and capture a small mammal during a 10- to 15-min period. Troy and Carpenter (1990), Troy (1996, 2000), and Burgess (2000) have all identified arctic foxes as significant predators on tundra birds.

There was more evidence of predation by arctic fox than other species at nest sites at Point Thomson in 2002. Evidence of fox predation, such as fox scent or scat, was recorded at 37 depredated nests (Appendix C). Avian predators generally did not leave signs at nest sites; however, waterfowl and loon eggs exhibiting signs of avian predation were often found on study plots or while walking between plots. In one case, a depredated eider egg was found during a rope-drag on study plot 18. The egg had a hole punched on one side with the remaining portion intact suggesting avian predation. A short search along the shoreline of a nearby lake revealed a depredated eider nest. On another occasion a parasitic jaeger was observed eating chicks at a known longspur nest. Inspection of the nest after the predation event yielded no evidence implicating a specific predator type. Although there was more evidence of fox predation than predation by other species at depredated nests, the evidence is insufficient to conclude that foxes are the only significant predators of tundra-nesting birds at Point Thomson. Parasitic jaegers, glaucous gulls, and less frequently common raven were consistently observed on predator counts and may have been responsible for much of the predation. Custer and Pitelka (1977) considered jaegers to be the most important predators on bird eggs and young during a 7-year study in the Barrow region of Alaska. The use of cameras to document predation at specific nests may prove useful in determining the extent of predation by individual predator species.

Bird Use

The densities of birds using the Point Thomson study plots in 2002 (Table 5) were similar to those reported for other North Slope areas (Spindler 1978; Martin and Moitoret 1981; Troy 1985, 1988; Rodrigues 1992) and for the Point Thomson area in 2001 (Rodrigues 2002). Average densities of Lapland longspur, and semipalmated and pectoral sandpipers were similar at Point Thomson in 2001 and 2002, although a different set of study plots was censused each year. In 2002, the average density of red phalaropes was approximately 4½ times that of 2001, and parasitic jaeger density was more than twice that of 2001. In contrast, pomarine jaeger density in 2002 was reduced to approximately ¼ of the 2001 level. The reduction in the number of pomarine jaegers in 2002 may be in response to an apparent reduction in the number of lemmings in the Point Thomson area.

Habitat Selection

Based on the amount of habitat available, tundra birds at Point Thomson in 2002 nested in lower than expected densities in vegetation/land cover category III_d (wet sedge/moist sedge, dwarf shrub tundra complex). This was due primarily to a lower number of longspur nests than expected in category III_d. Vegetation/land cover category III_d also had fewer nests than expected on study plots at Point Thomson in 2001, although this was due to a lower than expected number of semipalmated sandpiper nests, rather than longspur nests, in that habitat type (Rodrigues 2002). Category III_d represented the largest area for any of the vegetation/land cover categories on the Point Thomson study plots in 2002 and was particularly prominent in the southern portion of the study area (Figure 2). Vegetation/land cover category III_d is characterized by wet vegetation types and land forms consisting of strangmoor and low-centered polygons (Noel and Funk 1999). TERA (1993a) attributed the low nest densities in the Yukon Gold area, located approximately 10 km south of the Point Thomson study area, to the low diversity of habitats that were dominated by wet tundra vegetation and the surface form strangmoor. The large expanse of vegetation/land cover category III_d in the southern portion of the Point Thomson study area is

likely the beginning of the transition area between the coastal FTLP and the RCP referenced by TERA (1993a, 1995).

Based on the amount of habitat available, tundra birds in 2002 nested in higher densities than expected in vegetation/land cover category IVa (moist sedge, dwarf shrub/wet graminoid tundra complex). This was due primarily to a higher number of longspur nests than expected in this category. In 2001, there was no selection for any particular vegetation/land cover category by tundra-nesting birds at Point Thomson (Rodrigues 2002).

TERA (1995) reported nest densities of tundra birds in different vegetation types in the Badami area, and Martin and Moitoret (1981) compared bird nest densities on different tundra types in the Canning River delta. Most nesting bird species in both of these studies were similar to those nesting at Point Thomson, although red phalaropes were not as common at Badami and Point Thomson as they were at some areas in the Canning River delta.

Habitats were divided into 3 types at Badami (wet tundra, moist/wet tundra complex, and moist/dry tundra; TERA 1995) and at the Canning River delta (lowland, mesic, and upland; Martin and Moitoret 1981). Wet tundra and lowland habitats are poorly drained and may have standing water in some areas; moist/wet and mesic habitats are intermediate in wetness; and moist/dry and upland habitats are relatively well drained and dryer. If vegetation/land cover types at Point Thomson are combined in such a way that IIIa, IIIc, and IIIe form one category, and Va, Vc and Ve form a second category (categories III and V), then vegetation/land cover categories III, IV, and V at Point Thomson would be comparable to the habitat classifications at Badami and the Canning River delta. Vegetation/land cover categories III, IV and V correspond to wet, wet/moist, and moist/dry, respectively.

Nesting habitats at Point Thomson and Badami have similar trends (Table 9). Higher nest densities occur in wet/moist habitats and lower nest densities occur in wet habitats at both locations. At these locations, Lapland longspur, semipalmated sandpiper, and pectoral sandpiper are the dominant species. In 2002, red phalarope was also a fairly common nesting species at Point Thomson. At the Canning River delta, the higher nest densities occur on wet/moist habitats as at the other locations; however, wet habitats have higher densities than moist/dry habitats (Table 9).

At the Canning River delta, Lapland longspur, semipalmated sandpiper, and pectoral sandpiper are also dominant species, along with a fourth species, red phalarope. Red phalarope was the most numerous breeding species in the lowland, or wet, study plot, and was the second most abundant nesting species on all plots combined. Rodrigues (1994) reported that red-necked phalaropes in the Prudhoe Bay area also selected nest sites in wet areas. In this sense, the avifauna of the Canning River delta closely resembles that of Prudhoe Bay.

During 2 years of study at Point Thomson, fewer nests than expected were discovered on vegetation/land cover category IIIc. This was due to a lower number of semipalmated sandpiper nests than expected in 2001 and of Lapland longspur nests in 2002 on this habitat type. There was no selection for a particular habitat type at Point Thomson in 2001, although in 2002 a larger number of birds than expected nested on vegetation/land cover category IVa. This was due to a larger number of longspur nests than expected on this habitat type. At Point Thomson, nest densities appear to be higher on wet/moist and moist/dry habitats than on wet habitats. Results of studies at Point Thomson indicate that wet/moist and moist/dry habitats (vegetation/land cover categories IV and V, respectively) may be more important for nesting birds in the Point Thomson area than wet habitats (vegetation/land cover category III).

Summary

The nest density of tundra-nesting birds in the Point Thomson area in 2002 was within the range reported for other North Slope areas. The most common nesting species was Lapland longspur, followed by semipalmated and pectoral sandpipers. These were also the most common nesting species in the Point Thomson area in 2001. Lapland longspur nests comprised almost 40% of the total number of nests of all species combined. Red phalarope was a common nesting species at Point Thomson in 2002, although it had been an uncommon nesting species in 2001. Species diversity in 2002 was similar to what might be expected in the Prudhoe Bay area, although in 2001 it was intermediate between that of Prudhoe Bay and most areas of ANWR. These 4 common nesting species were also the most commonly observed species during censuses of bird use of Point Thomson study plots. These species were followed in abundance during plot censuses by parasitic jaeger.

Nest survival in 2002 was relatively low for Lapland longspur (0.24), and semipalmated (0.31) and pectoral sandpiper (0.36) when compared to other North Slope studies. Nest survival for red phalarope (0.59) was higher than that of the other common species. The most frequently observed predator on study plots during predator counts was parasitic jaeger. Glaucous gull was the most frequently observed predator off study plots. Arctic foxes were observed in small numbers both on and off study plots during predator counts. A parasitic jaeger was observed depredating a longspur nest, but there was more evidence of fox predation at nest sites than for predation by other species. However, jaegers and other avian predators generally do not leave evidence at depredated nests and avian predation may have been as significant as fox predation at Point Thomson in 2002. Observations suggested that predators may have shifted from their main prey species (lemmings) in 2001 to alternative prey (bird eggs and young) in 2002.

Although nests were discovered on 10 different vegetation/land cover categories, 84% of all nests occurred on 1 of 3 vegetation/land cover categories. Nest density on vegetation/land cover categories IVa (moist sedge, dwarf shrub/wet graminoid tundra complex) and Va (moist sedge, dwarf shrub tundra) was approximately twice that of category IIIId (wet sedge/moist sedge, dwarf shrub tundra complex). Based on the amount of habitat available, more nests of all species combined and of Lapland longspurs alone were located on vegetation/land cover category IVa, and fewer nests than expected for all species combined and for Lapland longspur alone were located on category IIIId. On Point Thomson study plots in 2001, there was no selection for nest sites on any particular vegetation/land cover category; however, when considering all species combined and semipalmated sandpiper alone, the occurrence of nests on vegetation/land cover category IIIId was less than expected based on the amount of habitat available.

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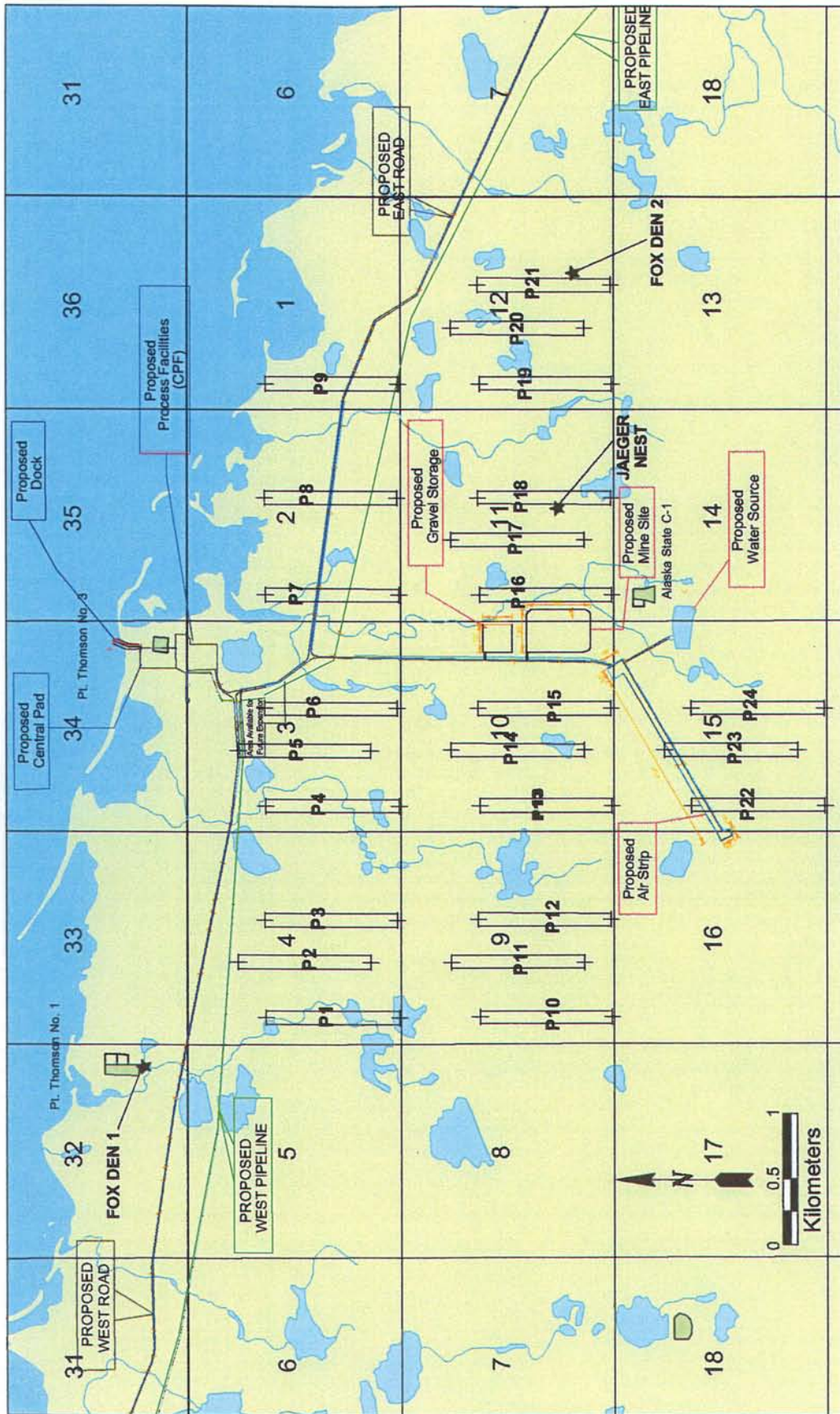


Figure 1. Location of study plots, proposed infrastructure, and fox dens and jaeger nest at Point Thomson, Alaska, 2002.



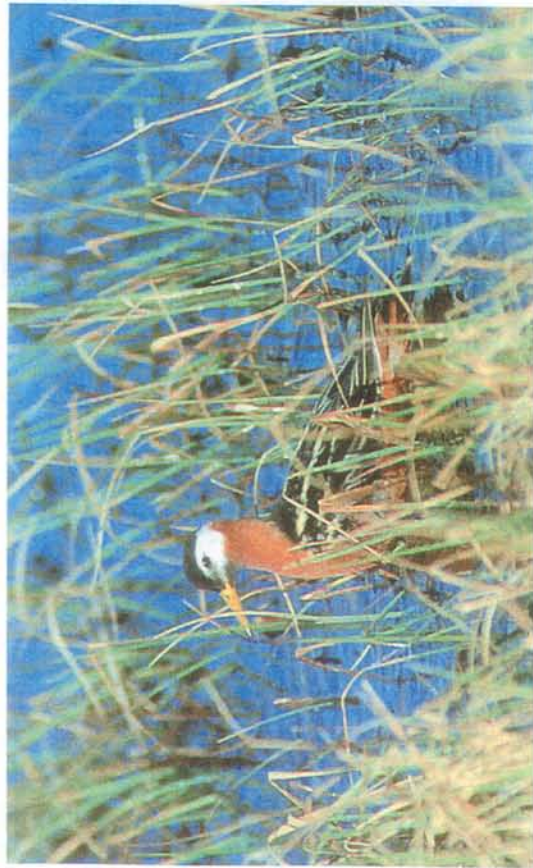
Figure 2. Vegetation/land cover categories of study plots and of the Point Thomson area, Alaska, 2002. Vegetation/land cover categories are from Noel and Funk (1999) and are briefly described in Table 6.



Base camp at Point Thomson Unit 3 gravel pad.



Workers cleanup Point Thomson Unit 3 gravel pad.



Red phalarope (common nesting species).



Stilt sandpiper (uncommon nesting species).

Figure 3. Camp site and gravel pad at Point Thomson Unit 3, and examples of common and uncommon nesting species at Point Thomson, Alaska, summer 2002. Photos by Robert Rodrigues.



Arctic fox Den 1.



Short-tailed weasel.



Adult arctic fox at Den 1.



Arctic fox with kits at Den 1.

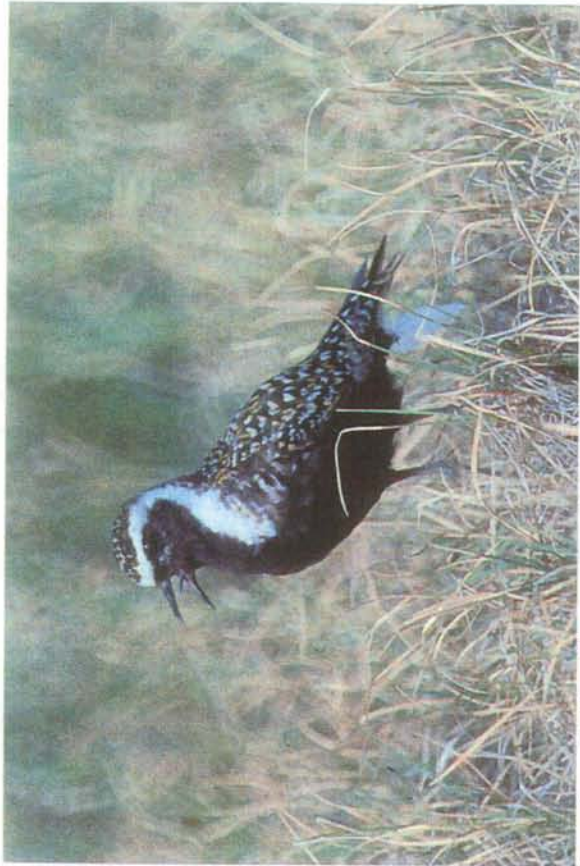
Figure 4. Mammalian predators included arctic fox and short-tailed weasel, Point Thomson, Alaska, summer 2002. Photos by Robert Rodrigues.



Parasitic jaeger nest with eggs.



Parasitic jaeger at nest.



American Golden-Plover alarming near nest.



Female Lapland longspur on nest.

Figure 5. Parasitic jaeger was a known predator of at least one longspur nest. American Golden-Plover was an uncommon nesting species, Point Thomson, Alaska, summer 2002. Photos by Robert Rodrigues.

Table 1. Schedule of activities for tundra nesting bird study, Point Thomson, Alaska, 2002.

Activity	Dates
Plot set-up	June 7-10
First "W" Search	June 11-14
First Rope-drag	June 15-22
Second Rope-drag	June 25-July 6
Second "W" Search	July 8-10
Nest Monitoring	June 16-July 14

Table 2. Number of nests found during systematic searches ("W" searches and rope drags) and nest density (nests/km²), number of nests nest found incidentally, total number of nests, and total nest density for bird species and species groups on tundra plots at Point Thomson, Alaska, 2002.

Species	Nests Found During Searches	Nest Density (Searches)	Nests Found Incidentally	Total Nests	Nest Density (total nests)
Passerines					
Lapland Longspur	49	20.4	7	56	23.3
Shorebirds					
Pectoral Sandpiper	23	9.6	3	26	10.8
Semipalmated Sandpiper	23	9.6	3	26	10.8
Red-necked Phalarope	11	4.6	2	13	5.4
American golden-Plover	4	1.7	3	7	2.9
Dunlin	5	2.1	0	5	2.1
Long-billed Dowitcher	3	1.3	0	3	1.3
Red Phalarope	0	0.0	1	1	0.4
Stilt Sandpiper	1	0.4	0	1	0.4
Waterfowl					
King Eider	2	0.8	0	2	0.8
Long-tailed duck	0	0.0	1	1	0.4
Waterbirds					
Pacific Loon	1	0.4	0	1	0.4
Passerines					
	49	20.4	7.0	56.0	23.3
Shorebirds					
	70	29.2	12.0	82.0	34.2
Waterfowl					
	2	0.8	1.0	3.0	1.3
Waterbirds					
	1	0.4	0.0	1.0	0.4
Total					
	122	50.8	20	142	59.2

Table 3. Estimated daily survival rates for nests of selected species, all species combined, and all shorebird species combined, on and off study plots, Point Thomson, Alaska, 2002. Nest survival (the product of incubation survival and nestling survival) was 0.24 for longspurs.

Species	Daily Survival (Incubation Period)	Standard Error	Survival (Incubation)	Daily Survival (Nestling)	Standard Error	Survival (Nestling)
Lapland Longspur	0.93913	0.01287	0.47 ($n=60$)	0.93569	0.01391	0.51 ($n=54$)
Semipalmated Sandpiper	0.94643	0.01228	0.31 ($n=34$)			
Pectoral Sandpiper	0.95423	0.01420	0.36 ($n=31$)			
Red Phalarope	0.97222	0.01581	0.59 ($n=13$)			
All Species	0.94612	0.00645				
Shorebirds	0.94910	0.00739				

Table 4. Average number of predators recorded on and off plot during 30-min counts (composed of three 10-min counts each) on study plots at Point Thomson, Alaska, 2002. Period 1 includes 11 June through 22 June; period 2 includes 23 June through 7 July.

Species	Period 1 (n=45)		Period 2 (n=85)		Total (n=130)	
	Average/30-min count		Average/30-min count		Average/30-min count	
	On	Off	On	Off	On	Off
Parasitic Jaeger	0.16	0.76	0.40	1.45	0.32	1.21
Glaucous Gull	0.20	1.62	0.14	1.24	0.16	1.37
Jaeger sp.	0.00	0.47	0.00	0.68	0.00	0.61
Common Raven	0.00	0.09	0.09	0.25	0.06	0.19
Snowy Owl	0.00	0.31	0.00	0.11	0.00	0.18
Long-tailed Jaeger	0.09	0.02	0.06	0.09	0.07	0.07
Pomarine Jaeger	0.07	0.09	0.04	0.04	0.05	0.05
Northern Harrier	0.00	0.00	0.00	0.05	0.00	0.03
Raptor Sp.	0.00	0.02	0.00	0.02	0.00	0.02
Rough-legged Hawk	0.00	0.00	0.00	0.02	0.00	0.02
Bald Eagle	0.00	0.02	0.00	0.00	0.00	0.01
Arctic Fox	0.11	0.07	0.01	0.13	0.05	0.11
Total	0.62	3.47	0.74	4.07	0.70	3.86

Table 5. Average density of bird species recorded on all study plots combined during "W" searches and rope-drags at Point Thomson, Alaska, 2002.

Species	Density (birds/ km ²)				Average
	1st Search	1st Rope-drag	2nd Rope-drag	2nd Search	
Lapland Longspur	61.3	78.3	41.3	84.6	66.4
Pectoral Sandpiper	27.9	14.6	15.4	32.1	22.5
Semipalmated Sandpiper	21.7	17.1	15.4	25.4	19.9
Red Phalarope	12.9	7.1	2.5	14.6	9.3
Parasitic Jaeger	6.7	7.1	14.2	7.1	8.8
Dunlin	5.4	4.2	6.3	6.7	5.6
American Golden-Plover	3.3	1.3	4.6	7.9	4.3
Long-tailed Jaeger	3.8	0.8	7.1	0.0	2.9
Long-billed Dowitcher	3.8	3.8	1.3	1.7	2.6
Stilt Sandpiper	2.9	0.8	3.8	2.5	2.5
Long-tailed Duck	0.8	0.8	2.5	3.8	2.0
King Eider	0.4	1.3	4.6	0.8	1.8
Red-necked Phalarope	1.7	0.8	0.0	3.3	1.5
Glaucous Gull	2.5	0.4	1.3	1.7	1.5
Canada Goose	1.7	1.3	0.0	2.5	1.4
Pacific Loon	1.3	0.0	1.3	1.7	1.0
Northern Pintail	2.1	0.4	0.0	1.7	1.0
Buff-breasted Sandpiper	1.3	0.0	0.8	1.7	0.9
Pomarine Jaeger	0.4	0.8	0.0	2.1	0.8
Rock Ptarmigan	1.3	0.0	0.4	0.8	0.6
Red-throated Loon	0.0	1.3	0.0	0.0	0.3
Common Raven	0.4	0.0	0.4	0.0	0.2
Bar-tailed Godwit	0.0	0.0	0.0	0.8	0.2
Willow Ptarmigan	0.0	0.0	0.0	0.8	0.2
Golden Eagle	0.0	0.4	0.0	0.0	0.1
Jaeger Species	0.0	0.0	0.0	0.4	0.1
Peregrine Falcon	0.0	0.4	0.0	0.0	0.1
Redpoll	0.0	0.0	0.0	0.4	0.1
Snow Bunting	0.0	0.4	0.0	0.0	0.1
Total	163.3	143.3	122.9	205.0	158.6

Table 6. Percent coverage and brief description of vegetation/land cover categories on all study plots combined, Point Thomson, Alaska, 2002. See Noel and Funk (1999) for complete descriptions of vegetation/land cover categories.

Vegetation/Land Cover Category	Vegetation/Land Cover Description	Percent Coverage
Ia	Water	8.31
IIb	Aquatic Graminoid Tundra	0.69
IIc	Water/Tundra Complex	0.89
IIIa	Wet Sedge Tundra	2.29
IIIb	Wet Graminoid Tundra	0.14
IIIc	Wet Sedge/Moist Sedge, Dwarf Shrub Tundra Complex	34.85
IIId	Wet Sedge/Moist Sedge/Barren Complex (wet frost-scar tundra complex)	1.95
IVa	Moist Sedge, Dwarf Shrub/Wet Graminoid Tundra Complex	26.13
Va	Moist Sedge, Dwarf Shrub Tundra	16.64
Vc	Dry Dwarf Shrub, Crustose Lichen Tundra	2.29
Ve	Moist Graminoid, Dwarf Shrub Tundra/Barren Complex	2.61
IXb	Dry Barren/Dwarf Shrub, Forb Grass Complex	0.15
IXh	Wet Barren/Wet Sedge Tundra Complex	0.24
IXi	Dry Barren/Forb, Graminoid Complex	0.66
Xa	River Gravels/Beaches	0.09
XIa	Wet Mud	1.93
Marine Waters		0.12
Total		100

Table 7. The total number of nests of each species found on vegetation/land cover categories on all study plots combined, Point Thomson, Alaska, 2002.

Species	Vegetation/Land Cover Category										Total
	Iib	IId	IIIa	IIIId	IIIe	IVa	Va	Vc	Ve	IXi	
Lapland Longspur				11	1	29	13	2			56
Semipalmated Sandpiper			3	9	2	6	3	2		1	26
Pectoral Sandpiper			1	7		8	9		1		26
Red Phalarope		1	1		2	5	4				13
American Golden-Plover				1		3	1	2			7
Dunlin						1	2	1	1		5
Long-billed Dowitcher				3							3
King Eider				1		1					2
Stilt Sandpiper				1							1
Red-necked Phalarope				1							1
Long-tailed Duck						1					1
Pacific Loon	1										1
Total	1	1	5	34	5	54	32	7	2	1	142
Percent of total	0.7	0.7	3.5	23.9	3.5	38.0	22.5	4.9	1.4	0.7	100

Table 8. Area, percent coverage, number of nests, and nest density for each vegetation/land cover category on tundra bird nesting study plots, Point Thomson, Alaska, 2002.

Vegetation/Land Cover Category	Area (ha)	Percent Coverage	Number of Nests	Nest Density (Nests /km ²)
Ia	19.9	8.31	0	0.0
IIb	1.7	0.69	1	60.4
IIId	2.1	0.89	1	46.8
IIIa	5.5	2.29	5	91.0
IIIb	0.3	0.14	0	0.0
IIIId	83.6	34.85	34	40.7
IIIe	4.7	1.95	5	106.8
IVa	62.7	26.13	54	86.1
Va	39.9	16.64	32	80.1
Vc	5.5	2.29	7	127.4
Ve	6.3	2.61	2	31.9
IXb	0.4	0.15	1	277.8
IXh	0.6	0.24	0	0.0
IXi	1.6	0.66	0	0.0
Xa	0.2	0.09	0	0.0
XIa	4.6	1.93	0	0.0
Marine Waters	0.3	0.12	0	0.0
Total	240.0	100.0	142	59.2

Table 9. Nest densities of all species combined on three basic habitat types at locations on the Arctic Coastal Plain, Alaska. Nest densities at Badami are from TERA (1995), those at the Canning River Delta are from Martin and Moitoret (1981), those at Point Thomson in 2001 are from Rodrigues (2002).

Location	Nest Density (Nests/km ²)		
	Wet	Wet/Moist	Moist/Dry
Point Thomson, 2002	46.7	86.1	79.3
Point Thomson, 2001	35.7	70.2	64.3
Badami, 1995	60.0	84.0	76.4
Canning River Delta, 1980	92.5	136.5	78.1
Canning River Delta, 1979	59.2		51.0

Appendix A. GPS coordinates (WGS84) for end points of transect centerlines for study plots at Point Thomson, Alaska, 2002. A and B indicate north and south ends of transects, respectively.

Transect endlines			Transect endlines		
Centerpoint	Latitude	Longitude	Centerpoint	Latitude	Longitude
P1A	70.16501	-146.32969	P13A	70.15058	-146.28718
P1B	70.15601	-146.32969	P13B	70.14158	-146.28718
P2A	70.16688	-146.31862	P14A	70.15245	-146.27608
P2B	70.15789	-146.31862	P14B	70.14346	-146.27608
P3A	70.16509	-146.31014	P15A	70.15067	-146.26762
P3B	70.1561	-146.31014	P15B	70.14167	-146.26762
P4A	70.16501	-146.28727	P16A	70.15058	-146.24475
P4B	70.15601	-146.28728	P16B	70.14158	-146.24475
P5A	70.16688	-146.27617	P17A	70.15245	-146.23365
P5B	70.15789	-146.27617	P17B	70.14346	-146.23365
P6A	70.16509	-146.2677	P18A	70.15066	-146.2252
P6B	70.1561	-146.2677	P18B	70.14166	-146.2252
P7A	70.16501	-146.24478	P19A	70.15058	-146.20233
P7B	70.15601	-146.24482	P19B	70.14159	-146.20233
P8A	70.16509	-146.22525	P20A	70.15245	-146.19123
P8B	70.15609	-146.22525	P20B	70.14346	-146.19123
P9A	70.16501	-146.20237	P21A	70.15066	-146.18277
P9B	70.15601	-146.20237	P21B	70.14166	-146.18277
P10A	70.15058	-146.3296	P22A	70.13616	-146.28707
P10B	70.14158	-146.3296	P22B	70.12716	-146.28708
P11A	70.15245	-146.31851	P23A	70.13803	-146.276
P11B	70.14346	-146.31851	P23B	70.12904	-146.276
P12A	70.15067	-146.31005	P24A	70.13624	-146.26754
P12B	70.14167	-146.31005	P24B	70.12725	-146.26753

Appendix B. GPS coordinates (WGS84) for bird nests and fox dens (bottom of list) in the Point Thomson area, Alaska, 2002.

Species	Nest ID	Latitude	Longitude
American Golden-Plover	A015	70.14855	-146.27501
American Golden-Plover	A021	70.15706	-146.24351
American Golden-Plover	A028	70.14817	-146.28686
American Golden-Plover	A041	70.16087	-146.26799
American Golden-Plover	A137	70.16309	-146.24508
American Golden-Plover	A144	70.16267	-146.32904
American Golden-Plover	A147	70.14445	-146.20322
American Golden-Plover	A311	70.14232	-146.24482
American Golden-Plover	A324	70.15739	-146.26974
American Golden-Plover	A337	70.15616	-146.2657
Dunlin	D017	70.16292	-146.31104
Dunlin	D120	70.15048	-146.28719
Dunlin	D126	70.16303	-146.28895
Dunlin	D171	70.16475	-146.28765
Dunlin	D227	70.14996	-146.27345
Dunlin	D313	70.14846	-146.26694
Dunlin	D323	70.16008	-146.26716
King Eider	K222	70.14957	-146.1822
King Eider	K329	70.14526	-146.22399
Lapland longspur	L003	70.14302	-146.20251
Lapland longspur	L006	70.16161	-146.32865
Lapland longspur	L008	70.16432	-146.27509
Lapland longspur	L011	70.14399	-146.20224
Lapland longspur	L012	70.15675	-146.20184
Lapland longspur	L016	70.14385	-146.27705
Lapland longspur	L018	70.16036	-146.31056
Lapland longspur	L019	70.16353	-146.30917
Lapland longspur	L022	70.15736	-146.24723
Lapland longspur	L024	70.14875	-146.20178
Lapland longspur	L025	70.14553	-146.20292
Lapland longspur	L026	70.16021	-146.27677
Lapland longspur	L029	70.16317	-146.27035
Lapland longspur	L032	70.16335	-146.24507
Lapland longspur	L033	70.16191	-146.24588
Lapland longspur	L034	70.1654	-146.31066
Lapland longspur	L039	70.14755	-146.19149
Lapland longspur	L102	70.14257	-146.22585
Lapland longspur	L103	70.16052	-146.28659
Lapland longspur	L105	70.16173	-146.31282
Lapland longspur	L106	70.16271	-146.24328
Lapland longspur	L107	70.16435	-146.24519
Lapland longspur	L109	70.15217	-146.19061
Lapland longspur	L112	70.15005	-146.19245
Lapland longspur	L114	70.14654	-146.18194
Lapland longspur	L117	70.14768	-146.30993
Lapland longspur	L118	70.14265	-146.31066

Appendix B, continued.

Species	Nest ID	Latitude	Longitude
Ptarmigan sp.	PT001	70.15591	-146.28748
Red Phalarope	R002	70.15169	-146.27684
Red Phalarope	R002	70.15171	-146.27682
Red Phalarope	R005	70.16386	-146.32975
Red Phalarope	R031	70.15607	-146.26622
Red Phalarope	R037	70.15224	-146.19165
Red Phalarope	R038	70.14779	-146.18992
Red Phalarope	R111	70.14406	-146.19128
Red Phalarope	R127	70.15969	-146.28784
Red Phalarope	R141	70.16307	-146.3291
Red Phalarope	R157	70.1619	-146.26792
Red Phalarope	R159	70.14779	-146.1841
Red Phalarope	R169	70.16508	-146.33035
Red Phalarope	R211	70.15925	-146.31784
Red Phalarope	R233	70.15782	-146.28853
Red Phalarope	R235	70.15616	-146.20153
Red Phalarope	R241	70.16341	-146.22253
Red Phalarope	R302	70.16137	-146.32927
Red-necked Phalarope	RN027	70.13251	-146.26599
Red-necked Phalarope	RN156	70.14953	-146.288
Red-throated Loon	RT154	70.15829	-146.27469
Semipalmated Sandpiper	S010	70.14302	-146.20258
Semipalmated Sandpiper	S013	70.16283	-146.2025
Semipalmated Sandpiper	S023	70.15909	-146.24395
Semipalmated Sandpiper	S030	70.16259	-146.26838
Semipalmated Sandpiper	S035	70.15643	-146.30978
Semipalmated Sandpiper	S101	70.16337	-146.24513
Semipalmated Sandpiper	S108	70.16097	-146.2262
Semipalmated Sandpiper	S110	70.14742	-146.19138
Semipalmated Sandpiper	S113	70.15042	-146.18278
Semipalmated Sandpiper	S115	70.14431	-146.18325
Semipalmated Sandpiper	S116	70.1469	-146.1841
Semipalmated Sandpiper	S121	70.15094	-146.28859
Semipalmated Sandpiper	S130	70.14473	-146.24593
Semipalmated Sandpiper	S131	70.14164	-146.24391
Semipalmated Sandpiper	S138	70.1575	-146.22547
Semipalmated Sandpiper	S164	70.14656	-146.27431
Semipalmated Sandpiper	S204	70.16593	-146.27684
Semipalmated Sandpiper	S205	70.14515	-146.23472
Semipalmated Sandpiper	S207	70.1302	-146.27899
Semipalmated Sandpiper	S219	70.15167	-146.23417
Semipalmated Sandpiper	S221	70.14193	-146.18271
Semipalmated Sandpiper	S224	70.15004	-146.27847
Semipalmated Sandpiper	S225	70.14553	-146.27696
Semipalmated Sandpiper	S228	70.15619	-146.24261
Semipalmated Sandpiper	S237	70.16411	-146.20321
Semipalmated Sandpiper	S305	70.15714	-146.24382
Semipalmated Sandpiper	S309	70.1494	-146.2458

Appendix B, continued.

Species	Nest ID	Latitude	Longitude
Semipalmated Sandpiper	S310	70.14251	-146.24429
Semipalmated Sandpiper	S312	70.14724	-146.24427
Semipalmated Sandpiper	S317	70.1592	-146.33152
Semipalmated Sandpiper	S320	70.1641	-146.32918
Semipalmated Sandpiper	S321	70.16379	-146.2671
Semipalmated Sandpiper	S322	70.16046	-146.26949
Semipalmated Sandpiper	S336	70.16389	-146.28954
Semipalmated Sandpiper	S338	70.14722	-146.24341
Semipalmated Sandpiper	S339	70.14225	-146.24447
Stilt Sandpiper	ST133	70.14372	-146.32817
Arctic Fox	Den 1	70.17331	-146.33963
Arctic Fox	Den 2	70.14428	-146.18044

Appendix C. Database for nesting portion of tundra-nesting bird study, Point Thomson, Alaska, 2002. INC indicates whether or not the nest was found incidentally, ON indicates nests location on or off plot, TV indicates type of visit (search or monitoring), NO E indicates number of eggs, NO Y indicates number of young, VEG indicates vegetation/land cover category, FT indicates nest fate (successful, depredated, unknown, or abandoned), CON indicates percent nest concealment. Codes for species names are in Appendix C.

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
LALO	6	1	15	N	Y	CR	6/11	1310	S	6		4-8+		5a	P	60	Observer followed feeding female back to nest(W1), FTPs with concave centers and some STR, several HCPs near
LALO	6	1	15	N	Y	ARA	6/15	1020	M	4	2	8-12	1-2				Nest feathers slightly ruffled, no fox scent, no adults or alarming, no feather sheaths.
LALO	6					RR	6/19	1242	M	0	0						Female flushed from nest in front of observer, FTP along river
REPH	5	1	6	N	Y	CR	6/11	943	S	4	0	0-1		3a	P	10	Male feeding in ,nearby pond
REPH	5	1	6	N	Y	ARA	6/15	840	M	4	0	4-5					Male incubating
REPH	5	1	6	N	Y	RR	6/19	1232	M	4		8-9					Male incubating, did not flush
REPH	5					RR	6/25	1104	M	4		14-15					Nest empty, no scent, no bits, no powder or stringy hairs
REPH	5					CR	6/29	826	M			18-19					Female flushed then followed back to nest, age based on incomplete clutch, FTP
REPH	5					CR	7/4	805	M	0	0						Female incubating
LALO	301	1	31	N	Y	ARA	6/11	1238	S	3		3-4		5a	H/F	30	All downy young
LALO	301	1		N	Y	ARA	6-15	950	M	6		7-8					Female alarming
LALO	301	1		N	Y	RR	6/19	1321	M	6		11-12					Nest empty, no scent, ample powdery residue, alarming female with food in area
LALO	301					RR	6/25	1225	M	2	2		2				Age based on incomplete clutch, bird flushed and returned to nest, FTP with shallow STR
LALO	301					CR	6/29	857	M	0	5		4-5				Male incubating
LALO	301					CR	7/4	920	M		0						Male did not flush
REPH	302	1	17	N	Y	ARA	6/11	1305	S	3		3-4		5a	S	0	Three cold, wet eggs, no hatch evidence from one egg
REPH	302	1	17	N	Y	ARA	6-15	1030	M	4		7-8					egg bits found with possible fuzz, at least one egg not fertile, no scent
REPH	302	1	17			RR	6/19	1245	M	4		11-12					Followed bird back to nest during rope drag, FTP
REPH	302					RR	6/25	1155	M	4		17-18					
REPH	302					CR	6/29	835	M			21-22					
REPH	302					CR	7/4	842	M	3							
REPH	302					RR	7/7	1140	M	3							
SESA	317	1	26	N	N	ARA	6/15	900	S	4		1-6		5a	S	10	

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
SESA	317				RR	6/19	1313	M	4		5-10					Adult incubating
SESA	317				RR	6/25	1220	M	4		11-16					Adult incubating
SESA	317				CR	6/29	851	M	4		15-20					Adult incubating
SESA	317				CR	7/4	916	M	0	0						Powdery residue, egg bits, alarming adult in vicinity
LALO	318	1	38	N N	ARA	6/15	927	S	5		1-5	5a	S	40		Followed female back to nest, FTP,
LALO	318				RR	6/19	1325	M	5		4-9					Female feeding in area
LALO	318				RR	6/25	1235	M		4						No bare skin, feathers starting
LALO	318				CR	6/29	903	M	4		4-5					Still no pin feathers
LALO	318				CR	7/4	926	M	1	1						1 ready to go chick
PESA	319	1	22	N Y	ARA	6/15	1010	S	3		1-3	5a	S	15		Followed female back to nest during rope drag, FTP / FLV
PESA	319				RR	6-19	1251	M	4		4-7					Female incubating
PESA	319				RR	6/25	1215	M	4		10-13					Female incubating
PESA	319				CR	6/29	849	M	4		14-17					Female incubating
PESA	319				CR	7/4	905	M	0	0						No scent, stringy hairs, egg bits
SESA	320	1	3	N Y	ARA	6/15	1056	S	4		1-4		D	40		Followed bird to nest, FTP / FLV
SESA	320				RR	6/19	1224	M	4		5-8					Adult incubating
SESA	320				RR	6/25	1102	M	4		11-14					Adult incubating
SESA	320				CR	6/29	821	M	0	0						Nest empty, faint fox scent
REPH	169	1	7	Y N	RR	7/7	1110	S	4			3d	S	25		Saw bird move to wet area while checking habitats, wet tundra near lake edge
REPH	169				ARA	7/8	754	M	4							Male present
REPH	169				CR	7/12	815	M	2							2 wet, ice-cold eggs, 1 was pipped, no fox scent, nest flattened, abundant stringy hairs, multiple egg bits
LALO	143	1	17	N Y	RR	6/25	1202	S	5			5a	U	60		Feeding bird went to nest, FTP with wet TROs, nest on FLY.
LALO	143				CR	6/29	837	M	5							Female incubating
LALO	143				CR	7/4	850	M	5							Female incubating
LALO	143				ARA	7/8	848	M		5						Downy chicks with patches of bare skin, eyes closed, female present
LALO	143				CR	7/12	825	M		4+						Pin feathers in, chicks nearly ready
LALO	143				CR	7/14	818	M		5						Ready to go
REPH	141	1	9	N Y	RR	6/25	1114	S	3			5a	S	20		Bird not flushed by rope, but flushed by middle observer, nest in small wet area surrounded by mostly dry habitat, wide TRO with standing water

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS
REPH	141				CR	6/29	829	M												Male did not flush
REPH	141				CR	7/4	815	M	0	0										Large egg bits, no scent
LALO	142	1	11	N	Y	6/25	1134	S	4								5a	P	50	Feeding bird went to nest on rope-drag, FTP, Eriophorum tussock
LALO	142				CR	6/29	831	M			4		1-3							Little naked skin, eyes closed
LALO	142				CR	7/4	828	M	0	0										Nest torn up and outside of scrape
AGPL	144	1	11	N	Y	6/25	1140	S	0								5a	P	0	Empty scrape with lichen lining, appeared to be a predated nest, no fox scent or other predator sign, is this a nest? FTP with bare lichen area
PESA	7	2	1	N	Y	6/11	1723	S	4				0-1				4a	D	20	Female flushed and followed back to nest, FTP / STR
PESA	7				JB	6/15	1350	M	4				4-5							
PESA	7				RR	6/19	1147	M	4				8-9							Female in area
PESA	7				JB	6/25	840	M	0	0										Nest empty before expected hatch date, no egg bits or scent
LALO	303	2	29	N	Y	6/11	1630	S	6				5-8+				4a	D	50	Female flushed, followed back to nest during W, FTP / STR, standing water in TRO, ground saturated
LALO	303				JB	6/15	1305	M	0											Nest intact no fox scent
LALO	303				RR	6/19	1120	M	0											Nest torn apart, fox scent present
LALO	212	2	17	N	Y	6/15	1347	S	6				2				3d	D	50	Female flushed, STR
LALO	212				RR	6/19	1138	M	6				6							Female nearby
LALO	212				JB	6/25	850	M	5				11							Female seen
LALO	212				CR	6/29	1000	M	0	0										Nest empty, lining mildly disturbed, no scent
REPH	211	2	33	N	Y	6/15	1318	S	3				2				4a	D	5	Male flushed from nest during rope drag, FTP/STR, standing water in TRO, ground saturated, FB with standing water near
REPH	211				RR	6/19	1108	M	0											Fox scent present
LALO	232	2	2	N	Y	6/25	838	S	3								4a	U	90	Female flushed from nest during rope-drag, FTP/STR.
LALO	232				CR	6/29	1015	M	4											Female incubating
LALO	232				CR	7/4	1025	M	4											Female incubating
LALO	232				ARA	7/8	1522	M		4										Downy with patches of skin, female brooding
LALO	232				CR	7/12	800	M		4										Pin feathers in, nearly ready to go
LALO	232				CR	7/14	805	M		4										Ready to go
PESA	104	3	3	N	Y	6/11	1500	S	4				1-4				4a	S	5	Feeding bird went to nest during W search, FTP with STR

SPEC	ID	PLOT	GRID	INC-ON	OBS	DATE	TIM	TV	NOE	NOY	AGE E	AGE Y	VEG	FT	CON	COMMENTS
PESA	124				ARA	6/23	1024	M	4		11-15					Female not seen
PESA	124				JB	6/26	1036	M	4		14-18					female present
PESA	124				CR	6/29	1300	M	0	0						No fox scent, no lining disturbance, egg bits in cup
REPH	127	4	24	N Y	RR	6/16	917	S	1		0		D	20		Male and female standing together. Female sat for 2 minutes with male 1 foot away. Female laid egg and moved off, NPG/STR
REPH	127				CR	6/20	852	M	4		1-4					
REPH	127				ARA	6/23	1121	M	0	0						No fox scent, no male
DUNL	126	4	10	N N	RR	6/16	850	S	3		2-3		D	15		Alarming bird returned to nest, FTP
DUNL	126				CR	6/20	807	M	0							Nest empty, no fox scent
LALO	125	4	11	N Y	RR	6/16	845	S	4		4-5		D	30		Nest previously found empty on 6/11, female inc 4 eggs, FTP with concave centers, ground saturated
LALO	125				CR	6/20	812	M	5		9-10					Female present
LALO	125				ARA	6/23	1036	M	5		10-13					Female present
LALO	125				JB	6/26	1100	M	4		13-16					Female present
LALO	125				CR	6/29	1257	M								Female did no flush
LALO	125				CR	7/4	1249	M	0	0						Nest empty, lining undisturbed, no scent
PTAR	1	4	40	Y N	CR	6/7		S	8				S	50		Eggs spotted accidentally while walking near end stake during plot set-up, large hummock in area of standing water
PTAR	1				RR	6/16	945	M								Female incubating
PTAR	1				CR	6/20	902	M								Female incubating
PTAR	1				ARA	6/23	1138	M								Female did not flush
PTAR	1				JB	6/26	1110	M								Female did not flush
PTAR	1				CR	6/29	1215	M								10 hatched egg shells in cup
LALO	103	4	19	N Y	RR	6/11	1145	S	6		5-8+		D	20		Feeding female flew to nest, small HCPs
LALO	103				RR	6/16		M	4		2	1				Some down but almost naked
LALO	103				CR	6/20	849	M	0		2	5				No eggs visible
LALO	103				ARA	6/23	1115	M	0		0					PAJA seen eating chicks
LALO	103				ARA	6/26	1130	M	0		0					Confirmed predation before chicks left nest via no powder or other fledgling evidence
PESA	203	4	4	N N	JB	6/11	1135	S	4		1-5		D	10		Female flushed then followed back to nest, FTP
PESA	203				RR	6/16		M	4		9					
PESA	203				CR	6/20	843	M	4		13					
PESA	203				ARA	6/23	1053	M	0	0						Female no present, no fox scent

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS	
PESA	202	4	9	N	Y	JB	6/11	1043	S	4				4-5				5a	D	10	Female flushed then followed to nest, FTP	
PESA	202					RR	6/16	U	M	0											No fox scent or predator sign	
PESA	202					CR	6/20	804	M	0	0										No fox scent or predator sign	
LALO	4	4	5	Y	Y	CR	6/10	U	S	6				U				5a	S	30	Found during plot staking, female flushed, FTP (same as LALO 201)	
LALO	4					RR	6/11	1015	M	6				U								Downy with some bard skin, eyes closed
LALO	4					RR	6/16	U	M	0	6			3								Near hopper status
LALO	4					CR	6/20	758	M	0	6			7								Both adults present, chicks huge, feathered
LALO	4					ARA	6/23	1018	M	0	3			10								Feather sheaths, no scent, hoppers in area
LALO	4					JB	6/26		M													Female flushed from nest during monitoring, FTP
LALO	216	4	20	Y	N	JB	6/17	1329	S	7				1-5				5c	S	80		
LALO	216					CR	6/20	847	M	7				11								Female present
LALO	216					ARA	6/23	1118	M	7				14								Female incubating
LALO	216					JB	6/26	1150	M	7				17								Down coming in
LALO	216					CR	6/29	1241	M	1+	4+											Pin feathers coming in
LALO	216					CR	7/4	1230	M	4												Abundant feather sheath, 1 dead chick out of nest, LALO droppings on nest rim, no fox scent or sign of predation
LALO	216					RR	7/8	1245	M		0											Flushed adult off nest, FTP
SESA	336	4	6	Y	N	ARA	6/23	948	S	4								5a	D	15	Nest found empty with fox scat in cup	
SESA	336					JB	6/26	1210	M	0												Female flushed off nest during rope-drag, STR
LALO	234	4	27	N	N	JB	6/26	1153	S	5												Female incubating
LALO	234					CR	6/29	1235	M	5												Nearly naked chicks
LALO	234					CR	7/4	1223	M	2	2+											Downy
LALO	234					RR	7/8	1301	M		4+											Ready to go
LALO	234					CR	7/12	933	M		3											One ready, the rest have fledged. LALO droppings around rim of cup.
LALO	234					CR	7/14	1000	M		1											Male seen sneaking in appropriate habitat during rope drag, area searched and nest found, STR by lake
REPH	233	4	34	N	Y	JB	6/26	1114	S	4								3e	U	80		
REPH	233					CR	6/29	1232	M	4												Male incubating
REPH	233					CR	7/4	1210	M	0	0											Nest empty, no bits, no powder or hairs, no fox scent
PALO	170	4	38	N	N	RR	7/8	1345	S	2								3e	U	0		Saw two loons on lake, searched shoreline and found nest.
PALO	170					CR	7/12	943	M	2												Adults defensive

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS
SESA	30	6	12	N	Y	6/27	1137	S	4								3e	D	20	Adult flushed from nest during rope-drag
SESA	30				RR	6/30	1642	M	4											Adult incubating
SESA	30				CR	7/5	1228	M	0											Empty nest, lining torn up, fox scent present
LALO	29	6	10	N	CR	6/27	1115	S	4								3e	D	20	Feeding female followed back to nest, FTP at interphase with wet area
LALO	29				RR	6/30	1645	M	6											Female incubating
LALO	29				CR	7/5	1233	M	0											Nest empty, entire lining torn out
PESA	158	6	4	Y	RR	6/30	1705	S	4								5a	U	10	Saw bird sneak onto nest after predator watch, FTP / FLV
PESA	158				RR	7/4	1330	M	0											Nest cup not flattened, no bits, no fox scent, no fuzz, female seen making scrape in area on 6/16, if this was the same bird's nest there was not enough time to hatch eggs
REPH	157	6	16	Y	RR	6/30	1635	S	4								3e	D	30	Saw bird fly to wet area during predator watch, walked to area and flushed bird
REPH	157				CR	7/5	1222	M	0											Nest empty, fox scent in cup
AGPL	41	6	20	N	Y	7/8	1223	S	2								3e	U	0	Male flushed from nest during W search, HCP on edge of wet area
AGPL	41				JB	7/12	903	M	2											2 eggs in cup, wet from mist, neither adult seen or heard, likely abandoned
AGPL	41				CR	7/13	1042	M	0											nest empty, lining very disturbed
SESA	101	7	8	Y	RR	6/7		S	1				0-1				5c	S	5	Followed adult to nest, HCP
SESA	101				RR	6/12	1240	M	4				2-3							
SESA	101				CR	6/17	1547	M	4				7-8							
SESA	101				JB	6/21	1217	M	4				11-12							
SESA	101				RR	6/24	753	M	4				14-15							Adult incubating
SESA	101				CR	6/28	1545	M	4				18-19							
SESA	101				JB	7/3	1424	M	0											Fledged
LALO	106	7	11	N	RR	6/12	1155	S	4				1-5				5c	S		Feeding bird flew to nest, HCP
LALO	106				CR	6/17	1541	M	5				5-8+							
LALO	106				JB	6/21	1219	M	5				9-12							
LALO	106				RR	6/24	827	M												Down with little bare skin
LALO	106				CR	6/28	1525	M	0				5-7							Pin feathers just starting to come in
LALO	106				JB	7/3	1435	M	2				10-12							2 chicks ready to go, 2 already fledged
SESA	305	7	35	N	ARA	6/12	1020	S	4				1-5				3d	D	10	Agitated female followed back to nest, lots of frost boils, area predominately wet, nest on small patch of dry habitat

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
SESA	305				CR	6/17	1428	M	4		6-11					
SESA	305				JB	6/21	1241	M	0							Nest empty, fox scent in cup
LALO	107	7	4	N Y	RR	6/12	1213	S	4		1-4		5a	S	20	FTP
LALO	107				CR	6/17	1550	M	4		6-10					
LALO	107				JB	6/21	1213	M	4		10-14					
LALO	107				RR	6/24	810	M		3+		1-2				Partial down, eyes closed
LALO	107				CR	6/28	1550	M	4			5-7				Large-bodied chicks with about 50% of skin still naked
LALO	107				JB	7/3	1421	M	4		10-12					Chicks ready to go
LALO	107				RR	7/6	1640	M	0							Abundant feather sheaths, nest in tact with LALO droppings on rim, no fox scent, adult alarming mildly
PESA	304	7	34	N Y	ARA	6/12	1010	S	3		1-3		3d	D	10	Agitated female followed back to nest, shallow FTP with STR
PESA	304				CR	6/17	1451	M	3		6-8					
PESA	304				JB	6/21	1241	M	3		10-12					
PESA	304				RR	6/24	904	M	0							Fox scat at nest
AGPL	21	7	35	N N	CR	6/17	1425	S	4		1-3		3d	D	0	Male flushed from nest during rope-drag, FTP
AGPL	21				JB	6/21	1254	M	0							Nest lining disturbed, cup contained fox scat
LALO	22	7	34	N N	CR	6/17	1455	S	6		5-8		5e	D	90	Feeding female followed back to nest, idistinct FTP with STR
LALO	22				JB	6/21	1244	M	0							Nest in tact, no fox scent
SESA	23	7	27	N Y	CR	6/17	1533	S	4		1-5		3a	S	40	Alarming adult followed back to nest during rope-drag, dry elevated area in DLB
SESA	23				JB	6/21	1239	M	4		5-9					Adult incubating
SESA	23				RR	6/24	901	M	4		8-12					Alarming adult present
SESA	23				CR	6/28	1458	M	4		12-16					Adult incubating
SESA	23				JB	7/3	1507	M	4		17-21					Egg bits and fuzz, no fox w scent, nest not particularly flattened
SESA	23				RR	7/6	1600	M	0							Downy chicks with small patches of bare skin, eyes closed, FTP / STR on side of wet TRO
LALO	129	7	39	Y N	RR	6/18	1350	S	4			2-3	3d	D	40	Nest in tact, no fox scent
LALO	129				JB	6/21	1301	M	0							Coincidentally found nest without seeing adult, FTP/FLV some standing water in TRO, map shows this area as wet, nest is on well formed FTP with other FTP's adjacent
SESA	228	7	40	Y N	JB	6/21	1312	S	3		1-3		3d	A	10	

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NOE	NOY	AGEE	AGEY	VEG	FT	CON	COMMENTS
SESA	228				RR	6/24	929	M	3							No adults showed up during predator watch
SESA	228				CR	6/28	1349	M	3							No adult present before or after rope-drag, eggs covered with moisture from prior evening's snow - abandoned
AGPL	137	7	10	Y	RR	6/24	820	S	4			5c	D	0		Alarming female returned to nest, HCP
AGPL	137				CR	6/28	1530	M	0							Nest empty, fox scent in cup
LALO	33	7	14	N	CR	6/28	1617	S	6			5a	U	70		Female flushed from rope, FTP
LALO	33				JB	7/3	1442	M	6							Female incubating
LALO	33				RR	7/6	1627	M		3+						Down with some bare skin
LALO	33				JB	7/8	1322	M	0	2						2 chicks inside of nest, 1 dead chick outside of nest
LALO	33				JB	7/12	926	M		0						no feather sheaths, no droppings around nest, nest lining in tact, no fox scent
LALO	32	7	8	N	CR	6/28	1606	S	3		3	5c	D	30		Feeding female followed back to nest during rope-drag, flat area between HCP's
LALO	32				JB	7/3	1428	M	4		7					Female incubating
LALO	32				RR	7/6	1636	M	3		10					Female incubating
LALO	32				JB	7/8	1347	M	1	2						Female brooding
LALO	32				JB	7/12	933	M	0	0						nest empty before expected fledge date, no scent but nest lining slightly disturbed
SESA	108	8	20	N	RR	6/12	1410	S	3		0	3d	D	5		Alarming adult returned to nest, FTP
SESA	108				ARA	6/17	1150	M	0							Lining mildly disturbed, no fox scent but suspect fox predation
LALO	306	8	20	N	ARA	6/12	1344	S	6		5-8		D	40		Feeding female followed back to nest, FTP with STR
LALO	306				ARA	6/17	1200	M	0							Lining mildly disturbed, no fox scent but suspect fox predation
LALO	307	8	40	N	ARA	6/12	1536	S	6		1-5	3d	D	50		Female flushed off nest, STR
LALO	307				ARA	6/17	1050	M	0							Lining mildly disturbed, no fox scent but suspect fox predation
LALO	326	8	26	N	ARA	6/17	1100	S		4		3-4	U	40		Female with food followed to nest, FTP with standing water in TROs
LALO	326				JB	6/21	1104	M		0						Lining in tact, no fox scent
PESA	327	8	25	N	ARA	6/17	1130	S	4		1-6	3d	D	40		Followed female to nest, FTP / STR
PESA	327				JB	6/21	1103	M	0							Lining in tact, no fox scent
LALO	328	8	12	N	ARA	6/17	1215	S	6		5-8+		D	12		Flushed female off nest, FTP / STR
LALO	328				JB	6/21	1124	M	0							Lining in tact, no fox scent

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS	
LALO	329	8	24	N	N	ARA	6/17	1309	S	0	0	0						3d	D	5	Nest found already predated, FTP	
LALO	139	8	18	Y	N	RR	6/24	1157	S	3	1	1						5a	S	30	Saw female feeding and followed to nest, FTP/STR	
LALO	139					RR	6/28	1100	M		4	4						4-5			All downy	
LALO	139					JB	7/3	1230	M		1	1						9-10			1 ready to go chick, 3 most likely already gone	
SESA	138	8	34	Y	Y	RR	6/24	1045	S	4								3d	U	10	Heard alarming bird and followed back to nest, FTP with FB	
SESA	138					RR	6/28	1700	M	4											Adult incubating	
SESA	138					JB	7/3	1312	M	0	0	0									Nest empty, slight depression, no scent, no egg bits	
LALO	149	8	39	N	Y	RR	6/28	1309	S	4								3d	D	40	Bird flushed from rope, FTP/STR near small pond	
LALO	149					JB	7/3	1334	M	4											Female incubating	
LALO	149					RR	7/6	1456	M	4											Female incubating	
LALO	149					JB	7/8	815	M	3	1	1									Female incubating, completely bare chick	
LALO	149					JB	7/12	1105	M	0	0	0									Nest found empty before expected fledge date, no feather sheaths, no droppings around nest, lining intact and no scent detected	
REPH	241	8	7	N	N	JB	7/8	1027	S	4								5a	U	5	Male flew into pond and snuck away, area searched and nest found, FTP/STR near pond	
REPH	241					JB	7/12	1002	M	0												nest lining concave and undisturbed, no fox scent, no fuzz or bits found
LALO	128	9	25	N	N	RR	6/17	1002	S		6	6						4a	S	60	Feeding female followed off plot to nest, chicks all downy with eyes beginning to open, FTP/STR	
LALO	128					JB	6/21	1004	M		5	5									Young covered with brown feathers	
LALO	128					RR	6/24	1410	M		1	1									1 dead chick in nest, male and female feeding hoppers in grid 22	
LALO	12	9	37	N	Y	CR	6/13	1315	S	6								4a	D	50	Female flushed from nest during "W" search, FTP with concave centers and STR	
LALO	12					RR	6/17	830	M	6												
LALO	12					JB	6/21	1012	M	1	5	5										No bare skin on chicks
LALO	12					RR	6/24	1425	M	0	0	0										No fox scent, nest in tact
SESA	13	9	10	N	Y	CR	6/13	1512	S	4								4a	D	20	Adult flushed from nest and "played injured," FTP/STR	
SESA	13					RR	6/17	905	M	4												
SESA	13					JB	6/21	845	M	3												
SESA	13					RR	6/24	1340	M	0												No fox scent, nest not flattened

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
REPH	235	9	39	N	Y	JB	6/29	1053	S	4				4a	S	10	Male flushed off nest during rope-drag, FTP with standing water in TROs
REPH	235					JB	7/3	1047	M	4							Male incubating
REPH	235					RR	7/6	1219	M	4							Male incubating
REPH	235					JB	7/9	1201	M	4							Male incubating
REPH	235					JB	7/12	1046	M	0							Lots of egg bits and fuzz in cup, egg bits in water around nest, no sign of fox
LALO	236	9	33	N	Y	JB	6/29	1113	S	6				4a	S	30	Feeding female followed back to nest, FTP eyes closed, patches of skin, 2 days
LALO	236					JB	7/3	1052	M	6	2						Body feathers coming in
LALO	236					RR	7/6	1226	M	4+	6						2 chicks ready to go, 2+ already fledged
LALO	236					JB	7/9	1348	M	2	9						feather sheaths and no sign of predation
LALO	236					JB	7/12	1040	M	0							Bird flushed during rope-drag, edge of barrens
SESA	237	9	6	N	Y	JB	6/29	1222	S	4				9i	S	5	Incubating bird seen
SESA	237					JB	7/3	1119	M	4							Adult incubating
SESA	237					RR	7/6	1255	M	4							adult incubating; tight sitter
SESA	237					JB	7/9	1251	M	4							Lots of fuzz. Could not find bits. Stopped looking because adult was alarming and trying to brood the four chicks about two meters from nest. Chicks approximately 1 day old.
SESA	237					JB	7/12	1022	M	4							Feeding female followed back to nest, Most of general area moist with nest in wet area, ground not patterned, several FBs and ponds/mud
SESA	237					ARA	7/14	935	M	0	0						Eyes closed, patches of skin
LALO	140	9	13	Y	Y	RR	6/24	1340	S	5				4a	S	80	All downy, eyes closed
LALO	140					JB	6/29	1138	M	5							Pin feathers coming in, eyes closed
LALO	140					JB	7/3	1113	M	0	5		2				Lots of feathers sheaths, bird droppings near nest cup, no sign of predation
LALO	140					RR	7/6	1255	M		4+		5				Adult flushed during rope-drag, STR in very wet area
LALO	140					JB	7/9	1238	M		5		7				No adult seen
LALO	140					JB	7/12	1028	M		0						Egg bits, whitish hairs, 2 alarming adults, nest cup flattened
STSA	133	10	31	N	Y	RR	6/21	848	S	4		8+		3d	S	5	Female flushed, followed back to nest upon returning to area 10 minutes later.
STSA	133					CR	6/25	857	M	4		12					
STSA	133					RR	6/30	1025	M	0	0						
PESA	134	10	28	N	Y	RR	6/21	914	S	4		1-3		3d	S	10	

SPEC	ID	PLOT	GRID	INC	CON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
PESA	134					CR	6/25	850	M	4		5-7					No female seen
PESA	134					RR	6/30	1017	M	4		10-12					Female in area
PESA	134					RR	7/5	855	M	4		15-17					Female in area
PESA	134					CR	7/7	922	M	4		17-19					Female not seen
PESA	134					ARA	7/10	1004	M	4		20-22					Female not seen
PESA	134					CR	7/13	837	M	4		23-25					Female not seen
PESA	134					CR	7/14	856	M	0	1						One chick in nest, another seen five meters from cup. Very upset female.
LALO	314	10	7	N	Y	ARA	6/14	857	S	5		4-8+	3d	U	40		Followed female back to nest, Hummock
LALO	314					JB	6/17	1005	M	5		7-11					
LALO	314					RR	6/21	831	M		5		2-3				Downy with some bare skin patches
LALO	314					CR	6/25	830	M		5		6-8				Pin feathers coming in
LALO	314					CR	6/30	936	M		0						Abundant feathers sheaths, LALO droppings on bowl edge, fox scat in cup
PESA	155	10	12	Y	Y	RR	6/30	949	S	4				U	10		Saw female go to nest, STR
PESA	155					RR	7/5	932	M	0							No bits, nest not flattened, no fox scent, no fuzz
PESA	166	10	1	Y	N	RR	7/5	836	S	4			3d	S	5		Female alarmed as plot approached for rope-drag, STR/rim top
PESA	166					CR	7/7	840	M	4							Female seen, 1 egg appeared piped without close inspection
PESA	166					ARA	7/10	800	M	4							Female incubating
PESA	166					CR	7/13	821	M	0	0						Empty nest very flattened, no scent, stringy hairs and egg bits, alarming female in area
LBDO	168	10	28	N	Y	RR	7/5	1026	S	4			3d	S	5		Rope flush, STR / very shallow rim
LBDO	168					CR	7/7	924	M								Adult incubating, did not flush
LBDO	168					ARA	7/10	1002	M	4							Adult incubating
LBDO	168					CR	7/13	839	M	0	0						Empty nest very flattened, no scent, many egg bits
LBDO	167	10	3	N	Y	RR	7/5	907	S	4			3d	U	5		Rope flush, STR / rim
LBDO	167					CR	7/7	853	M								Adult stayed on nest
LBDO	167					ARA	7/10	817	M	4							Adult incubating
LBDO	167					CR	7/13	828	M	4							Adult incubating
LBDO	167					CR	7/14	844	M								Nest contents not seen because incubating adult did not flush.
PESA	315	11	37	N	Y	ARA	6/14	1425	S	4		1-3	3d	D	5		Flushed female off nest, STR
PESA	315					JB	6/17	1107	M	4		4-6					
PESA	315					ARA	6/21	1052	M	4		8-10					No female seen

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS
PESA	315				CR	6/25	934	M	4				12-14							Female incubating
PESA	315				RR	6/30	1121	M	0											Faint fox scent, nest not flattened, no egg bits
LALO	316	11	27	N	ARA	6/14	1450	S	3				1-3				4a	D	30	Flushed female off nest, FTP/STR centers, standing water in TROs
LALO	316				JB	6/17	1112	M	1				4-6							1 cold egg remained, fox scent present, lining mildly disturbed
LALO	316				ARA	6/21	1030	M	1											Followed female to nest, FTP/STR centers, standing water in TROs
PESA	335	11	28	N	ARA	6/21	1041	S	4				1-5				3d	U	15	Female incubating
PESA	335				CR	6/25	939	M	4				5-9							No adult seen
PESA	335				RR	6/30	1133	M	4				9-13							Female incubating
PESA	335				ARA	7/5	1139	M	4				14-18							Female no seen
PESA	335				CR	7/7	1026	M	4				16-20							Female not seen, faint fox scent, no egg bits
PESA	335				ARA	7/10	1306	M	0											Flushed female, FTP/STR.
LALO	342	11	30	N	ARA	7/5	1143	S	6								4a	S	50	
LALO	342				CR	7/7	1024	M		4+			1-2							
LALO	342				ARA	7/10	1310	M		5			4-5							Female feeding in area
LALO	342				CR	7/13	902	M		5			7-8							Nearly ready to go
LALO	342				CR	7/14	910	M		4			8-9							Four ready. One already gone. Hopper seen on same grid.
LALO	343	11	32	N	ARA	7/5	1148	S		4+							4a	D	5	Female flushed, FTP/STR
LALO	343				CR	7/7	1020	M		5			4-5							Female alarming
LALO	343				ARA	7/10	1318	M		5			7-8							Chicks ready to go
LALO	343				CR	7/13	857	M		0										Nest torn apart, LALO pin feather not fully formed scattered outside of cup
LALO	341	11	10	N	ARA	7/5	1116	S		4							4a	U	70	Female flushed, FTP/STR.
LALO	341				CR	7/7	1046	M		4										Female alarming
LALO	341				ARA	7/10	1226	M		4										Female incubating
LALO	341				CR	7/13	817	M		3+			1-2							
LALO	341				CR	7/14	918	M		3+			2-4							Mostly down.
LALO	118	12	36	N	ARA	6/14	1015	S		4			2-3				3d	D	40	Female with food followed to nest, STR
LALO	118				JB	6/17	1234	M		4			5-8							
LALO	118				CR	6/21	1303	M		0										Fox urine visible in nest with pungent scent
LALO	117	12	13	N	ARA	6/14	902	S		5			4-6				3d	S	5	Feeding female flew to nest, STR/rim top
LALO	117				JB	6/17	1210	M		5			9-11							
LALO	117				CR	6/21	1343	M		1			2-3							
LALO	117				CR	6/25	1048	M		0			5-6							no pin feathers

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS
LALO	117					RR	6/30	1245	M			0									Feather sheaths in cup, LALO droppings on rim, nest in tact, no fox scent
PESA	132	13	28	N	Y	RR	6/20	900	S	4				1-3				5e	D	10	Female flushed ahead of rope, returned to plot and went onto nest, FTP with concave centers, standing water in TROs
PESA	132					CR	6/24	858	M	0	0										Strong fox scent, nest empty
LALO	123	13	28	N	N	RR	6/14	1540	S		3			1-2				5e	U		Feeding female followed back to nest, FTP with moist centers, STR, standing water in TROs, FB present but not abundant
LALO	123					RR	6/20	910	M		4										Pin feathers showing up on chicks
LALO	123					CR	6/24	902	M	0	0										Nest empty, LALO droppings along rim along with fresh scat containing lemming hair, LALO legs and pin feathers at cup, Alarming adults present
LALO	122	13	21	N	Y	RR	6/14	1355	S	6				5-8				4a	U	20	Female flushed off nest during "predator watch", FB in area, FTP with wet centers
LALO	122					RR	6/20	841	M		4										Downy with some bare skin
LALO	122					CR	6/24	852	M	0	0										Nest empty, lining in tact, no fox scent
SESA	121	13	2	N	N	RR	6/14	1245	S	4				1				5a	D	5	Bird flushed off nest immediately following alarming DUNL and PESA birds in area, FTP/FLV
SESA	121					RR	6/20	807	M	4				7							Nest empty, lining in tact, no fox scent
SESA	121					CR	6/24	809	M	0	0										Alarming adult followed back to nest at start of "W" search, FTP/FLV
DUNL	120	13	2	N	Y	RR	6/14	1237	S	4				4-5				5a	D	1	Nest empty, lining in tact, no fox scent
DUNL	120					RR	6/20	808	M	4				10-11							Followed female sneaking back to nest at start of "W" search, FTP/FLV
DUNL	120					CR	6/24	815	M	0	0										Faint fox scent
PESA	119	13	2	N	Y	RR	6/14	1229	S	4				1				5a	D	20	Female flushed and gave broken wing display, lichen area surrounded by wet tundra and ponds
PESA	119					RR	6/20	808	M	0											Adult seen
AGPL	28	13	11	Y	Y	CR	6/24	830	S	2								3d	D	0	Male incubating
AGPL	28					ARA	6/27	816	M	4				1							Adult incubating
AGPL	28					RR	6/30	1500	M	4				4							Adult incubating
AGPL	28					JB	7/4	1009	M	4				8							Adult incubating
AGPL	28					JB	7/7	1357	M	4				11							Female incubating
AGPL	28					CR	7/10	1227	M	4				14							Female incubating

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NOE	NOY	AGEE	AGEY	VEG	FT	CON	COMMENTS
AGPL	28				CR	7/13	943	M	0							Empty nest not flattened, no bits or fuzz, no scent but too early to hatch
RNPH	156	13	6	Y	RR	6/30	1528	S	4			3d	S	50		Saw bird fly into area near lake, walked to area and bird flushed, low area near pond
RNPH	156				JB	7/4	1005	M	4							
RNPH	156				JB	7/7	1406	M	4							
RNPH	156				CR	7/10	1212	M	0	0						Nest empty, no fox scent, egg bits in cup
LALO	240	13	38	N	Y	7/4	1124	S		3+		2-3	4a	S	10	Incubating female flushed from nest during rope-drag, FTP with concave centers, wet and low areas
LALO	240				JB	7/7	1333	M		4		5				Eyes closed, some pink skin with pin feathers coming in
LALO	240				CR	7/10	1347	M		1		8+				1 chick ready to go, male seen feeding hoppers a grid away
REPH	2	14	4	Y	CR	6/8		S	1	1		4a	D	10		Male flushed from nest while plots were being staked, FTP/STR with some standing water in TROs
REPH	2				JB	6/20	1330	M	0							
AGPL	15	14	17	N	Y	6/14	1513	S	4		1-6	4a	S	0		Male flushed while doing W, gave broken wing display, FTP
AGPL	15				JB	6/20	1130	M	4		7-13					
AGPL	15				CR	6/24	1019	M								Nest contents not seen, adult was incubating
AGPL	15				ARA	6/27	945	M	4		14-20					Adult seen
AGPL	15				RR	7/3	834	M	1	3						1 chick halfway hatched, 2 fully out, adults present
AGPL	15				JB	7/7	1210	M	0	0						Nest empty, lining not disturbed, fuzz and egg bits in cup
LALO	16	14	40	N	Y	6/14	1608	S	6		5-8+	3d	D	40		Feeding female followed back to nest during W search, FTP with concave centers and STR, standing water in area with pond nearby
LALO	16				JB	6/20	1240	M	3	3	11-14	2-3				
LALO	16				CR	6/24	951	M	0	0						Nest empty, strong fox scent
LALO	226	14	11	N	N	6/20	1310	S	3		3-4	5a	A	90		Feeding female followed to nest during rope drag, FTP/STR with some standing water in TROs
LALO	226				CR	6/24	1033	M	4							4 cold eggs with dew and spider webs over top of cup, no adult seen or heard

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS	
SESA	225	14	7	N	Y	6/20	1154	S	4				8+				3d	S	5	Incubating bird flushed during rope drag, FTP with concave centers, standing water in area, pond nearby	
SESA	225				CR	6/24	1002	M	4				12+							Alarming adult present	
SESA	225				ARA	6/27	927	M	4				15+							Adult present	
SESA	225				RR	7/3	927	M	0	0										Bits present, no fox scent or sign of predation, nest cup flattened, no fuzz but had been raining last days prior to visit	
SESA	224	14	12	N	N	6/20	1057	S	4				6-8				4a	S	15	Alarming adult followed to nest during rope drag, FTP with concave centers, no standing water	
SESA	224				CR	6/24	1026	M	4				10-12							Adult incubating	
SESA	224				ARA	6/27	951	M	4				13-15							Adult present	
SESA	224				RR	7/3	1052	M		4										Adult alarming and brooding chicks	
SESA	224				JB	7/7	1201	M	0	0										Nest empty and undisturbed, nest cup contained fuzz and egg bits	
LALO	223	14	6	N	N	6/20	1039	S		4							3-4	4a	D	0	Feeding female returned to nest, FTP/STR, some standing water and TROs
LALO	223				CR	6/24	1043	M	0	0											Nest empty, lining torn up, fox scent
DUNL	227	14	11	N	N	6/20	1310	S	4				4-5				5a	D	5		Incubating adult flushed during rope drag, FTP
DUNL	227				CR	6/24	1030	M	0	0											Nest empty, fox scent in cup, alarming adult in area
LALO	163	14	23	N	N	7/3	855	S	5								5a	D	25		Bird appeared to flush from rope but was followed back to nest well behind rope and off plot, FTP with concave centers and standing water in TROs
LALO	163				JB	7/7	1232	M	0	0											Nest found empty prior to expected fledge date, strong fox scent
PESA	165	14	24	N	Y	7/3	1029	S	2	2							5a	U	10		Anxious bird returned to nest during rope-drag, chicks hatching, FTP with STR centers, standing water and TROs
PESA	165				JB	7/7	1227	M	0	0											Fox scat next to cup, strong fox scent
PESA	165				RR	7/10		M													Nest cup flattened, egg bits and fuzz, no fox scent, fox scat about 6" from cup somewhat dried up
SESA	164	14	27	N	N	7/3	918	S	4								4a	S	10		Alarming bird followed to nest during rope-drag, STR/FLV
SESA	164				JB	7/7	1237	M	0	0											Nest found empty and concave, fuzz and egg bits, no sign of fox

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NOE	NOY	AGEE	AGEY	VEG	FT	CON	COMMENTS
DUNL	313	15	11	N	Y	6/13	1620	S	4		1-4		5a	D	10	Followed bird back to nest, Hummuk, STR, standing water in low areas
DUNL	313					6/20	1440	M	0							
LALO	334	15	39	N	Y	6/20	1536	S	5		0-6		4a	S	10	Followed female back to nest, FTP with STR centers, approaching wet habitat, standing water in TROs
LALO	334					6/24	1209	M	6		4-10					Female incubating
LALO	334					6/27	1115	M	6		7-13					Female incubating
LALO	334					7/3	1248	M		3+		3				Female brooding, chicks mostly down with some patches of skin
LALO	334					7/7	1038	M		4		7				Female brooding, pin feathers coming in
LALO	334					7/9	1416	M		5		9				Body feathers coming in, almost ready
LALO	334					7/13	913	M	1	2						2 dead chicks in nest, 1-2 days from fledging with no fat on body, appeared to still be warm, lots of powder in nest, LALO dropping around rim of cup, egg was cold, no adult
PESA	333	15	37	N	Y	6/20	1533	S	4		1-5		4a	S	20	Followed female back to nest, indistinct polygons, wet STR, standing water in low areas
PESA	333					6/24	1206	M	4		5-9					Female incubating
PESA	333					6/27	1114	M	4		8-12					Did not see female
PESA	333					7/3	1245	M	4		14-18					Female present
PESA	333					7/7	1041	M	4		18-22					Female not seen
PESA	333					7/9	1419	M	0	0						Egg bits, flattened cup, no fuzz visible, no fox scent or signs of predation
PESA	172	15	12	N	Y	7/9	1531	S	4				3d	S	20	Very difficult nest to find, STR
PESA	172					7/13	856	M	3							Female present
PESA	172					7/14	809	M	0	3						Female brooding.
PESA	308	16	2	N	Y	6/13	825	S	4		2-6		5a	S	5	Watched female go back to nest during "W" search, HCP
PESA	308					6/18	1417	M	4		7-11					
PESA	308					6/22	1106	M	4		11-15					Female incubating
PESA	308					6/27	1231	M	4		16-21					No female seen
PESA	308					6/30	1234	M	0	0						Egg bits, white powder in cup
SESA	309	16	6	N	Y	6/13	850	S	4		1-3		3d	S	40	Watched adult return to nest, hummuk
SESA	309					6/18	1424	M	4		7					Adult incubating
SESA	309					6/22	1110	M	4		11					Adult incubating
SESA	309					6/27	1228	M	4		16					Adult incubating

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
SESA	309				ARA	6/30	1242	M	4		19					Adult incubating
SESA	309				CR	7/5	1053	M	0							Nest empty, flattened appearance, multiple egg bits
SESA	312	16	15	N Y	ARA	6/13	1156	S	4		1-3	5a	D	10		Flushed bird and located nest, near frost heave
SESA	312				RR	6/18	1440	M	4		7					Adult incubating
SESA	312				ARA	6/22	1116	M	0							No fox scent
SESA	310	16	37	N Y	ARA	6/13	1025	S	4		1-3	4a	D	20		Watched adult return to nest, hummuk
SESA	310				RR	6/18	1520	M	4		7					
SESA	310				ARA	6/22	1145	M	0							No fox scent
AGPL	311	16	38	N Y	ARA	6/13	1035	S	3		1-4	4a	S	0		Almost stepped on nest without first seeing adult, lichen filled cup
AGPL	311				RR	6/18	1523	M	4		6-9					Female nearby, alarming
AGPL	311				ARA	6/22	1150	M	4		10-13					Both adults present, alarming
AGPL	311				ARA	6/27	1158	M	4		15-18					Adult present
AGPL	311				ARA	6/30	1400	M	4		18-21					Adult present
AGPL	311				CR	7/5	1019	M	4		23-26					Adult incubating
AGPL	311				RR	7/9	930	M	4		27-30					Male incubating
AGPL	311				ARA	7/13	952	M	0							egg bits in cup, no fox scent
SESA	130	16	28	N Y	RR	6/18	1507	S	4		5-8+	3d	S	5		Flushed incubating bird ahead of rope
SESA	130				ARA	6/22	1132	M	4		9-13					Adult present
SESA	130				ARA	6/27	1207	M	4		14-18					Adult present
SESA	130				ARA	6/30	1333	M	0							Found 3 chicks with adults in grid 32, a second search of cup revealed an egg bit, no scent
SESA	131	16	39	N Y	RR	6/18	1549	S	4		4-8	4a	U	5		Several adults alarming, watched one go to nest while rope-dragging
SESA	131				ARA	6/22	1150	M	4		8-12					Adult present
SESA	131				ARA	6/27	1153	M	0							No fox scent, no disturbance, too early to hatch
SESA	338	16	15	N N	ARA	6/30	1808	S	4			5a	D	10		flushed bird from rope and followed back to nest, FTP
SESA	338				CR	7/5	1042	M	4							Adult incubating
SESA	338				RR	7/9	839	M	4							Adult incubating
SESA	338				ARA	7/13	1011	M	0							Faint fox scent, no bits, no adult
SESA	339	16	37	N Y	ARA	6/30	1407	S	3		>=1	4a	U	20		Followed bird to nest several times before getting exact spot, what a champ, STR
SESA	339				CR	7/5	1018	M	3		>=6					Adult incubating
SESA	339				RR	7/9	930	M	3		>=10					Adult incubating
SESA	339				ARA	7/13	945	M	3		>=14					Adult present, alarming

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
SESA	339				JB	7/14	1011	M	3		>=15					Adult alarming
LALO	340	16	4	N	ARA	6/30	1502	S	5				5a	D	60	Nest seen at roper's foot, female in area, FTP
LALO	340				CR	7/5	1103	M	0	0						Nest empty, lining torn out of cup
SESA	205	17	34	N	Y	6/13	1050	S	4		0-1		3d	D	30	Adult flushed during "W," was followed back to nest, FTP with moist centers, TROs with standing water
SESA	205				JB	6/18	1113	M	4		5-6					
SESA	205				ARA	6/22	1022	M	4		9-10					
SESA	205				RR	6/26	1600	M	0							No bits, no fox scent, nest cup not flattened
LALO	217	17	1	N	N	6/18	1033	S	7		8+		3d	D	70	Feeding female followed to nest, wet FTP/STR
LALO	217				ARA	6/22	935	M								Female incubating, contents not seen
LALO	217				RR	6/26	1655	M	0	0						No fox scent, nest in tact
LALO	218	17	19	N	Y	6/18	1056	S	1	3		2-3	4a	D	30	Female flushed from rope, chicks with minimal naked skin, indistinct FTP with STR, lots of standing water in TROs
LALO	218				ARA	6/22	949	M	0	0						Mildly disturbed nest lining, no fox scent
SESA	219	17	4	N	Y	6/18	1303	S	4		2-3		3d	D	10	Feeding adult followed to nest, moist FTP/STR
SESA	219				ARA	6/22	940	M	4		6-7					Adult present
SESA	219				RR	6/26	1650	M	0							No egg bits or fox scent
LALO	148	17	38	Y	N	6/26	1615	S	5				3d	S	90	Feeding female followed back to nest, wet SRT/FTP
LALO	148				CR	6/30	1052	M	2+	2		1-2				Chicks with fresh down and some naked skin
LALO	148				CR	7/5	940	M		2+		3-4				Eyes still closed
LALO	148				ARA	7/9	1402	M	3	0						Female incubating
LALO	148				ARA	7/13	1028	M	3	0						Female not present, abundant feather sheaths
PESA	36	17	20	N	N	6/30	1135	S	4				4a	U	10	Female flushed from rope and was followed back to nest, STR ridge in very wet area.
PESA	36				CR	7/5	928	M	4							Female feeding in area
PESA	36				ARA	7/9	1238	M	4							Female incubating
PESA	36				ARA	7/13	1040	M	4							Female incubating
PESA	36				JB	7/14	942	M	4							Female incubating
LALO	102	18	38	Y	Y	6/9		S	5				4a	D		Found during plot set-up, FTP
LALO	102				JB	6/13		M								Female flushed from nest
LALO	102				CR	6/18	918	M	6							
LALO	102				ARA	6/22	843	M	1	4		1-2				Small patches of down, mostly skin
LALO	102				RR	6/26	1534	M	0	0						Nest in tact, no fox sign, no feather sheaths
LALO	206	18	29	N	N	6/13	1421	S	6		2-6		4a	D	70	Feeding female followed to nest, FTP

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
LALO	11				RR	6/29	944	M		0						No fox scent or signs of predation
LALO	24	19	7	N Y	CR	6/19	1348	S	7		5-8+		4a	S	30	Feeding female followed to nest, FTP, almost LCPs, fairly wet
LALO	24				JB	6/23	1223	M	7		8-11					No female seen
LALO	24				RR	6/26	1351	M		4+		2				Down with some bare skin
LALO	24				RR	6/29	830	M		7		5				All down, eyes closed
LALO	24				JB	7/3	954	M	0	0						Nest found empty near expected fledge date, lots of feather sheaths in nest with LALO droppings nearby, lining in tact and no sign of fox
LALO	25	19	24	N Y	CR	6/19	1500	S		5		2-3	4a	D	30	Female seen taking food to nest during rope-drag, FTP with moist centers
LALO	25				JB	6/23	1245	M		0						Nest empty before expected fledge date, lining disturbed and smelling of fox
AGPL	147	19	28	Y	RR	6/26	1315	S					5a	U		Alarming bird went to nest after observer backed off, FTP with moist centers, standing water in TROs, edge of rim on barren area
AGPL	147				RR	6/29	900	M	0							No fox scent or sign of predation
LALO	151	19	3	N Y	RR	6/29	1027	S	3	1		1	4a	D	50	Flushed by rope, FTP/STR
LALO	151				JB	7/3	1007	M	0	0						Nest found empty before expected fledge date, strong fox scent
LALO	150	19	21	N Y	RR	6/29	850	S	4				4a	D	40	Bird seen flying and landed on tundra during rope-drag, flushed from nest when approached, FTP/STR side of STR rim
LALO	150				JB	7/3	915	M	0							Nest found empty before expected hatch date
LALO	109	20	1	N Y	RR	6/13	915	S	6		4-7		5a	S	80	Feeding female followed to nest, HCP/FTP
LALO	109				CR	6/16	1004	M	6		7-10					
LALO	109				ARA	6/19	1030	M	6		10-13					
LALO	109				JB	6/23	1135	M		4+		2-4				No bare skin, eyes closed
LALO	109				RR	6/26	1053	M		3-4		5				Feathers beginning
LALO	109				CR	7/1	1211	M		3+		10				Fully feathered and ready to go
LALO	109				RR	7/6	1131	M		0						Abundant feather sheaths, bird scat on cup rim, cup in tact, no scent
SESA	110	20	24	N Y	RR	6/13	1005	S	4		4		4a	D	15	Watched alarming bird return to nest, FTP with concave centers, TROs with standing water, approaching wet habitat
SESA	110				CR	6/16	941	M	4		7					
SESA	110				ARA	6/19	1120	M	0							No shells, no fox scent

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
REPH	111	20	38	N	Y	RR	6/13	1100	S	4		1		5a	S	10	Male returned to small pond several times and eventually walked onto nest, FTP with concave moist centers, TROs with standing water
REPH	111					CR	6/16	933	M	4		4					
REPH	111					ARA	6/19	1145	M	4		9					
REPH	111					JB	6/23	1054	M	4		13					
REPH	111					RR	6/26	1205	M	4		17					Male incubating
REPH	111					CR	7/1	1343	M	4		21					Male incubating
REPH	111					RR	7/6	1033	M	0	1						1 dead chick, egg bits and fuzz present, no fox scent, nest cup flattened
LALO	112	20	12	N	Y	RR	6/13	1221	S	6		4-5		4a	D	20	Feeding female flew to nest, FTP/STR
LALO	112					CR	6/16	958	M	5		7-8					Female never seen
LALO	112					ARA	6/19	1000	M	5		10-11					Female never seen
LALO	112					JB	6/23	1134	M	0							Nest found empty before expected hatch date, no urine smell, lining in tact
LALO	330	20	9	N	Y	ARA	6/19	1048	S	1	4		3-4	5a	S	5	Chicks with eyes still closed, downy with small patches of skin, STR on FTP
LALO	330					JB	6/23	1140	M	5		7-8					Pin feathers coming in, chicks eyes slightly open
LALO	330					RR	6/26	1100	M	5		10-11					Body feathers in, ready to go
LALO	330					CR	7/1	1241	M	0							Powder in cup, male and female feeding hoppers in immediate vicinity, some made it some didn't???
LALO	331	20	20	N	Y	ARA	6/19	1110	S	5		2-6		4a	D	70	Watched female return to nest, FTP with concave centers
LALO	331					JB	6/23	1135	M	0							Nest found empty before expected hatch date, lining in tact but strong fox scent detected
PESA	332	20	33	N	Y	ARA	6/19	1130	S	4		1-3		4a	S	10	Followed female back to nest, moist FTP with concave centers
PESA	332					JB	6/23	1057	M	4		5-7					
PESA	332					RR	6/26	1157	M	4		8-10					Female incubating
PESA	332					CR	7/1	1324	M	4		13-15					Female feeding in area
PESA	332					RR	7/6	1039	M	4		18-20					Female incubating
PESA	332					CR	7/9	1419	M	4		21-23					Female incubating
PESA	332					JB	7/13	1011	M	0							Nest cup flattened with lots of fuzz and egg bits, no sign of fox
REPH	37	20	2	N	Y	CR	7/1	1226	S	3				5a	U	5	Alarming male followed back to nest during rope-drag, small area with moist MPG but area generally dry HCPs

SPEC	ID	PLOT	GRID	INCON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
REPH	37				RR	7/6	1146	M	0							No bits or fuzz, no fox scent, nest flattened
REPH	38	20	21	N	CR	7/1	1310	S	4				4a	S	20	Male flushed during rope-drag, FTP with concave centers, standing water in TROs
REPH	38				RR	7/6	1055	M	2							One egg with dent in side and outer portion broken off showing white below, no fox scent, did not see bits or fuzz but made very quick check and left area
REPH	38				CR	7/9	1436	M	2							2 eggs remain, egg bits both in and out of cup, fuzz, no fox scent
LALO	39	20	22	N	CR	7/1	1403	S	5				4a	U	20	Female flushed during rope-drag and was followed back to nest, FTP with concave centers, standing water in TROs
LALO	39				RR	7/6	1050	M	5							Female in area
LALO	39				CR	7/9	1246	M	4	1						
LALO	39				JB	7/13	1026	M	4	3						Female seen
LALO	39				ARA	7/14	810	M	4	4						Female not seen
PESA	42	20	39	N	CR	7/9	1340	S	4				5a	U	30	Female followed back to nest during W search, generally a dry area, HCPs with deep TROs
PESA	42				JB	7/13	933	M	0	0						Nest cup disturbed, fluffed up and scattered around perimeter of cup, no bits or fuzz in cup, no scent
SESA	116	21	18	N	RR	6/13	1610	S	4	2			5a	D		Adult flew off nest, FTP/FLV
SESA	116				CR	6/16	830	M	0							Fox scent
SESA	115	21	30	N	RR	6/13	1540	S	2	0			3a	D	10	Heard alarm, bird moved onto nest, nest on elevated dry area, 1m from wet MPG, veg map shows area to be wet
SESA	115				CR	6/16	849	M	4	1-5						
SESA	115				JB	6/19	838	M	4	4-8						
SESA	115				JB	6/23	1010	M	4	8-12						
SESA	115				RR	6/26	935	M	0							No bits, no adults, no fox scent
LALO	114	21	19	N	RR	6/13	1430	S	0				5a	D	30	Predated when found, empty nest cup, grayish feathers in cup, no fox scent, no droppings of fox or LALO. Female went to cup 3 times with food. Possibly hatched and recently predated, FTP with concave centers, standing water in TROs
LALO	114				CR	6/16	844	M	0							Empty nest, no fox scent just to make sure

SPEC	ID	PLOT	GRID	INC	CON	OBS	DATE	TIM	TV	NOE	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
SESA	113	21	2	N	Y	RR	6/13	1325	S	4		1-3		4a	D	30	Bird flushed early and returned to nest, FTP with shallow, wet centers
SESA	113					CR	6/16	818	M	4		6-8					
SESA	113					JB	6/20	847	M	4		10-12					
SESA	113					JB	6/23	940	M	0							Nest found empty well before expected hatch date, lining disturbed, no fox scent
LALO	220	21	6	N	Y	JB	6/19	845	S	6		4-5		4a	D	40	Female flushed off nest during rope-drag, FTP with mois low centers
LALO	220					JB	6/23	945	M	6		8-9					
LALO	220					RR	6/26	1011	M	6		11-12					Female incubating
LALO	220					RR	7/1	909	M	0							No fox scent, feather sheaths present, though no chick could have been old enough to fledge
SESA	221	21	39	N	Y	JB	6/19	925	S	4		8+		5a	S	10	Feeding adult flew to nest, FTP
SESA	221					JB	6/23	1018	M	4		12+					
SESA	221					RR	6/26	928	M	4		15+					Adult incubating
SESA	221					RR	7/1	1037	M	0							Bits and fuzz present, no fox scent or signs of predation
KIEI	222	21	5	N	Y	JB	6/19	1009	S	4				4a	D	0	Female flushed off nest during rope-drag, FTP with STR centers, edge of pond
KIEI	222					JB	6/23	948	M	0							Nest empty, lining disturbed, fox scent in cup
LALO	145	21	40	Y	N	RR	6/24	914	S		4		4-5	5a	S	0	Female took food to nest during predator watch, FTP/FLV
LALO	145					RR	7/1	1024	M	0	0						Feather sheaths present, no fox scent, hoppers seen in grid 24
PESA	146	21	39	Y	N	RR	6/26	926	S	4				5a	S	20	Female seen sneaking around during predator watch, nest found after predator watch completed, FTP with moist centers, standing water in TROs, mapped as dry
PESA	146					RR	7/1	1023	M	4							Female in area
PESA	146					CR	7/9	948	M	4							Female in area, nest not checked on 7/6 due to ARFO in area
PESA	146					JB	7/13	1058	M	0	4		0				Female not seen
PESA	146					ARA	7/14	832	M	0	0						Female seen alarming 20 meters away. Fuzz and bits. No urine scent. Nest compressed.
LALO	162	21	21	N	Y	RR	7/1	1125	S	2	2		1	5a	S	90	Rope flush, FTP, side of rim
LALO	162					RR	7/6	923	M		3+		5				all down
LALO	162					CR	7/9	859	M		4		7-8				Pin feathers coming in

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO E	NO Y	AGE E	AGE Y	VEG	FT	CON	COMMENTS
LALO	162					JB	7/13	1045	M	0	0						Lots of feather sheaths, several droppings in and around cup, chicks old enough to fledge
PESA	161	21	31	N	Y	RR	7/1	1102	S					3a	S	30	Saw female flush from area near pond, found 2 dead chicks in cup, 1 out of egg and the other nearly out, assuming 4 eggs, 2 chicks hatched successfully, mapped as IIIA, but nest elevated in higher area of DLB in small moist area
LALO	160	21	20	N	N	RR	7/1	943	S	5				4a	D	20	Feeding female followed to nest during rope-drag, FTP/slanting side of rim, TROs with standing water
LALO	160					RR	7/6	915	M	5							Female not seen
LALO	160					CR	7/9	852	M	3?	3+	1-2					Female alarming
LALO	160					JB	7/13	1040	M	0	0						Chicks not old enough to fledge, no feather sheaths, no droppings, no scent
REPH	159	21	14	N	Y	RR	7/1	925	S	4				4a	S	5	Flushed in front of rope, FTP with deep TROs and concave centers, standing water in TROs
REPH	159					RR	7/6	907	M	4							Male incubating
REPH	159					CR	7/9	839	M	0	0						Nest empty, flattened cup, egg bits, no fox scent
LALO	135	22	28	N	Y	RR	6/22	942	S		5		4-5	3d	U	5	Female flushed off nest during rope-drag, chicks all downy with eyes beginning to open
LALO	135					JB	6/28	1116	M		0						Nest found empty, nest lining in tact, no scent, no feathers sheaths, no LALO droppings
LALO	136	22	38	N	Y	RR	6/22	951	S	1		0-1		3d	D	80	Female flushed in front of rope, no lining or feathers in nest
LALO	136					JB	6/28	1110	M	0							Nest found empty before expected hatch date, no evidence of predation
PESA	209	22	7	N	Y	JB	6/14	1502	S	4		2-3		3d	D	20	Feeding female flew to nest after 20 minutes of observation
PESA	209					ARA	6/18	842	M	4		5-8					Female present
PESA	209					RR	6/22	1020	M	4		9-12					Female present
PESA	209					JB	6/28	1139	M	0							Nest found empty before expected hatch date, no evidence of hatch or fox predation
PESA	210	22	20	N	Y	JB	6/14	1647	S	4		1-5		4a	D	20	Feeding female walked back to nest
PESA	210					ARA	6/18	903	M	0							No shells, no disturbance, no fox scent
SESA	207	23	36	Y	N	JB	6/14	1056	S	4		1-3		3d	D	20	While walking around a pond, adult flushed from nest, it quickly returned after backing off
SESA	207					ARA	6/18	1115	M	4		5-7					Adult present

SPEC	ID	PLOT	GRID	INC	ON	OBS	DATE	TIM	TV	NO	E	NO	Y	AGE	E	AGE	Y	VEG	FT	CON	COMMENTS
SESA	207					JB	6/22	1112	M	4				9-11							Adult present
SESA	207					JB	6/28	1249	M	0											Nest found empty before expected hatch date, no urine detected but lining had been disturbed
LALO	208	23	14	N	N	JB	6/14	1226	S	6				8+			3d	S	10		Feeding female returned to nest
LALO	208					ARA	6/18	1038	M	1	4			12	3-4						Female present, chicks eyes closed, down with patches of skin
LALO	208					JB	6/22	1142	M		6				7-8						Female present, chicks all down with beginning of blood feathers, eyes open a crack
LALO	208					CR	6/28	1225	M		0										nest empty, nest cup contained lots of feather sheaths, LALO droppings near nest, nest lining in tact, no fox scent detected
LALO	229	23	32	Y	Y	JB	6/22	1145	S		4				3-5	4a	D	0			Blood feathers just showing, incubating female flushed off nest during rope-drag
LALO	229					JB	6/28	1255	M		0										nest empty before expected fledged date, nest lining disturbed and smelling of fox
LALO	230	23	38	N	Y	JB	6/22	1159	S	4				2-6		3d	D	50			Incubating female flushed during rope-drag
LALO	230					JB	6/28	1304	M	0											nest found empty before expected hatch date, nest lining torn out and fox scent present
PALO	231	23	31	N	Y	JB	6/22	1217	S	1						2b	D	0			Nest spotted while rope-dragging, a re-nest attempt was found on same lake well off plot and also predated
PALO	231					JB	6/28	1304	M	0											0 eggs, nest found empty before expected hatch date
LALO	344	23	23	N	Y	ARA	7/6	1105	S	4						4a	U	20			Female flushed, FTP/STR.
LALO	344					JB	7/10	1011	M	4											Female incubating
LALO	344					JB	7/14	835	M	0	4			1							Female brooding. Chicks tiny with a little down and patches of bare skin.
RNPH	27	24	17	N	N	CR	6/22	1406	S	4				4-8+		3d	S	10			Male flew in from behind and went to nest while rope-dragging
RNPH	27					JB	6/28	1421	M	4				10-14							Male not seen
RNPH	27					ARA	7/1	835	M	4				13-17							Male incubating
RNPH	27					CR	7/6	1403	M		4										Male in area alarming
RNPH	27					RR	7/10	1135	M		0										Bits and small amount of fuzz present, nest flattened, no fox scent
PESA	14	24	18	N	Y	CR	6/14	1143	S	4				1-5		4a	D	60			Feeding female followed to nest
PESA	14					ARA	6/18	1300	M	0											No shells, no disturbance, no fox scent

PL	DATE	OBS	SP 1	ON/OFF	SP 2	ON/OFF	SP 3	ON/OFF	SP 4	ON/OFF	COMMENTS
			PAJA	2			GLGU	1			
			JASP	1							
			GLGU	1							
			GLGU	1							
5	12-Jun	JB			SNOW	1			PAJA	2	
					JASP	1			GLGU	1	
5	20-Jun	CR	GLGU	2	SNOW	1	PAJA	4			
			PAJA	1	PAJA	1	SNOW	1			
			CORA	2	GLGU	2	GLGU	4			
			JASP	1							
			GLGU	1							
5	23-Jun	ARA									No predators seen
5	5-Jul	CR	GLGU	1	PAJA	1					
			PAJA	1	GLGU	2					
5	8-Jul	CR	PAJA	2			PAJA	4			One of two nests predated One of one nest still active. PAJA's seen frequently throughout monitoring period.
			GLGU	1			GLGU	3			
			CORA	1							
6	12-Jun	CR/JB	SNOW	1	GLGU	1	GLGU	1	PAJA	1	
									GLGU	5	
									POJA	2	
6	20-Jun	CR	GLGU	3	PAJA	1			GLGU	1	Hunting grids 9 and 10.
			PAJA	1	GLGU	1					
			SNOW	1	PAJA	2					
6	23-Jun	ARA	GLGU	1					PAJA	1	Hunting 10/11
6	30-Jun	RR	NOHA	1					PAJA	2	Passed through plot
6	5-Jul	CR	PAJA	1			GLGU	3			Five of seven nests predated
			PAJA	1							
6	8-Jul	CR	PAJA	1			PAJA	2			A lot of Jaeger activity in area.
			PAJA	2			NOHA	1			
7	12-Jun	ARA	GLGU	2	SNOW	1	PAJA	1			One duck egg found predated, perhaps by bird in grid 22.
			SNOW	1							
7	21-Jun	JB	PAJA	2	GLGU	4	GLGU	2			
			POJA	1							
			GLGU	5							
7	24-Jun	RR	CORA	1	GLGU	2	PAJA	1	POJA	1	Hunt across south plots

PL	DATE	OBS	SP 1	ON	OFF	SP 2	ON	OFF	SP 3	ON	OFF	SP 4	ON	OFF	COMMENTS
7	3-Jul	JB	GLGU	4	2	PAJA									
						PAJA	2								
						GLGU	1	1							
7	6-Jul	RR	PAJA	1	1	ARFO			SNOW	1					
									GLGU	3					
7	8-Jul	JB	PAJA	2	2	PAJA			GLGU	3					
			GLGU	1	2	GLGU									
8	21-Jun	JB	PAJA	2					POJA	1					
						SNOW		1	PAJA	3					
						GLGU		1	GLGU	1					
8	24-Jun	RR	GLGU	2	2	PAJA						PAJA	2		
												PAJA	1		
												LEMM	1		
8	6-Jul	RR	SNOW	2	1	SNOW			GLGU	1		PAJA	2		
					3	JASP						GLGU	4		
					1	PAJA						SNOW	1		
8	12-Jun	RR	GLGU	5	2	GLGU			GLGU	1		GLGU	1		
						SNOW			PAJA	1		PAJA	2		
8	3-Jul	JB	PAJA	3	2	PAJA			JASP	2					
			GLGU	1	5	GLGU			GLGU	1					
8	8-Jul	JB	CORA	1	4	LTJA			CORA	1					
			JASP	2	4	GLGU									
			GLGU	4											
9	13-Jun	CR	GLGU	2					PAJA	1		ARFO			Tracks in grids 23/27
									GLGU	7		PAJA	1		
												GLGU	1		
9	21-Jun	JB	ARFO	1	1	SNOW			GLGU	1					
			POJA	1											
			PAJA	1											
9	3-Jul	JB	GLGU	1	2	GLGU			GLGU	3					
									PAJA	1					
9	24-Jun	RR	GLGU	4	1	GLGU			PAJA	1		PAJA	1		
			GLGU	3								NOHA	1		Predated Loon egg in grid 34. Avian predation. / Weasel seen along river on the way to camp.
9	6-Jul	RR	PAJA	1	2	SNOW			SNOW	2		GLGU	6		
			SNOW	2					GLGU	1					
9	9-Jul	JB	JASP	2	2	PAJA						PAJA	5		

PL	DATE	OBS	SP 1	ON	OFF	SP 2	ON	OFF	SP 3	ON	OFF	SP 4	ON	OFF	COMMENTS
			PAJA		4										
10	17-Jun	JB													No predators seen
10	14-Jun	ARA	ARFO	2											
			POJA		1										
10	25-Jun	CR	PAJA	2		ARFO		1	CORA		1				Three of three nests still active
			ARFO	1				1	ARFO		1				
			NOHA	1											
10	30-Jun	RR										JASP		1	
10	7-Jul	CR	PAJA	2				2	PAJA						Four of four nests still active
10	10-Jul	ARA				LTJA	2								
11	14-Jun	ARA	CORA	1		CORA		1	CORA		1				
									POJA		1				
11	17-Jun	JB										PAJA	1		
11	25-Jun	CR	PAJA	1		PAJA		1	PAJA		1				Two of two nests still active
			PAJA	4					PAJA		1				
									RLHA		1				
11	30-Jun	RR	PAJA	1		JASP		1	PAJA		2				
11	7-Jul	CR	PAJA	1		PAJA		1	GLGU		1				Four of four nests still active
11	10-Jul	ARA				CORA		1							
12	14-Jun	RR	GLGU	2		ARFO	1		JASP		2	ARFO		1	
						GLGU		2							
12	17-Jun	JB							PAJA		2				
12	25-Jun	CR				GLGU		1	PAJA		1				One of one nest still active
									GLGU		1				
12	30-Jun	RR	GLGU	1		JASP		3	PAJA		3	PAJA	3		
						GLGU		1	CORA		1				
									GLGU		1				
12	10-Jul	CR	CORA	1					PAJA		2				GLGU nest east of plot
			PAJA	1											
13	14-Jun	RR	JASP	1		GLGU		2				GLGU		7	
13	24-Jun	CR	GLGU	2		LTJA		1	LTJA		1				5 of 5 nests predated, ARFO at two of them
						GLGU		1	PAJA		1				
									JASP		1				
									ARFO		1				very quiet
13	27-Jun	ARA	ARFO	1											
13	30-Jun	RR	PAJA	1		GLGU		1	GLGU		1				
						JASP		1	SNOW		1				

PL	DATE	OBS	SP 1	ON/OFF	SP 2	ON/OFF	SP 3	ON/OFF	SP 4	ON/OFF	COMMENTS
13	7-Jul	JB	ARFO	1	JASP	2	GLGU	2			
					GLGU	1	PAJA	1			
					ARFO	1					
13	10-Jul	CR	GLGU	1	PAJA	1	GLGU	1			3 of 3 nests unpredated, GLGU nest W of plot
					PAJA	2	PAJA	3			
							LTJA	2			
14	14-Jun	CR	FALCSP	1							
			JASP	1							
14	24-Jun	CR	PAJA	1	GLGU	1					ARFO predation at 3 nests
14	27-Jun	ARA									none detected
14	7-Jul	JB	JASP	1	PAJA	1	JASP	1			
			BUTEO	1	JASP	1	PAJA	1			
14	10-Jul	RR	JASP	5	PAJA	6	GLGU	1	PAJA	3	
					PAJA	2			PAJA	5	
15	13-Jun	ARA	LTJA	1							
15	24-Jun	CR	PAJA	1							2 of 2 nests still active
15	27-Jun	ARA									none detected
15	7-Jul	JB									none detected
15	9-Jul	RR	CORA	1	PAJA	1	JASP	5	PAJA	5	
			PAJA	2	GLGU	1					
16	13-Jun	ARA									none detected
16	22-Jun	ARA									none detected
16	27-Jun	ARA			GLGU	2	JASP	1			
16	5-Jul	CR	GLGU	1	PAJA	1					
16	9-Jul	RR			CORA	2	CORA	2	CORA	1	1 of 5 nests predated
									PAJA	1	
17	13-Jun	JB	ARFO	1	GLGU	3	JASP	1	GLGU	2	
			JASP	2					PAJA	1	
17	22-Jun	ARA			JASP	3			PAJA	1	
17	26-Jun	RR	PAJA	2	PAJA	1					
17	5-Jul	CR	PAJA	2	RAPTSP	1	RLHA	1			0 of 2 nests predated
			GLGU	1							
17	9-Jul	ARA			PAJA	2	PAJA	2			
					CORA	1					
18	13-Jun	JB	JASP	1	PAJA	1	PAJA	1			
18	22-Jun	ARA			PAJA	1	PAJA	2	PAJA	2	
18	26-Jun	RR			JASP	2					

PL	DATE	OBS	SP 1	ON	OFF	SP 2	ON	OFF	SP 3	ON	OFF	SP 4	ON	OFF	COMMENTS
18	5-Jul	CR	PAJA		2	PAJA		2	CORA	2					0 of 1 nest predated
18	9-Jul	ARA	JASP		1	PAJA		1	PAJA	1		PAJA		1	PAJA walking/hunting off plot
19	16-Jun	CR	GLGU		1	JASP		1	JASP	1					
19	23-Jun	JB	ARFO		1	ARFO		2	ARFO	1					
19	26-Jun	RR	PAJA		1										
19	13-Jun	CR	CORA		1										
19	3-Jul	JB	PAJA		1	CORA		2	CORA	1					ARFO track in grid 30
19	9-Jul	JB				JASP		2	JASP	2		PAJA		2	
20	13-Jun	RR							CORA	2					
20	16-Jun	CR	PAJA		1							GLGU		1	
20	23-Jun	JB	PAJA		1	ARFO		1	GLGU	9		PAJA		4	
20	26-Jun	RR	GLGU		1	POJA		1	ARFO	1					
20	6-Jul	RR	JASP		1	GLGU		2	GLGU	2					
20	9-Jul	CR	ARFO		1				SNOW	1					
20	9-Jul	CR	PAJA		6				PAJA	1					
20	9-Jul	CR	PAJA		6				LTJA	2					4 of 4 nests unpredated
21	13-Jun	RR	PAJA		1	GLGU		2	PAJA	1		PAJA		1	
21	16-Jun	CR	GLGU		2	CORA		1	LTJA	4		CORA		1	ARFO hair at north end of plot
21	23-Jun	JB	JASP		1	GLGU		1	CORA	1					

PL	DATE	OBS	SP 1	ON/OFF	SP 2	ON/OFF	SP 3	ON/OFF	SP 4	ON/OFF	COMMENTS
21	26-Jun	RR			PAJA	1					
					POJA	1			PAJA	1	
					PAJA	1			GLGU	1	
21	6-Jul	RR	GLGU	4	GLGU	3	ARFO	1	PAJA	2	ARFO non-natal den in grid 36
			JASP	1	JASP	1					
21	9-Jul	CR	ARFO	1	GLGU	2	PAJA	2			4 of 4 nests unpredated, ARFO den in grid 36, fox complex east of plot, grids 27/29, 10+ active holes, predated eggs, bones, scat, hair, fresh digs
22	14-Jun	JB	PAJA	2	SNOW	1	GLGU	3			
					JASP	1					
22	18-Jun	ARA							PAJA	1	
22	28-Jun	JB	JASP	1							
22	10-Jul	JB	CORA	3	JASP	2	PAJA	2	PAJA	2	
23	14-Jun	JB			JASP	1			ARFO	1	
									PAJA	1	
23	18-Jun	ARA									none detected
23	28-Jun	JB					PAJA	2			
23	10-Jul	JB	NOHA	1					GLGU	2	
			PAJA	1							
			GLGU	1							
24	14-Jun	CR			PAJA	2	ARFO	1	PAJA	2	
									ARFO	1	
24	18-Jun	ARA	GLGU	1			JASP	1			very quiet
			POJA	1							
24	28-Jun	JB							POJA	3	
24	1-Jul	ARA	PAJA	1							
24	10-Jul	RR			PAJA	2			PAJA	3	
									CORA	1	

Appendix F. Database for bird sightings on study plots at Point Thomson, Alaska, 2002. PL indicates plot number, TV indicates type of visit (i.e., first or second rope-drag or "W" search), VEG indicates vegetation category (i.e., wet, moist, or dry), LND indicates land form, MICRO indicates microhabitat, NO indicates number of individuals, BEH indicates behavior, M, F, AD and FL indicate male, female, adult and fledgling, GR indicates grid cell.

PL	DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
1	6/11	W1	935	1415	49	10	70	PESA			D	1	DI	1		1		5	
1	6/11	W1	935	1415	49	10	70	REPH	M	STR	HUM	1	INC	1		1		6	Nest 5
1	6/11	W1	935	1415	49	10	70	LALO	D	FTP		2	FD	2		2		9	
1	6/11	W1	935	1415	49	10	70	NOPI				2	FLY	2		2		16	Transit
1	6/11	W1	935	1415	49	10	70	REPH	W		POND	1	FD		1	1		18	
1	6/11	W1	935	1415	49	10	70	STSA			DRY	1	DI			1		24	
1	6/11	W1	935	1415	49	10	70	AGPL				1	DI	1		1		18	
1	6/11	W1	935	1415	49	10	70	PESA				1	FLY	1		1		18	
1	6/11	W1	935	1415	49	10	70	AGPL	M			1	FD	1		1		30	
1	6/11	W1	935	1415	49	10	70	SESA	M			1	DI			1		30	Also FD
1	6/11	W1	935	1415	49	10	70	LTDU				3	CH	2	1	3		33	Chase female
1	6/11	W1	935	1415	49	10	70	LALO				2	CH	2		2		34	
1	6/11	W1	935	1415	49	10	70	RNPH	W		POND	1	FD			1		34	
1	6/11	W1	935	1415	49	10	70	SESA	M			3	FD			3			Also chasing
1	6/11	W1	935	1415	49	10	70	LALO	D		STR	1	FD			1			
1	6/11	W1	935	1415	49	10	70	DUNL				1	FLY			1		40	
1	6/11	W1	935	1415	49	10	70	DUNL	D			3	FD			3		29	Also chasing
1	6/11	W1	935	1415	49	10	70	LALO	D		FTP	3	FD	2	1	3		29	Found nest, LALO 301, 3 eggs
1	6/11	W1	935	1415	49	10	70	REPH	M			1	INC	1		1		17	REPH 302, 3 eggs
1	6/11	W1	935	1415	49	10	70	LALO	D			1	INC			1		15	LALO 006, 6 eggs
1	6/11	W1	935	1415	49	10	70	PESA				1	DI	1		1		18	
1	6/11	W1	935	1415	49	10	70	LALO	D			2	FD	1	1	2		11	
1	6/11	W1	935	1415	49	10	70	LTDU				1	FLY	1		1		5	
1	6/11	W1	935	1415	49	10	70	SESA	W			1	FD			1		5	
1	6/15	R1	825	1106		10	100	LALO	M			1	DI	1		1		13	
1	6/15	R1	825	1106		10	100	SESA	M			1	AL			1		3	
1	6/15	R1	825	1106		10	100	REPH	M			2	FLY	1	1	2		23/24	
1	6/15	R1	825	1106		10	100	PESA	M			1	ST	1		1		23	
1	6/15	R1	825	1106		10	100	PESA	M			1	FLY	1		1		23	
1	6/15	R1	825	1106		10	100	LBDO	M			2	FLY			2		25	
1	6/15	R1	825	1106		10	100	SESA	M			1	FD			1		23	Also preening

PL DATE	TV START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
1 6/15	R1 825	1106		10	100	LALO	M			1	DI	1		1		24	
1 6/15	R1 825	1106		10	100	NOPI	M			1	ST	1		1		35	
1 6/15	R1 825	1106		10	100	LALO	M			1	DI	1		1		34	
1 6/15	R1 825	1106		10	100	PESA	M			2	FD	1	1	2		34	Also chasing
1 6/15	R1 825	1106		10	100	SESA	M			1	FD			1		35	
1 6/15	R1 825	1106		10	100	LTDU	W		POND	1	FLY	1		1		40	Calling/alarming
1 6/15	R1 825	1106		10	100	LZIA	W		POND	4	FLY			4		30	
1 6/15	R1 825	1106		10	100	PESA	M			1	INC			1		22	PESA 319
1 6/15	R1 825	1106		10	100	PAJA	M			3	FLY			3		15	
1 6/15	R1 825	1106		10	100	GLGU	M			3	FLY			3		1	
1 6/15	R1 825	1106		10	100	DUNL	D		LICHEN	1	PR			1		8	Also preening
1 6/15	R1 825	1106		10	100	REDP	M			1	FLY			1		9	
1 6/15	R1 825	1106		10	100	PESA	M			1	FLY			1		8	
1 6/15	R1 825	1106		10	100	PALO	M			1	FLY			1		8	
1 6/15	R1 825	1106		10	100	LTDU	W		POND	1	AL			1		8	Calling/alarming
1 6/15	R1 825	1106		10	100	SESA	M	HU		1	INC			1		3	SESA 320
1 6/15	R1 825	1106		10	100	REPH	W		POND	2	FD	1	1	2		3	
1 6/25	R2 1057	1305	55	10	0												First day of heavy mosquitoes
1 6/25	R2 1057	1305	55	10	0	SESA				1	INC			1		3	SESA 320 / 2 eggs
1 6/25	R2 1057	1305	55	10	0	REPH				1	INC	1		1		6	REPH 005 / 4 eggs
1 6/25	R2 1057	1305	55	10	0	REPH				1	INC	1		1		17	REPH 302 / 4 eggs
1 6/25	R2 1057	1305	55	10	0	PESA				1	INC			1		22	PESA 319 / 4 eggs
1 6/25	R2 1057	1305	55	10	0	LALO	D			1	BR			1		31	2 eggs, 2 young full of down, 2-3 days
1 6/25	R2 1057	1305	55	10	0	LALO	D			2	FD	2		2		7	
1 6/25	R2 1057	1305	55	10	0	LALO	D			2	FD			2		11	
1 6/25	R2 1057	1305	55	10	0	LALO	D			1	FD			1		17	
1 6/25	R2 1057	1305	55	10	0	LALO	D			1	DI	1		1		20	
1 6/25	R2 1057	1305	55	10	0	LALO	D			2	CH	2		2		22	
1 6/25	R2 1057	1305	55	10	0	SESA			POND	1	FD			1		25	
1 6/25	R2 1057	1305	55	10	0	DUNL	D			1	FD			1		31	
1 6/25	R2 1057	1305	55	10	0	LALO	D			1	DI	1		1		37	
1 6/25	R2 1057	1305	55	10	0	LALO	D			1	DI	1		1		32	
1 6/25	R2 1057	1305	55	10	0	PESA	D		POND	1	FD			1		11	

PL DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
1 7/8	W2	743	1123	48	7	100	LALO				2	AL	1	1	2		17	LALO 143 / 5 chicks downy with eyes closed
1 7/8	W2	743	1123	48	7	100	LALO				1	FLY			1		5	Flew off plot
1 7/8	W2	743	1123	48	7	100	LALO	D	FTP		2	FD	1	1	2		11	
1 7/8	W2	743	1123	48	7	100	LTDU				2	FLY	1	1	2		27/28	
1 7/8	W2	743	1123	48	7	100	CORA				1	FLY			1		5/6	
1 7/8	W2	743	1123	48	7	100	LALO				1	FLY			1		23-19	No alarm, nothing
1 7/8	W2	743	1123	48	7	100	SESA	W			2	AL			1	1	23	Maybe off plot
1 7/8	W2	743	1123	48	7	100	PESA	W			1	ST	1	1			29	Flew off plot
1 7/8	W2	743	1123	48	7	100	SESA	W			3	AL			3		30/32	Acting like chicks are present
1 7/8	W2	743	1123	48	7	100	LALO	D	FTP		1	FLY				1	33	
1 7/8	W2	743	1123	48	7	100	LALO	D			2	AL	1	1	2		34	Maybe chicks
1 7/8	W2	743	1123	48	7	100	PESA				7	CH			7		32/31	
1 7/8	W2	743	1123	48	7	100	LALO	D	HCP		3	FD	1	1	2		14	
2 6/11	W1	1500	1922	50	10	100	REPH	W		POND	1	FD	1	1			11	
2 6/11	W1	1500	1922	50	10	100	PESA	M	FTP		2	FD	1	1	2		16	May have been INC
2 6/11	W1	1500	1922	50	10	100	LALO	M			1	DI	1	1			16	
2 6/11	W1	1500	1922	50	10	100	REPH	W		POND	2	FD	1	1	2		18	Building nest, placed tongue depressor
2 6/11	W1	1500	1922	50	10	100	ROPT				2	FD	1	1	2		25	Moving from one veg class to another
2 6/11	W1	1500	1922	50	10	100	LALO				1	INC	1	1			29	LALO 303
2 6/11	W1	1500	1922	50	10	100	PESA				1	DI	1	1			28	
2 6/11	W1	1500	1922	50	10	100	LALO	D			2	FD	1	1	2		30	Flew off plot
2 6/11	W1	1500	1922	50	10	100	LTDU				3	FLY	1	2	3		40	Chasing
2 6/11	W1	1500	1922	50	10	100	SESA				1	FLY			1		39	
2 6/11	W1	1500	1922	50	10	100	LALO	D	NPG		1	FD	1	1			14	Lazy feeding
2 6/11	W1	1500	1922	50	10	100	PESA				1	INC	1	1			1	PESA 007
2 6/15	R1	1129	1402	50	10	40	PESA				1	INC	1	1			1	PESA 001 / 4 eggs
2 6/15	R1	1129	1402	50	10	40	LALO				1	ST	1	1			29	
2 6/15	R1	1129	1402	50	10	40	PESA	M	FTP		1	DI	1	1			1/2	
2 6/15	R1	1129	1402	50	10	40	PESA	W	STR		2	CH	2	2			9/10	2 males chasing each other

PL	DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
2	6/15	R1	1129	1402	50	10	40	LBDO	W	STR		3	ST			3	10		
2	6/15	R1	1129	1402	50	10	40	GWFG	W	STR		6	FLY			6	17\18		
2	6/15	R1	1129	1402	50	10	40	PESA	W	STR		1	FD	1	1	1	19		
2	6/15	R1	1129	1402	50	10	40	REPH	W	STR		2	FLY	1	1	2	17		
2	6/15	R1	1129	1402	50	10	40	RNPH	W	STR		1	FLY			1	19		
2	6/15	R1	1129	1402	50	10	40	LALO	W	STR		1	DI	1	1	1	20		
2	6/15	R1	1129	1402	50	10	40	LALO	W	STR		2	DI	2	2	2	24		
2	6/15	R1	1129	1402	50	10	40	PESA	W	STR		1	FD			1	24		
2	6/15	R1	1129	1402	50	10	40	LALO	W	STR		2	CH	2	2	2	28		
2	6/15	R1	1129	1402	50	10	40	REPH	W	STR		1	FLY	1	1	1	28		
2	6/15	R1	1129	1402	50	10	40	AGPL	W	STR		2	FLY	2	2	2	28		
2	6/15	R1	1129	1402	50	10	40	LALO	W	STR		2	FD	2	2	2	29		
2	6/15	R1	1129	1402	50	10	40	PESA	M	FTP		1	ST	1	1	1	34		
2	6/15	R1	1129	1402	50	10	40	PESA	M	FTP		1	FLY			1	38		
2	6/15	R1	1129	1402	50	10	40	REPH	M	FTP		1	FD			1	39		
2	6/15	R1	1129	1402	50	10	40	PAJA	M	FTP		1	HU			1	8\20	Working most of plot	
2	6/15	R1	1129	1402	50	10	40	REPH	M	FTP		1	INC	1	1	1	33	Found nest	
2	6/15	R1	1129	1402	50	10	40	LALO	W	STR		1	DI	1	1	1	21		
2	6/15	R1	1129	1402	50	10	40	LALO	W	STR		1	INC			1	17	Found nest	
2	6/25	R2	825	1034	60	15	0	LALO	W	STR		1	INC	1	1	1	17	LALO 212 / 5 eggs, one chick less than a day old	
2	6/25	R2	825	1034	60	15	0	LALO	M	FTP		1	ST	1	1	1	2		
2	6/25	R2	825	1034	60	15	0	LALO	M	FTP		1	INC			1	2	LALO walked onto nest	
2	6/25	R2	825	1034	60	15	0	GWFG	M	FTP		6	FLY			6	30		
2	6/25	R2	825	1034	60	15	0	LALO	W	STR		1	FLY			1	26		
2	6/25	R2	825	1034	60	15	0	LALO	W	STR		2	FD	2	2	2	18		
2	6/25	R2	825	1034	60	15	0	LALO	W	STR		1	FLY	1	1	1	18	Flew to nest far off plot	
2	6/25	R2	825	1034	60	15	0	LALO	M	FTP		2	FLY	2	2	2	30		
2	6/25	R2	825	1034	60	15	0	PAJA	D			1	HU			1	39\40		
2	6/25	R2	825	1034	60	15	0	LALO	M	STR		1	INC			1	17		
2	6/25	R2	825	1034	60	15	0	PESA	M	STR		1	FLY			1	15		
2	6/25	R2	825	1034	60	15	0	LALO	M	FTP		1	DI	1	1	1	9		

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
2	6/25	R2	825	1034	60	15	0	REPH	M	FTP		2	FD	1	1	2		7	
2	6/25	R2	825	1034	60	15	0	LALO	M	FTP		1	FLY	1		1		1	
2	7/8	W2	1145	1526	50	7	100	LALO				1	INC	1	1	1		2	LALO 232 / 4 chicks
2	7/8	W2	1145	1526	50	7	100	BBSA				1	ST			1		1	Acting like chicks are present
2	7/8	W2	1145	1526	50	7	100	LBDO				1	FLY		1		5/6		
2	7/8	W2	1145	1526	50	7	100	PAJA				4	CH		4		22		
2	7/8	W2	1145	1526	50	7	100	LALO				2	FD	1	1	2		20	Watched for 20 min, nothing
2	7/8	W2	1145	1526	50	7	100	SESA				2	CH		2		35		
2	7/8	W2	1145	1526	50	7	100	LTDU				1	FLY		1		39/40		
2	7/8	W2	1145	1526	50	7	100	REPH				1	FD	1		1		32	Leisurely feeding
2	7/8	W2	1145	1526	50	7	100	PAJA				2	HU		2		14		
2	7/8	W2	1145	1526	50	7	100	LTIA				1	HU		1		14		
2	7/8	W2	1145	1526	50	7	100	ROPT				1	WA	1	1		4		
2	7/8	W2	1145	1526	50	7	100	PESA				1	FD		1		4		
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		1	DI	1		1		1	Flew off plot
3	6/11	W1	1450	1811	40	10	100	PESA	M	FTP		1	FD	1	1		3		Seen feeding, then INC
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		1	DI	1		1	7		
3	6/11	W1	1450	1811	40	10	100	SESA	M	FTP		1	FLY		1		10		
3	6/11	W1	1450	1811	40	10	100	REPH	M	FTP	POND	2	FD	1	2		16		
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		1	DI	1		1	17		
3	6/11	W1	1450	1811	40	10	100	LALO	M	STR		4	FD	3	1	4	18		Female on nest west of plot
3	6/11	W1	1450	1811	40	10	100	GLGU	M	STR		3	FLY		3		24		
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		2	DI	2		2	18		
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		2	DI	2		2	17		
3	6/11	W1	1450	1811	40	10	100	GLGU	M	FTP		1	FLY		1		15		
3	6/11	W1	1450	1811	40	10	100	BRANT	M	FTP		20	FLY		20		2		
3	6/11	W1	1450	1811	40	10	100	REPH	M	FTP	POND	2	FD	1	2		20		
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		3	FD	2	1	3	23		
3	6/11	W1	1450	1811	40	10	100	PESA	M	FTP		1	FD	1		1	21		
3	6/11	W1	1450	1811	40	10	100	PESA	M	FTP		1	DI	1		1	21		
3	6/11	W1	1450	1811	40	10	100	CAGO	M	FTP		2	FLY		2		21		
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		3	FD	2	1	3	24		

PL	DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
3	6/11	W1	1450	1811	40	10	100	LTDU	M	FTP	POND	1	SW	1		1		27	
3	6/11	W1	1450	1811	40	10	100	REPH	M	FTP	POND	2	FD	1	1	2		31	
3	6/11	W1	1450	1811	40	10	100	LALO	M	FTP		1	FD	1		1		30	
3	6/11	W1	1450	1811	40	10	100	REPH	M	FTP		1	FLY			1		34	
3	6/11	W1	1450	1811	40	10	100	SESA	D	FTP		1	DI			1		30	
3	6/11	W1	1450	1811	40	10	100	LALO	D	FTP		1	DI	1		1		38	
3	6/11	W1	1450	1811	40	10	100	LALO	M	STR		1	ST	1		1		37	
3	6/11	W1	1450	1811	40	10	100	AGPL	M	FTP		1	ST	1		1		31	
3	6/11	W1	1450	1811	40	10	100	LALO	M	STR		1	DI	1		1		26	
3	6/11	W1	1450	1811	40	10	100	PALO	W		POND	1	FLY			1		30	
3	6/11	W1	1450	1811	40	10	100	AGPL	M	FTP		5	FLY	5		5		13	
3	6/11	W1	1450	1811	40	10	100	PALO	M	FTP		1	FLY			1		3	
3	6/15	R1	1440	1729	53	10	50	PESA				1	INC	1		1		3	PESA 104 / 4 eggs
3	6/15	R1	1440	1729	53	10	50	LALO	M	FTP		1	FD	1		1		6	
3	6/15	R1	1440	1729	53	10	50	PESA	M	FTP	TOP	1	ST	1		1		9	
3	6/15	R1	1440	1729	53	10	50	DUNL	M	FB	RIM	1	INC			1		10	DUNL 017 / 3 eggs
3	6/15	R1	1440	1729	53	10	50	GWFG	M			2	FLY			2		17/18	
3	6/15	R1	1440	1729	53	10	50	REPH	M	FTP		2	FLY	1	1	2		15/16	
3	6/15	R1	1440	1729	53	10	50	PESA	M	FTP		1	FLY	1		1		19/20	
3	6/15	R1	1440	1729	53	10	50	LALO	M	FTP		1	FD	1		1		22	
3	6/15	R1	1440	1729	53	10	50	LALO	D	FTP		1	INC			1		22	LALO 018 / 2 eggs
3	6/15	R1	1440	1729	53	10	50	PAJA	D	FTP		1	HU			1		39/40	
3	6/15	R1	1440	1729	53	10	50	LTJA	M	FTP		3	HU			3		19/20	
3	6/15	R1	1440	1729	53	10	50	ARTE	M			20	FLY			20		33/34	
3	6/15	R1	1440	1729	53	10	50	REPH	M		POND	1	FD	1		1		37	
3	6/15	R1	1440	1729	53	10	50	SESA	M		EMER	2	FD			2		40	
3	6/15	R1	1440	1729	53	10	50	PESA	D	FTP		1	FLY			1		37/38	
3	6/15	R1	1440	1729	53	10	50	LALO	M	HCP		1	FD	1		1		31	
3	6/15	R1	1440	1729	53	10	50	GLGU	D	FTP		1	HU			1		31/32	
3	6/15	R1	1440	1729	53	10	50	PESA	D	FTP		3	CH	2	1	3		21/22	
3	6/15	R1	1440	1729	53	10	50	CAGO	D	FTP		1	FLY			1		15/16	
3	6/15	R1	1440	1729	53	10	50	RNPH	M	STR		1	AL	1		1		13	Likely nest, bird flew off
3	6/15	R1	1440	1729	53	10	50	LALO	M	STR		1	FLY	1		1		9/10	
3	6/15	R1	1440	1729	53	10	50	SESA	M	STR		4	FLY			4		5	
3	6/15	R1	1440	1729	53	10	50	LALO	M			1	FLY	1		1		5/6	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS	
3 6/15	R1	1440	1729	53	10	50	LALO	M	STR	TUSOCK	1	INC		1	1		7	LALO 019 / 4 eggs	
3 6/26	R2	820	941	50	1	100	PESA	W			1	INC		1	1		3	PESA 104 / 4 eggs	
3 6/26	R2	820	941	50	1	100	POJA	M		PINGO	1	HU			1		2		
3 6/26	R2	820	941	50	1	100	LALO	M			1	DI			1		6		
3 6/26	R2	820	941	50	1	100	SESA	W		TROUGH	1	FD			1		6		
3 6/26	R2	820	941	50	1	100	LALO	W			1	ST			1		10		
3 6/26	R2	820	941	50	1	100	DUNL	M			1	FLY			1		21		
3 6/26	R2	820	941	50	1	100	LALO	M			1	DI			1		20		
3 6/26	R2	820	941	50	1	100	REPH	W			2	FLY	1	1	2		28		
3 6/26	R2	820	941	50	1	100	PESA	W	POND	EDGE	1	FD			1		33		
3 6/26	R2	820	941	50	1	100	LALO	M			1	ST			1		33		
3 6/26	R2	820	941	50	1	100	LALO	M			1	ST			1		38		
3 6/26	R2	820	941	50	1	100	LALO	W			1	FLY			1		37		
3 6/26	R2	820	941	50	1	100	LALO	M			1	DI			1		38		
3 6/26	R2	820	941	50	1	100	PESA	M			2	FLY	2	2			24	Some displaying and chasing	
3 6/26	R2	820	941	50	1	100	LALO	M			1	DI			1		18		
3 6/26	R2	820	941	50	1	100	LALO	M			1	DI			1		8		
3 7/8	W2	739	1120	40	7	90													Wind P/U to 10 to 20 by 815
3 7/8	W2	739	1120	40	7	90	SESA				1	INC			1		39	4 eggs	
3 7/8	W2	739	1120	40	7	90	SESA	M			1	FD			1		18		
3 7/8	W2	739	1120	40	7	90	LALO	M			3	FD	2	1	3		20		
3 7/8	W2	739	1120	40	7	90	PESA	D		POND	1	FD			1		32		
3 7/8	W2	739	1120	40	7	90	LALO	D		HCP	2	FD	1	1	2		30		
3 7/8	W2	739	1120	40	7	90	SESA	D		HCP	1	FD			1		35		
3 7/8	W2	739	1120	40	7	90	SESA	W			1	INC			1		39		
3 7/8	W2	739	1120	40	7	90	REPH	W			1	FD			1		35		
3 7/8	W2	739	1120	40	7	90	REPH	D		TROUGH	1	FD			1		20		
4 6/11	W1	1000	1412	40	10	80	REPH	M			2	FLY			2		5		
4 6/11	W1	1000	1412	40	10	80	LALO	M	FTP	CLUMP	1	INC			1		5		
4 6/11	W1	1000	1412	40	10	80	LALO	M	FTP		1	DI			1		8		
4 6/11	W1	1000	1412	40	10	80	AGPL	M	FTP		1	AL			1		7		
4 6/11	W1	1000	1412	40	10	80	GWFG	M	FTP		1	FLY			1		14		
4 6/11	W1	1000	1412	40	10	80	LALO	M	FTP		1	DI			1		12		

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
4	6/11	W1	1000	1412	40	10	80	PESA	M	FTP		1	AL	1	1		9		Flushed earlier, PESA 202
4	6/11	W1	1000	1412	40	10	80	LALO	M	FTP		2	FD	2	2		9		
4	6/11	W1	1000	1412	40	10	80	LALO	M	FTP		2	FD	1	1	2	11		Nest cup, no eggs, grid 11
4	6/11	W1	1000	1412	40	10	80	NOPI	M	FTP		2	ST	1	1	2	16		
4	6/11	W1	1000	1412	40	10	80	LALO	M	FTP		1	DI	1	1		18		
4	6/11	W1	1000	1412	40	10	80	LALO	M	FTP	CLUMP	1	FD	1	1		19		Flew to the west
4	6/11	W1	1000	1412	40	10	80	LALO	M	FTP		1	DI	1	1		21		
4	6/11	W1	1000	1412	40	10	80	REPH	M	LCP	BASIN	2	FD	1	1	2	25		Large flooded area
4	6/11	W1	1000	1412	40	10	80	LALO	M	FTP		2	DI	2	2		23		
4	6/11	W1	1000	1412	40	10	80	LTDU	M		POND	2	SW	1	1	2	33		
4	6/11	W1	1000	1412	40	10	80	KIEI	M		POND	2	SW	1	1	2	33		
4	6/11	W1	1000	1412	40	10	80	PESA	M	POND	EDGE	1	FD	1	1		34		
4	6/11	W1	1000	1412	40	10	80	SESA	W	STR		2	FD		2		34		
4	6/11	W1	1000	1412	40	10	80	GWFG	W			7	FLY		7		34		
4	6/11	W1	1000	1412	40	10	80	PESA	W	POND	EDGE	1	FD	1	1		28		
4	6/11	W1	1000	1412	40	10	80	LSGO	W			8	FLY		8		36		
4	6/11	W1	1000	1412	40	10	80	AGPL	M			1	AL		1		12		
4	6/11	W1	1000	1412	40	10	80	SESA	M			1	FD		1		4		
4	6/11	W1	1000	1412	40	10	80	AGPL	M	NPG		2	UN	1	1	2	2		
4	6/16	R1	730	1103	40	10	100												Arctic fox hunting off plot, 1 lemming seen on plot, 1 GLGU flew off plot
4	6/16	R1	730	1103	40	10	100	LALO				2	FY	1	1	2	5		LALO 201 / 6 chicks, downy with some bar skin, 3-4 days
4	6/16	R1	730	1103	40	10	100	LALO				1	INC	1	1		11		LALO 125
4	6/16	R1	730	1103	40	10	100	LALO	D			1	INC	1	1		19		LALO 103 / 2 chicks almost naked, 4 eggs, 1 day
4	6/16	R1	730	1103	40	10	100	PESA	D			1	INC	1	1		4		
4	6/16	R1	730	1103	40	10	100	LALO	D			1	FD	1	1		8		
4	6/16	R1	730	1103	40	10	100	REPH			POND	1	FD	1	1		6		

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
4	6/16	R1	730	1103	40	10	100	DUNL				1	AL			1	10		NEST 125 off plot
4	6/16	R1	730	1103	40	10	100	BBSA	D			1	FD			1	17		
4	6/16	R1	730	1103	40	10	100	LALO	D			1	DI			1	13		
4	6/16	R1	730	1103	40	10	100	LALO				2	FD		2	2	25		
4	6/16	R1	730	1103	40	10	100	PESA				1	DI		1	1	24		
4	6/16	R1	730	1103	40	10	100	PALO			POND	2	SW		1	1	34		
4	6/16	R1	730	1103	40	10	100	LALO	D			1	DI		1	1	21		
4	6/16	R1	730	1103	40	10	100	LALO	D			1	DI		1	1	19		
4	6/16	R1	730	1103	40	10	100	GLGU				1	HU			1	1		
4	6/16	R1	730	1103	40	10	100	DUNL				1	FD			1	1		
4	6/26	R2	1024	1218	40	10	100												Light rain on and off, fox north of plot
4	6/26	R2	1024	1218	40	10	100	PESA				1	INC		1	1	6		PESA 124, 4 eggs
4	6/26	R2	1024	1218	40	10	100	LALO				1	INC		1	1	11		LALO 125 / 4 eggs
4	6/26	R2	1024	1218	40	10	100	SESA	D	FTP		2	FLY			2	1		
4	6/26	R2	1024	1218	40	10	100	LALO	D	FTP		2	FLY		2	2	2		
4	6/26	R2	1024	1218	40	10	100	LALO	D	FTP		3	FLY		3	3	8		
4	6/26	R2	1024	1218	40	10	100	LBDO	D	FTP		1	FLY			1	8		
4	6/26	R2	1024	1218	40	10	100	LALO	D	FTP		2	DI		2	2	18		
4	6/26	R2	1024	1218	40	10	100	LALO	D	FTP		1	INC		1	1	20		LALO 216 / 7 eggs
4	6/26	R2	1024	1218	40	10	100	PAJA	D	FTP		1	HU			1	30		
4	6/26	R2	1024	1218	40	10	100	PALO	M	FTP		2	FLY			2	34		
4	6/26	R2	1024	1218	40	10	100	SESA	M	FTP		2	ST			2	24		
4	6/26	R2	1024	1218	40	10	100	LBDO	M	FTP		2	ST			2	29		
4	6/26	R2	1024	1218	40	10	100	LALO	M	FTP		1	FLY		1	1	28		
4	6/26	R2	1024	1218	40	10	100	REPH				3	FD		1	2	30		
4	6/26	R2	1024	1218	40	10	100	PAJA	W	STR		1	HU			1	36		
4	6/26	R2	1024	1218	40	10	100	LALO	D	FTP		2	FD		2	2	7		
4	7/8	W2	1145	1548	40	15	100												Rain during middle of survey
4	7/8	W2	1145	1548	40	15	100	PAJA	W			1	HU			1	1		
4	7/8	W2	1145	1548	40	15	100	GLGU				1	HU			1	30		
4	7/8	W2	1145	1548	40	15	100	PAJA				1	HU			1	2		
4	7/8	W2	1145	1548	40	15	100	LALO	D			1	FD		1	1	12		
4	7/8	W2	1145	1548	40	15	100	LALO	D			1	FD		1	1	21		
4	7/8	W2	1145	1548	40	15	100	LALO	W			2	FD		1	1	29		

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
4	7/8	W2	1145	1548	40	15	100	STSA	W		2	FD			1	1	34	
4	7/8	W2	1145	1548	40	15	100	SESA	W		2	FD			2		36	
4	7/8	W2	1145	1548	40	15	100	DUNL	W		1	FD			1		35	
4	7/8	W2	1145	1548	40	15	100	PESA	W		2	FD			2		36	
4	7/8	W2	1145	1548	40	15	100	PALO	W		1	SW			1		33	
4	7/8	W2	1145	1548	40	15	100	GLGU	W		1	HU			1		35	
4	7/8	W2	1145	1548	40	15	100	AGPL	W		3	AL			1	2	1	39
4	7/8	W2	1145	1548	40	15	100	SESA	W		2	AL			2		39	
4	7/8	W2	1145	1548	40	15	100	DUNL	W		1	AL			1		39	
4	7/8	W2	1145	1548	40	15	100	STSA	W		1	AL			1		39	
4	7/8	W2	1145	1548	40	15	100	LALO	D		1	FD			1	1	21	
4	7/8	W2	1145	1548	40	15	100	SESA	D	HCP	1	AL			1		22	
4	7/8	W2	1145	1548	40	15	100	PESA	D		1	AL			1	1	14	
4	7/8	W2	1145	1548	40	15	100	DUNL	W		1	INC			1		2	
5	6/12	W1	1250	1630	40	10	100	PESA	M	FTP	2	DI			2		3\4	
5	6/12	W1	1250	1630	40	10	100	AGPL	M	FTP	1	FLY			1		19\20	
5	6/12	W1	1250	1630	40	10	100	LALO	M	FTP	1	DI			1		4	
5	6/12	W1	1250	1630	40	10	100	PAJA	M		1	HU			1		18	
5	6/12	W1	1250	1630	40	10	100	LALO	M	NPG	3	FD			2	1	3	
5	6/12	W1	1250	1630	40	10	100	NOPI	M		2	FLY			1	1	2	
5	6/12	W1	1250	1630	40	10	100	NOPI	M	FTP	2	FD			1	1	2	
5	6/12	W1	1250	1630	40	10	100	LALO	M		1	DI			1		22	
5	6/12	W1	1250	1630	40	10	100	LALO	M		1	ST			1		22	
5	6/12	W1	1250	1630	40	10	100	LTDU	M		1	FLY			1		34	
5	6/12	W1	1250	1630	40	10	100	AGPL	M		1	FLY			1		36	
5	6/12	W1	1250	1630	40	10	100	DUNL	M		1	FLY			1		35\36	
5	6/12	W1	1250	1630	40	10	100	AGPL	M	FTP	1	FD			1	1	37	
5	6/12	W1	1250	1630	40	10	100	PESA	M	POND	1	FD			1		38	Land type also FTP
5	6/12	W1	1250	1630	40	10	100	REPH	M	FTP	2	FLY			1	2	40	
5	6/12	W1	1250	1630	40	10	100	CAGO	M	FTP	2	FLY			2		38	
5	6/12	W1	1250	1630	40	10	100	PALO	M		1	FLY			1		13	
5	6/12	W1	1250	1630	40	10	100	CAGO	M		2	FLY			2		30	
5	6/12	W1	1250	1630	40	10	100	JASP	M		1	HU			1		3	
5	6/12	W1	1250	1630	40	10	100	PESA	M	STR	1	DI			1		33	
5	6/12	W1	1250	1630	40	10	100	NOPI	M	FTP	1	FLY			1		7	
5	6/12	W1	1250	1630	40	10	100	NOPI	M	FTP	3	FLY			3		5	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
5 6/12	W1	1250	1630	40	10	100	PESA	M	POND	EDGE	1	FD			1		14	Land type also FTP
5 6/12	W1	1250	1630	40	10	100	LALO	M	FTP	CLUMP	1	INC	1	1	1		11	
5 6/12	W1	1250	1630	40	10	100	REPH	M	NPG	POND	2	FD	1	1	2		3	
5 6/12	W1	1250	1630	40	10	100	LALO	M	POND	EDGE	1	FD	1	1	1		2	Land type also NPG
5 6/16	R1	1131	1354	45	10	100												Lemming found dead on grid 18
5 6/16	R1	1131	1354	45	10	100	SESA				1	INC			1		6	SESA 204 / 4 eggs
5 6/16	R1	1131	1354	45	10	100	LALO				1	INC	1	1			11	LALO 008 / 4 chicks, downy with some skin, 2-3 days, 1 egg
5 6/16	R1	1131	1354	45	10	100	PESA	D	FTP		2	DI	2	2			7	
5 6/16	R1	1131	1354	45	10	100	LALO	D	FTP		1	DI	1	1			7	
5 6/16	R1	1131	1354	45	10	100	NOPI	D	FTP		1	FLY	1	1			16	
5 6/16	R1	1131	1354	45	10	100	LALO	D	FTP		2	FD	1	1	2		12	
5 6/16	R1	1131	1354	45	10	100	GWFG	D	FTP		2	FLY		2			11\12	
6 6/16	R2	1131	1354	45	10	100	LALO	D	FTP		1	INC	1	1			11	
5 6/16	R1	1131	1354	45	10	100	CAGO	D	FTP		6	FLY		6			11\12	CAGO flying with LSGO referenced below
5 6/16	R1	1131	1354	45	10	100	LSGO	D	FTP		2	FLY		2			11\12	LSGO flying with CAGO referenced above
5 6/16	R1	1131	1354	45	10	100	AGPL	D	FTP		2	ST	1	1	2		4	
5 6/16	R1	1131	1354	45	10	100	SNNB	D	FTP		1	FLY		1				
5 6/16	R1	1131	1354	45	10	100	REPH	M	FTP		2	FD	1	1	2		22	
5 6/16	R1	1131	1354	45	10	100	LALO	M	FTP		1	DI	1	1			28	
5 6/16	R1	1131	1354	45	10	100	LALO	M	FTP		1	DI	1	1			30	
5 6/16	R1	1131	1354	45	10	100	LALO	M	FTP		1	FLY	1	1			30	Building nest
5 6/16	R1	1131	1354	45	10	100	LALO	M	FTP		1	ST	1	1			34	
5 6/16	R1	1131	1354	45	10	100	LALO	M	FTP		2	COP	1	1	2		34	
5 6/16	R1	1131	1354	45	10	100	NOPI	M	FTP		2	FLY	2	2			39\40	
5 6/16	R1	1131	1354	45	10	100	LALO	D	FTP		2	FD	2	2			40	
5 6/16	R1	1131	1354	45	10	100	CAGO	M	FTP		2	FLY		2			33\34	
5 6/16	R1	1131	1354	45	10	100	PESA	D	FTP		1	INC	1	1			13	Nest found
5 6/16	R1	1131	1354	45	10	100	GWFG	D	FTP		5	FLY		5			15	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
5 6/16	R1	1131	1354	45	10	100	LALO	D	FTP		1	INC	1	1	1	1	1	Nest found
5 6/16	R1	1131	1354	45	10	100	SESA	D	FTP		1	ST			1	1	1	
5 6/27	R2	800	1039	45	8	100	LALO	D			1	AL	1	1	1	3	3	
5 6/27	R2	800	1039	45	8	100	SESA				1	FD		1	1	6	6	
5 6/27	R2	800	1039	45	8	100	LALO	D			1	DI	1	1	1	10	10	
5 6/27	R2	800	1039	45	8	100	LALO	D			1	FD	1	1	1	10	10	
5 6/27	R2	800	1039	45	8	100	LTDU				1	FLY		1	1	12	12	
5 6/27	R2	800	1039	45	8	100	REPH	D			1	FD	1	1	1	11	11	
5 6/27	R2	800	1039	45	8	100	LALO	D			1	FD	1	1	1	19	19	
5 6/27	R2	800	1039	45	8	100	PESA				3	FLY		3	3	19	19	Possible hopper
5 6/27	R2	800	1039	45	8	100	PESA				1	FD		1	1	23	23	
5 6/27	R2	800	1039	45	8	100	REPH				1	FD	1	1	1	23	23	
5 6/27	R2	800	1039	45	8	100	GLGU	D			1	HU		1	1	27	27	
5 6/27	R2	800	1039	45	8	100	RTLO	D		POND	2	SW		2	2	35	35	
5 6/27	R2	800	1039	45	8	100	PESA			POND	1	FD		1	1	35	35	
5 6/27	R2	800	1039	45	8	100	SESA			POND	2	FD		2	2	39	39	
5 6/27	R2	800	1039	45	8	100	LALO				2	FD	1	1	2	40	40	
5 6/27	R2	800	1039	45	8	100	LALO				1	RST			1	38	38	
5 6/27	R2	800	1039	45	8	100	NOPI				1	LD	1	1	1	36	36	
5 6/27	R2	800	1039	45	8	100	SESA				1	DI		1	1	4	4	
5 7/8	W2	730	1045	45	5	70												Essentially no birds, just dead
5 7/8	W2	730	1045	45	5	70	PESA				1	INC	1	1	1	30	30	Female sat extremely tight
5 7/8	W2	730	1045	45	5	70	ARTE	M			2	FLY		2	2	17\18	17\18	
5 7/8	W2	730	1045	45	5	70	PAJA	M			1	HU		1	1	27\28	27\28	
5 7/8	W2	730	1045	45	5	70	LALO	D	HCP		1	FD	1	1	1	34	34	
5 7/8	W2	730	1045	45	5	70	SESA	W			3	FD		2	1	39	39	
5 7/8	W2	730	1045	45	5	70	PAJA				1	HU		1	1	9\10	9\10	
5 7/8	W2	730	1045	45	5	70	LALO	M			1	FD	1	1	1	24	24	
5 7/8	W2	730	1045	45	5	70	CAGO	M			2	FLY		2	2	15\16	15\16	
6 6/12	W1	820	1212	40	0	100	LOSP	M			1	FLY		1	1	1\2	1\2	
6 6/12	W1	820	1212	40	0	100	LALO	D	FTP		1	FD	1	1	1	1	1	
6 6/12	W1	820	1212	40	0	100	SESA	M			1	DI		1	1	12	12	
6 6/12	W1	820	1212	40	0	100	AGPL	M			1	DI		1	1	10	10	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
6 7/8	W2	1110	1500	45	15	100												Bird activity close to nothing minus the few adults with chicks
6 7/8	W2	1110	1500	45	15	100	AGPL	D	HCP		4	FLY			4	5/6		
6 7/8	W2	1110	1500	45	15	100	DUNL	W			2	AL			2	17		Strongly suspect chicks
6 7/8	W2	1110	1500	45	15	100	AGPL	D	HCP		1	INC			1	20		AGPL 041 / 2 eggs
6 7/8	W2	1110	1500	45	15	100	LALO	D	HCP		4	FLY	1	1	2	2	22	
6 7/8	W2	1110	1500	45	15	100	SESA	W			2	AL			2	23/24		chicks?
6 7/8	W2	1110	1500	45	15	100	SESA	W	STR		1	FD			1	33		
6 7/8	W2	1110	1500	45	15	100	DUNL	W	TUSSOCK		1	FD			1	34		
6 7/8	W2	1110	1500	45	15	100	LTJA	W			2	HU			2	7/8		
7 6/12	W1	811	1213	40	5	100	LALO	M			1	DI	1		1	4		
7 6/12	W1	811	1213	40	5	100	LALO	M			1	FD	1	1	1	3		Copulation off plot
7 6/12	W1	811	1213	40	5	100	LALO	M			2	FD	2		2	6		
7 6/12	W1	811	1213	40	5	100	SESA	M	HCP		1	INC			1	8		Bird was flushed
7 6/12	W1	811	1213	40	5	100	LALO	M			1	DI	1		1	14		
7 6/12	W1	811	1213	40	5	100	CAGO	M			2	FLY			2	24		
7 6/12	W1	811	1213	40	5	100	REPH	M			2	FLY			2	18		
7 6/12	W1	811	1213	40	5	100	SESA	M			3	FLY			3	20		
7 6/12	W1	811	1213	40	5	100	PESA	M		POND	2	FD	1	1	2	20		Female feeding, male displaying
7 6/12	W1	811	1213	40	5	100	LALO	D	HCP		1	FD	1		1	22		
7 6/12	W1	811	1213	40	5	100	CAGO	M			2	FLY			2	28		
7 6/12	W1	811	1213	40	5	100	PESA	M			1	INC			1	34		PESA 304
7 6/12	W1	811	1213	40	5	100	SESA	M			1	INC			1	35		SESA 305
7 6/12	W1	811	1213	40	5	100	CAGO	M			1	FLY			1	27		
7 6/12	W1	811	1213	40	5	100	LALO	M			2	NB	1	1	2	4		Both adults building a nest
7 6/17	R1	1422	1621	40	10	100												The events were dead
7 6/17	R1	1422	1621	40	10	100	SESA	D			1	INC			1	8		SESA 101 / 4 eggs
7 6/17	R1	1422	1621	40	10	100	PESA	W	STR		1	INC			1	34		PESA 304 / 3 eggs
7 6/17	R1	1422	1621	40	10	100	SESA	W	STR		1	INC			1	35		SESA 305 / 4 eggs
7 6/17	R1	1422	1621	40	10	100	PESA	W	STR		1	ST			1	35		

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
7 6/17	R1	1422	1621	40	10	100	LALO	W	FTP		1	FLY			1		33\34	
7 6/17	R1	1422	1621	40	10	100	BBSA	D	HCP		2	FD	2		2		27	
7 6/17	R1	1422	1621	40	10	100	SESA	D	HCP		1	INC			1		27	SESA 023 / 4 eggs
7 6/17	R1	1422	1621	40	10	100	CORA	W			1	FLY			1		39\40	
7 6/17	R1	1422	1621	40	10	100	LALO	D	FTP		1	FD	1		1		1	
7 6/17	R1	1422	1621	40	10	100	PALO	D			2	FLY			2		15\16	
7 6/17	R1	1422	1621	40	10	100	LALO	D	STR		1	FD	1		1		4	Most likely 106
7 6/28	R2	1353	1655															A brown lemming was hiding in grid 23
7 6/28	R2	1353	1655				LALO				1	BR	1		1		4	4 ill-looking chicks
7 6/28	R2	1353	1655				SESA				1	INC			1		8	T-1545, AL adult, 4 eggs
7 6/28	R2	1353	1655				SESA	D			1	AL			1		27	4 eggs
7 6/28	R2	1353	1655				LALO	W	FTP		1	DI	1		1		37	
7 6/28	R2	1353	1655				LALO	D	FTP		4	FD	3	1	4		31	All flew well off plot
7 6/28	R2	1353	1655				LALO	D	FTP		2	FD	1	1	2		29	Both flew well off plot
7 6/28	R2	1353	1655				LALO	D	HCP		2	FD	2		2		27	Both flew well off plot
7 6/28	R2	1353	1655				LALO	D	HCP		2	CH	2		2		6	2 females
7 6/28	R2	1353	1655				LALO	D	STR		1	INC	1		1		8	LALO 032 / 3 eggs
7 6/28	R2	1353	1655				LALO	D	FTP	RIM	1	INC	1		1		14	LALO 033 / 6 eggs
7 6/28	R2	1353	1655				LALO	D	FTP		2	FLY	1		1		22	
7 6/28	R2	1353	1655				LALO	D	HCP		1	ST			1		24	
7 6/28	R2	1353	1655				AGPL	D			1	DI	1		1		23\24	
7 7/8	W2	1240	1530	50	15	100	LALO				1	INC	1		1		14	2 chicks in nest, 1 dead chick out of nest
7 7/8	W2	1240	1530	50	15	100	LALO				1	FD	1		1		8	2 chicks / 1 egg
7 7/8	W2	1240	1530	50	15	100	STSA	M	STR		1	AL			1		34	
7 7/8	W2	1240	1530	50	15	100	LTDU	M	STR		2	FLY	1	1	2		30	
7 7/8	W2	1240	1530	50	15	100	PESA	M	STR		1	FD	1		1		34	
7 7/8	W2	1240	1530	50	15	100	DUNL	M	STR		1	FD			1		34	
7 7/8	W2	1240	1530	50	15	100	LALO	D	HCP		1	AL	1		1		27	
7 7/8	W2	1240	1530	50	15	100	LALO	W	NPG		1	FLY			1		26	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
7	7/8	W2	1240	50	15	100	LALO	M	FTP		1	FLY				1	6	
7	7/8	W2	1240	50	15	100	LALO	M	FTP		1	FLY				1	8	Hopper
7	7/8	W2	1240	50	15	100	LALO	M	FTP		2	FD	2	2			4	1 female feeding hopper
7	7/8	W2	1240	50	15	100	LALO	M	FTP		1	FLY				1	9	Hopper
7	7/8	W2	1240	50	15	100	LALO	M	FTP		1	AL	1	1			9	
7	7/8	W2	1240	50	15	100	LTJA	M	FTP		6	HU		6			11	
7	7/8	W2	1240	50	15	100	LALO	M	FTP		2	FD	1	1	2		19	Adults with hopper
7	7/8	W2	1240	50	15	100	LALO	M	FTP		1	FD		1			19	
8	6/12	W1	1305	40	10	100												Wind P/U to 15 to 20 by end of survey
8	6/12	W1	1305	40	10	100	REPH	D			4	FLY	2	2	4		2	
8	6/12	W1	1305	40	10	100	SACR				1	FLY		1			6	
8	6/12	W1	1305	40	10	100	PESA	M	STR		1	DI	1	1			11	
8	6/12	W1	1305	40	10	100	DUNL	M	STR		1	DI		1			8	
8	6/12	W1	1305	40	10	100	LALO	M	STR		2	FD	2	2			13	One flew to west, LALO 306?
8	6/12	W1	1305	40	10	100	LALO	M	STR		1	DI	1	1			15	
8	6/12	W1	1305	40	10	100	REPH	M	STR		3	FLY		3			15	
8	6/12	W1	1305	40	10	100	PESA	M	STR		1	DI	1	1			15	
8	6/12	W1	1305	40	10	100	SESA	M	STR		1	INC		1			20	SESA 108
8	6/12	W1	1305	40	10	100	DUNL	M		POND	1	FD		1			17	
8	6/12	W1	1305	40	10	100	REPH	M	FTP		1	FD	1	1			21	
8	6/12	W1	1305	40	10	100	REPH	M		POND	1	LD	1	1			24	
8	6/12	W1	1305	40	10	100	RNPH	M		POND	1	LD		1			24	
8	6/12	W1	1305	40	10	100	LALO	M	FTP		1	FD	1	1			19	
8	6/12	W1	1305	40	10	100	LALO	M	STR		1	INC	1	1			40	
8	6/12	W1	1305	40	10	100	LALO	M	FTP		1	DI	1	1			34	
8	6/12	W1	1305	40	10	100	GLGU	M			1	FLY		1			10	
8	6/12	W1	1305	40	10	100	SESA	M		POND	1	ST		1			22	
8	6/12	W1	1305	40	10	100	LALO	M	FTP		1	FD	1	1			14	
8	6/12	W1	1305	40	10	100	LALO	M	FTP		1	FD	1	1			12	
8	6/12	W1	1305	40	10	100	SESA	M	FTP		2	DI		2			7	
8	6/12	W1	1305	40	10	100	DUNL	M	FTP	POND	1	LD		1			11	
8	6/17	R1	1043	48	5	100	PESA	W			1	FLY	1	1			39	
8	6/17	R1	1043	48	5	100	LALO	M			1	ST	1	1			31	

Appendix F, continued.

PL DATE	TV START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
8	6/17	R1	1043	1333	48	5	100	PESA	M		FLY	1	1	1	1	27	
8	6/17	R1	1043	1333	48	5	100	LALO	M		FLY	1	1	1	1	27	
8	6/17	R1	1043	1333	48	5	100	SESA	W		FD			1	24		
8	6/17	R1	1043	1333	48	5	100	PESA	W		CH			3	26		
8	6/17	R1	1043	1333	48	5	100	LALO	W		INC	1	1	1	26	LALO 326	
8	6/17	R1	1043	1333	48	5	100	PESA	M		INC	1	1	1	25	PESA 327	
8	6/17	R1	1043	1333	48	5	100	SESA	W	POND	FD			1	19		
8	6/17	R1	1043	1333	48	5	100	SESA	M		UN			1	19		
8	6/17	R1	1043	1333	48	5	100	LALO	W		DI	1	1	1	25		
8	6/17	R1	1043	1333	48	5	100	LALO	W		DI	1	1	1	15		
8	6/17	R1	1043	1333	48	5	100	NOPI	W		FLY			3	3		
8	6/17	R1	1043	1333	48	5	100	LALO	W		DI	1	1	1	12		
8	6/17	R1	1043	1333	48	5	100	REPH	W		FLY	1	1	2	11\12		
8	6/17	R1	1043	1333	48	5	100	LALO	W		INC	1	1	1	12	LALO 328	
8	6/17	R1	1043	1333	48	5	100	GLGU	W		FLY			1	19\20		
8	6/17	R1	1043	1333	48	5	100	PESA	W		FD	1	1	1	20		
8	6/17	R1	1043	1333	48	5	100	LSGO	W		FLY			2	20		
8	6/17	R1	1043	1333	48	5	100	SACR	W		FLY			2	20		
8	6/17	R1	1043	1333	48	5	100	DUNL	W		FD			1	20		
8	6/17	R1	1043	1333	48	5	100	PALO	W		FLY			1	24		
8	6/17	R1	1043	1333	48	5	100	PESA	W		FD			1	24		
8	6/17	R1	1043	1333	48	5	100	LALO	W		FD			1	24		
8	6/17	R1	1043	1333	48	5	100	SESA	W		FD			1	34		
8	6/28	R2	1017	1315	50	5	40										Snow covering about 60% of plot at start, melted to a trace by end of survey. ARFO moved off to east after traveling through plot around grid 32.
8	6/28	R2	1017	1315	50	5	40	SESA			INC			1	34		4 eggs, adult INC
8	6/28	R2	1017	1315	50	5	40	LALO			FD			1	32		
8	6/28	R2	1017	1315	50	5	40	LALO			FD			1	31		
8	6/28	R2	1017	1315	50	5	40	LALO			DI			1	32		

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
8	6/28	R2	1017	1315	50	5	40	LALO				2	AL	2		2	27		
8	6/28	R2	1017	1315	50	5	40	SESA				1	FD			1	26		
8	6/28	R2	1017	1315	50	5	40	LALO				1	DI	1		1	22		
8	6/28	R2	1017	1315	50	5	40	PESA				1	FD	1		1	20		
8	6/28	R2	1017	1315	50	5	40	DUNL				2	FD			2	20		
8	6/28	R2	1017	1315	50	5	40	LALO				1	PR	1		1	14		
8	6/28	R2	1017	1315	50	5	40	LALO				1	FD			1	10		
8	6/28	R2	1017	1315	50	5	40	PAJA				1	HU			1	20		
8	6/28	R2	1017	1315	50	5	40	LALO				1	INC	1		1	39		
8	7/8	W2	807	1202	50	15	100												ARFO on plot--842
8	7/8	W2	807	1202	50	15	100	LALO	M	FTP		1	INC	1		1	39		3 eggs, 1 chick about a day old
8	7/8	W2	807	1202	50	15	100	LALO	M	FTP		2	AL	2		2	38		
8	7/8	W2	807	1202	50	15	100	PESA	M	FTP		1	FLY	1		1	30		
8	7/8	W2	807	1202	50	15	100	LALO	M	FTP		3	AL	3		3	30		Seem to be alarming at an ARFO
8	7/8	W2	807	1202	50	15	100	DUNL	M	FTP		1	AL			1	27		
8	7/8	W2	807	1202	50	15	100	SESA	M	FTP		1	AL			1	22		Has chicks
8	7/8	W2	807	1202	50	15	100	REPH	M	FTP	POND EDGE	1	FD	1		1	22		
8	7/8	W2	807	1202	50	15	100	LALO	M	FTP		1	AL	1		1	19		
8	7/8	W2	807	1202	50	15	100	LALO	M	FTP		1	FD			1	18		Female with hopper
8	7/8	W2	807	1202	50	15	100	LALO	D	FTP		2	FLY	1		2	5		Flew off plot
8	7/8	W2	807	1202	50	15	100	DUNL	M	FTP		1	FD			1	16		
8	7/8	W2	807	1202	50	15	100	PALO	M	FTP		1	FLY			1	18		
8	7/8	W2	807	1202	50	15	100	DUNL	M	FTP		1	FD			1	23		
9	6/13	W1	1255	1625	40	15	100	LALO	M	STR		1	FD	1		1	39		
9	6/13	W1	1255	1625	40	15	100	LALO	M	FTP		1	INC			1	37		LALO O12 / 6 eggs
9	6/13	W1	1255	1625	40	15	100	CAGO	M	FTP		2	FLY			2	35/36		
9	6/13	W1	1255	1625	40	15	100	REPH	M	FTP		2	FLY	1		2	37/38		
9	6/13	W1	1255	1625	40	15	100	LOSP	M	FTP		2	FLY			2	25/26		
9	6/13	W1	1255	1625	40	15	100	SESA	M	FTP		2	CH			2	31/32		
9	6/13	W1	1255	1625	40	15	100	REPH	M	STR		2	FLY	1		2	29/30		
9	6/13	W1	1255	1625	40	15	100	LALO	M	FTP		1	DI	1		1	33		
9	6/13	W1	1255	1625	40	15	100	RNPH	W	FTP	POND	2	FD	1		2	21		Scrape found in grid
9	6/13	W1	1255	1625	40	15	100	PAJA	M	FTP		1	HU			1	12		21

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
9 6/13	W1	1255	1625	40	15	100	GLGU	M			1	HU			1		1\2	
9 6/13	W1	1255	1625	40	15	100	KIEI	M			2	FLY	1	1	2		21\22	
9 6/13	W1	1255	1625	40	15	100	LALO	M	STR		1	DI	1		1		15	
9 6/13	W1	1255	1625	40	15	100	REPH	M			1	FLY			1		9\10	
9 6/13	W1	1255	1625	40	15	100	LALO	D	HCP		1	DI	1		1		3	
9 6/13	W1	1255	1625	40	15	100	PAJA	M	NPG		1	HU			1		15\16	
9 6/13	W1	1255	1625	40	15	100	SESA	D	STR	CLUMPS	1	INC			1		10	SESA O13 / 4 eggs
9 6/13	W1	1255	1625	40	15	100	REPH	M	STR	POND	2	FD	1	1	2		31\32	
9 6/13	W1	1255	1625	40	15	100	RNPH	M	STR	POND	2	FD	1	1	2		31\32	
9 6/13	W1	1255	1625	40	15	100	LTDU	M			1	FLY	1		1		33\34	
9 6/13	W1	1255	1625	40	15	100	NOPI	M			2	FLY	1	1	2		37\38	
9 6/17	R1	820	1018	35	5	100	SESA				1	INC			1		10	High fog, visibility good, , flurries earlier, ARFO off plot (HU), SNOW perched off plot, weather variable, sun out briefly
9 6/17	R1	820	1018	35	5	100	LALO				1	DI	1		1		33	
9 6/17	R1	820	1018	35	5	100	LALO				1	FD	1		1		34	
9 6/17	R1	820	1018	35	5	100	REPH				2	FD	1	1	2		27	
9 6/17	R1	820	1018	35	5	100	TUSW				2	FLY			2		15	
9 6/17	R1	820	1018	35	5	100	LALO				2	FD	1	1	2		18	
9 6/17	R1	820	1018	35	5	100	REPH				2	COP	1	1	2		17	
9 6/17	R1	820	1018	35	5	100	SESA				1	AL			1		14	
9 6/17	R1	820	1018	35	5	100	REPH			POND	1	ST			1		14	
9 6/17	R1	820	1018	35	5	100	LALO				1	DI	1		1		19	
9 6/17	R1	820	1018	35	5	100	LALO				1	LD	1		1		12	
9 6/17	R1	820	1018	35	5	100	PESA			CLUMPS	1	ST	1		1		6	
9 6/17	R1	820	1018	35	5	100	LBDO				1	FD			1		6	
9 6/17	R1	820	1018	35	5	100	AGPL				2	FLY			2		6	
9 6/17	R1	820	1018	35	5	100	REPH				1	FLY			1		6	
9 6/17	R1	820	1018	35	5	100	SESA				2	FD			2		4	
9 6/17	R1	820	1018	35	5	100	LALO				2	DI	2		2		2	One weasel seen hunting in grid 2

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
9	6/17	R1	820	1018	35	5	100	LTJA				1	HU			1		17	
9	6/17	R1	820	1018	35	5	100	LALO				1	FD	1	1			29	Went to nest, LALO 127 off plot
9	6/29	R2	1050	1318	40	15	60												Plots 1 and 2 100% snow and water
9	6/29	R2	1050	1318	40	15	60	REPH	M	FTP		1	INC	1	1			39	REPH 235 / 4 eggs
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		2	ST	1	1	1		37	1 hopper and 1 adult male
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		2	CH	2	2			35	
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		1	ST			1		35	
9	6/29	R2	1050	1318	40	15	60	LTDU	M	FTP		3	FLY	2	1	3			Flew north to south through odd grids
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		1	INC	1	1			33	LALO 236 / 6 eggs
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		1	DI	1	1			31	
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		1	DI	1	1			10	
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP		2	ST	2	2			9	
9	6/29	R2	1050	1318	40	15	60	SNNB	M	FTP		1	DI	1	1			1	
9	6/29	R2	1050	1318	40	15	60	SESA	D	BARREN		2	ST		2			2	
9	6/29	R2	1050	1318	40	15	60	DUNL	D	BARREN		1	FD		1			2	
9	6/29	R2	1050	1318	40	15	60	LALO	D	BARREN		4	FD	2	2	4		2	
9	6/29	R2	1050	1318	40	15	60	SESA	M	FTP/STR		1	INC		1			4	SESA 237 / 4 eggs
9	6/29	R2	1050	1318	40	15	60	LALO	M	FTP/STR		1	FLY	1	1			16	
9	6/29	R2	1050	1318	40	15	60	CORA	M	STR		1	FLY		1			30	
9	6/29	R2	1050	1318	40	15	60	SESA	M	FTP		1	FD		1			4	
9	7/9	W2	1203	1421	52	3	70	SESA				1	INC		1			6	NG/ 4 eggs
9	7/9	W2	1203	1421	52	3	70	LALO				1	AL	1	1			13	Almost on center line; 4m from 15/16 NG, downy, pin feathers
9	7/9	W2	1203	1421	52	3	70	LALO				1	AL	1	1			33	
9	7/9	W2	1203	1421	52	3	70	REPH				1	INC	1	1			39	4 eggs
9	7/9	W2	1203	1421	52	3	70	PAJA	M	FTP		3	HU		3			13	
9	7/9	W2	1203	1421	52	3	70	PAJA	M	FTP		2	HU		2			13	
9	7/9	W2	1203	1421	52	3	70	LALO	M	FTP		3	ST	1	1	2		3	2 hoppers and AL female
10	6/14	W1	840	1158	48	5	100	AGPL	M			2	FLY		2			6	

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
10	6/14	W1	840	1158	48	5	100	LALO	W	CLUMPS		1	INC	1	1	1	7	LALO 314	
10	6/14	W1	840	1158	48	5	100	LALO	M			1	DI	1	1	1	8		
10	6/14	W1	840	1158	48	5	100	REPH	M			2	CH		2	18			
10	6/14	W1	840	1158	48	5	100	LALO	M			1	FD		1	17			
10	6/14	W1	840	1158	48	5	100	LALO	M			1	DI	1	1	21			
10	6/14	W1	840	1158	48	5	100	PESA	M			1	DI	1	1	28			
10	6/14	W1	840	1158	48	5	100	REPH	M			1	FLY		1	26			
10	6/14	W1	840	1158	48	5	100	KIEI	M			3	FLY	1	2	34			
10	6/14	W1	840	1158	48	5	100	LALO	M			2	FD	1	2	36			
10	6/14	W1	840	1158	48	5	100	REPH	M			1	FLY	1	1	40			
10	6/14	W1	840	1158	48	5	100	LALO	M			2	FD	1	2	30			
10	6/14	W1	840	1158	48	5	100	PESA	M			1	DI	1	1	11			
10	6/14	W1	840	1158	48	5	100	LALO	M			2	FD	1	2	11			
10	6/21	R1	822	940	35	13	80												Strong wind with light precipitation on way out to plot, occasional snow / sleet flurries during survey
10	6/21	R1	822	940	35	13	80	LALO	W			1	BR	1	1	7			LALO 314 / 5 chicks 2-4 days old, down with some skin patches
10	6/21	R1	822	940	35	13	80	LALO	W	STR		1	FD	1	1	3			
10	6/21	R1	822	940	35	13	80	LALO	W			1	DI	1	1	7			
10	6/21	R1	822	940	35	13	80	LALO	W			1	FD	1	1	19			
10	6/21	R1	822	940	35	13	80	STSA	W	STR		1	INC		1	31			
10	6/21	R1	822	940	35	13	80	LALO	W			1	FD	1	1	38			
10	6/21	R1	822	940	35	13	80	PESA	W			1	INC	1	1	28			
10	6/21	R1	822	940	35	13	80	LALO	W			1	FD	1	1	18			
10	6/21	R1	822	940	35	13	80	PESA	W			1	FD	1	1	16			
10	6/21	R1	822	940	35	13	80	PESA	W			2	CH	2	2	12			N Predated duck egg found in grid 23; avian predation
10	7/5	R2	822	1046	45	5	50												
10	7/5	R2	822	1046	45	5	50	PESA	W			1	INC	1	1	28			4 eggs

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
10 7/5	R2	822	1046	45	5	50	LALO	W	STR		2	FD	1	1	1	2		
10 7/5	R2	822	1046	45	5	50	LBDO	W	STR		1	INC			1	3		
10 7/5	R2	822	1046	45	5	50	GOEA				1	HU			1	1		
10 7/5	R2	822	1046	45	5	50	PESA				1	FD	1	1	1	9		
10 7/5	R2	822	1046	45	5	50	LALO				2	FD	1	1	1	29		
10 7/5	R2	822	1046	45	5	50	LTJA				1	HU			1	2		
10 7/5	R2	822	1046	45	5	50	LALO				1	FLY			1	36		
10 7/5	R2	822	1046	45	5	50	LBDO				1	INC			1	28		
10 7/5	R2	822	1046	45	5	50	PAJA				2	HU			2	13		
10 7/9	W2	801	1047	50	5	100	LBDO	W			1	INC			1	3		LBDO 167 / 4 chicks
10 7/9	W2	801	1047	50	5	100	LBDO				1	INC			1	28		LBDO 168 / 4 chicks
10 7/9	W2	801	1047	50	5	100	LTJA				2	HU			2	25\26		
10 7/9	W2	801	1047	50	5	100	CORA				1	FLY			1	39\40		
10 7/9	W2	801	1047	50	5	100	LBDO				6	FLY			6	39		
10 7/9	W2	801	1047	50	5	100	REPH				1	FLY			1	39\40		
10 7/9	W2	801	1047	50	5	100	AGPL				1	FLY			1	19\20		
11 6/14	W1	1235	1739	55	5	90	LALO	M			1	DI	1		1	10		
11 6/14	W1	1235	1739	55	5	90	LALO	M			1	DI	1		1	18		
11 6/14	W1	1235	1739	55	5	90	LALO	M			1	DI	1		1	20		
11 6/14	W1	1235	1739	55	5	90	LALO	M			1	DI	1		1	17		
11 6/14	W1	1235	1739	55	5	90	CAGO	M			2	FLY			2	21		
11 6/14	W1	1235	1739	55	5	90	PESA	M			1	FD	1	1	1	26		
11 6/14	W1	1235	1739	55	5	90	PESA	M			1	FD	1		1	32		
11 6/14	W1	1235	1739	55	5	90	LALO	M			2	FD	1	1	2	32		
11 6/14	W1	1235	1739	55	5	90	LALO	M			2	CH	2		2	31		
11 6/14	W1	1235	1739	55	5	90	PESA	M	CLUMPS		1	INC			1	37		PESA 315
11 6/14	W1	1235	1739	55	5	90	LALO	M	STR		1	INC			1	27		LALO 316
11 6/21	R1	1000	1143	48	10	100												Very quiet
11 6/21	R1	1000	1143	48	10	100	LALO	W			1	DI	1		1	22		
11 6/21	R1	1000	1143	48	10	100	ROPT	W	PINGO		1	ST	1		1	22		
11 6/21	R1	1000	1143	48	10	100	LALO	M			1	FD	1	1	1	20		
11 6/21	R1	1000	1143	48	10	100	PESA	D	FTP		1	INC	1	1	1	28		PESA 335
11 6/21	R1	1000	1143	48	10	100	LALO	D			3	DI	3		3	27		
11 6/21	R1	1000	1143	48	10	100	LALO	D			1	FD	1		1	27		
11 6/21	R1	1000	1143	48	10	100	PESA	M			1	FLY	1		1	23		
11 7/5	R2	1106	1240	60	7	75	PESA				1	INC	1	1	1	28		PESA 335 / 4 eggs

PL DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
11 7/5	R2	1106	1240	60	7	75	LALO				3	ST	1		3	2		1 male with food flew while 2 males stood
11 7/5	R2	1106	1240	60	7	75	LALO				1	ST				1	4	
11 7/5	R2	1106	1240	60	7	75	LALO	W	FTP	STR	1	INC	1	1	1	10		LALO 341 / 4 eggs
11 7/5	R2	1106	1240	60	7	75	LALO				1	ST			1	20		
11 7/5	R2	1106	1240	60	7	75	LBDO	W	STR		1	FD		1	1	20		
11 7/5	R2	1106	1240	60	7	75	LALO	M	FTP	STR	1	INC	1	1	1	30		LALO 342 / 6 eggs
11 7/5	R2	1106	1240	60	7	75	LALO	M	FTP	STR	1	INC	1	1	1	32		LALO 343 / 4+ chicks
11 7/5	R2	1106	1240	60	7	75	LALO				1	FD	1	1	1	23		Flew way off plot
11 7/5	R2	1106	1240	60	7	75	LALO				2	AL	1	1	2	25		Flew off further up plot
11 7/5	R2	1106	1240	60	7	75	LALO				2	FD				1	1	19
11 7/10	W2	1201	1508	55	8	30					1	INC						Very quiet
11 7/10	W2	1201	1508	55	8	30	LALO				1	INC	1	1	1	10		LALO 341 / 4 eggs
11 7/10	W2	1201	1508	55	8	30	LALO				1	FD	1	1	1	30		LALO 342 / 5 chicks
11 7/10	W2	1201	1508	55	8	30	LALO				1	AL	1	1	1	32		LALO 343 / 5 chicks ready to go
11 7/10	W2	1201	1508	55	8	30	LALO				1	HU			1	22-25		
11 7/10	W2	1201	1508	55	8	30	LALO				1	FD			1	31		
11 7/10	W2	1201	1508	55	8	30	SESA				1	FLY			1	13/14		
11 7/10	W2	1201	1508	55	8	30	LALO				1	FD	1	1	1	5		
12 6/14	W1	819	1156	40	10	100	PESA	W	STR		1	DI	1	1	1	6		
12 6/14	W1	819	1156	40	10	100	LALO	W	STR		1	DI	1	1	1	12		
12 6/14	W1	819	1156	40	10	100	REPH	W	STR		3	FLY			3	12		
12 6/14	W1	819	1156	40	10	100	LALO	W	STR	POND	1	FD	1	1	1	10		Went west
12 6/14	W1	819	1156	40	10	100	STSA	W	STR		1	LD			1	19		
12 6/14	W1	819	1156	40	10	100	PESA	W	STR		1	DI	1	1	1	22		
12 6/14	W1	819	1156	40	10	100	CAGO	W	STR		1	FLY			1	30		
12 6/14	W1	819	1156	40	10	100	PESA	W	STR		1	DI	1	1	1	31		
12 6/14	W1	819	1156	40	10	100	LALO	W	STR		1	DI	1	1	1	33		
12 6/14	W1	819	1156	40	10	100	LALO	W	STR		1	DI	1	1	1	34		
12 6/14	W1	819	1156	40	10	100	DUNL	W	STR		1	DI			1	3		
12 6/14	W1	819	1156	40	10	100	DUNL	W	STR		1	FD			1	3		
12 6/14	W1	819	1156	40	10	100	STSA	W	STR		1	DI			1	2		

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
12	6/21	R1	1220	1359	40	10	100	LALO				1	INC	1	1			13	LALO 117 / 3 chicks, 2 days old, 1 egg
12	6/21	R1	1220	1359	40	10	100	CAGO	M			1	FLY			1	23/24		
12	6/21	R1	1220	1359	40	10	100	LALO	W	STR		2	AL	2	2		16		
12	6/21	R1	1220	1359	40	10	100	LALO	W	STR		1	FD	1	1		36		
12	6/21	R1	1220	1359	40	10	100	REPH	W	STR		2	FD	1	1	2	23/24		
12	6/21	R1	1220	1359	40	10	100	LTJA	W	STR		1	HU		1		13/14		
12	6/21	R1	1220	1359	40	10	100	PESA	W	HCP	TOP	1	ST	1	1		8		
12	7/4	R2	815	935	40	13	100												Light rain
12	7/4	R2	815	935	40	13	100	LALO				1	UN			1	2		
12	7/4	R2	815	935	40	13	100	LALO				1	LD	1	1		21		
12	7/4	R2	815	935	40	13	100	DUNL				1	ST		1		26		
12	7/4	R2	815	935	40	13	100	PAJA				1	HU		1		30		
12	7/4	R2	815	935	40	13	100	PAJA				1	HU		1		20		
12	7/4	R2	815	935	40	13	100	LBDO				1	FLY		1		30		
12	7/10	W2	800	1115	50	7	100												No active nests at start
12	7/10	W2	800	1115	50	7	100	CORA	W			1	HU		1		3/4		
12	7/10	W2	800	1115	50	7	100	PAJA	W			1	HU		1		19/20		
12	7/10	W2	800	1115	50	7	100	GLGU	W			1	HU		1		23/24		
12	7/10	W2	800	1115	50	7	100	LALO	W	STR		3	FLY	1	1	2	32		
12	7/10	W2	800	1115	50	7	100	LALO	W	STR		1	FD	1	1		37		
12	7/10	W2	800	1115	50	7	100	LALO	M	STR		2	FD	2	2		19		
13	6/14	W1	1225	1630	45	10	90												Overcast cleared during survey to 40%, winds shifted back to NE
13	6/14	W1	1225	1630	45	10	90	PESA	M	FTP		1	INC	1	1		2		
13	6/14	W1	1225	1630	45	10	90	DUNL	M	FTP		1	INC		1		2		
13	6/14	W1	1225	1630	45	10	90	DUNL	M	FTP		1	AL		1		1		
13	6/14	W1	1225	1630	45	10	90	PESA	M	FTP		1	DI	1	1		2		
13	6/14	W1	1225	1630	45	10	90	REPH	W		POND	1	FD	1	1		11		
13	6/14	W1	1225	1630	45	10	90	REPH	W		POND	1	PR	1	1		16		
13	6/14	W1	1225	1630	45	10	90	LALO	M	FTP		1	INC	1	1		21		
13	6/14	W1	1225	1630	45	10	90	LALO	M	FTP		1	AL	1	1		21		

PL DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
13 6/14	W1	1225	1630	45	10	90	LALO	M	FTP		1	DI	1		1		33	
13 6/14	W1	1225	1630	45	10	90	PESA	M	FTP		1	DI	1		1		34	
13 6/14	W1	1225	1630	45	10	90	LALO	D	FTP		1	DI	1		1		36	
13 6/14	W1	1225	1630	45	10	90	LALO	D	FTP		1	FD	1		1		35	
13 6/14	W1	1225	1630	45	10	90	LALO	D	FTP		1	DI	1		1		39	
13 6/14	W1	1225	1630	45	10	90	LALO	D	FTP		1	DI	1		1		40	
13 6/14	W1	1225	1630	45	10	90	LALO	D	FTP		3	CH	2	1	3		34	
13 6/14	W1	1225	1630	45	10	90	LALO	W	STR		1	FD	1		1		35	Went to nest 123
13 6/14	W1	1225	1630	45	10	90	SESA			POND	1	FD			1		6	
13 6/20	R1	805	1008	40	15	95	DUNL	D			1	AL			1		2	DUNL 120 / 4 eggs
13 6/20	R1	805	1008	40	15	95	LALO	D			1	INC			1		21	LALO 122 / 4 chicks, down, some bare skin, 2-3 days
13 6/20	R1	805	1008	40	15	95	GLGU	W			1	HU			1		8	
13 6/20	R1	805	1008	40	15	95	STSA	W			1	FD			1		4	
13 6/20	R1	805	1008	40	15	95	SESA	W			2	FD			2		6	
13 6/20	R1	805	1008	40	15	95	LALO	D			1	DI			1		22	
13 6/20	R1	805	1008	40	15	95	PESA				1	INC			1		28	
13 6/20	R1	805	1008	40	15	95	STSA				1	DI			1		28	
13 6/20	R1	805	1008	40	15	95	DUNL	W			1	FD			1		35	
13 6/20	R1	805	1008	40	15	95	ROPT				1	ST	1		1		36	
13 6/20	R1	805	1008	40	15	95	CORA				1	HU			1		20	
13 6/20	R1	805	1008	40	15	95	LALO				1	FD			1		24	
13 6/20	R1	805	1008	40	15	95	PESA	W			1	FD	1		1		5	
13 6/20	R1	805	1008	40	15	95	CAGO	W			2	ST			2		13	
13 6/20	R1	805	1008	40	15	95	LBDO	W			2	FL			2		13	
13 6/20	R1	805	1008	40	15	95	STSA	W			1	DI			1		10	
13 6/20	R1	805	1008	40	15	95	SESA	W			1	FD			1		10	
13 6/20	R1	805	1008	40	15	95	RNPH				1	INC	1		1		6	
13 6/20	R1	805	1008	40	15	95	AGPL				1	INC			1		11	
13 7/4	R2	955	1205	40	15	100	CAGO	W	STR	PONDEDGE	3	ST			3		6	
13 7/4	R2	955	1205	40	15	100	KIEI	W	STR	PONDEDGE	3	SW			3		6	
13 7/4	R2	955	1205	40	15	100	LALO	W	STR		1	FLY	1		1		6	
13 7/4	R2	955	1205	40	15	100	STSA	W	STR		1	AL			1		4	
13 7/4	R2	955	1205	40	15	100	LALO	W	STR		1	FD	1		1		9	
13 7/4	R2	955	1205	40	15	100	RTLO	W	STR	POND	1	SW			1		14	

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
13	7/4	R2	955	1205	40	15	100	RNPB	W	FTP/STR	POND	2	SW			2	12		
13	7/4	R2	955	1205	40	15	100	LALO	M	FTP		1	FLY	1		1	22		
13	7/4	R2	955	1205	40	15	100	PAJA	M	FTP		1	HU			1	35		
13	7/4	R2	955	1205	40	15	100	LALO	M	FTP		1	FLY	1		1	34		
13	7/4	R2	955	1205	40	15	100	LALO	M	FTP		2	FY	1	1	2	36		LALO 240 / 3+chicks
13	7/4	R2	955	1205	40	15	100	LALO	M	STR		1	FLY	1		1	23		
13	7/4	R2	955	1205	40	15	100	PAJA	M	STR		2	HU			2	20		
13	7/4	R2	955	1205	40	15	100	LALO	M	FTP		1	UN			1	6		
13	7/10	W2	1144	1540	50	10	40	AGPL				1	INC	1		1	11		4 eggs
13	7/10	W2	1144	1540	50	10	40	LALO				1	FLY	1		1	38		Chick ready to go
13	7/10	W2	1144	1540	50	10	40	LALO	D	FTP		2	FD	1		1	2		
13	7/10	W2	1144	1540	50	10	40	PESA	W			11	FLY			11	11	12	
13	7/10	W2	1144	1540	50	10	40	SESA	W			2	AL			2	14		Heard chicks
13	7/10	W2	1144	1540	50	10	40	DUNL	W			2	AL			2	16		Heard chicks
13	7/10	W2	1144	1540	50	10	40	PESA	W			5	FD	5		5	16		
13	7/10	W2	1144	1540	50	10	40	LALO	W			1	FD	1		1	16		
13	7/10	W2	1144	1540	50	10	40	PESA	W			1	AL			1	18		
13	7/10	W2	1144	1540	50	10	40	STSA	W			2	AL			2	18		
13	7/10	W2	1144	1540	50	10	40	PAJA	M			1	HU			1	25	26	
13	7/10	W2	1144	1540	50	10	40	LTJA	M			1	HU			1	25	26	
13	7/10	W2	1144	1540	50	10	40	LALO	M			2	FLY			1	34		
13	7/10	W2	1144	1540	50	10	40	PAJA	M			1	HU			1	29	30	
13	7/10	W2	1144	1540	50	10	40	LBDO	W			1	FLY			1	27	28	
13	7/10	W2	1144	1540	50	10	40	PAJA	W			2	HU			2	15	16	
14	6/14	W1	1307	1616	45	5	100												
14	6/14	W1	1307	1616	45	5	100	REPH	M	FTP	POND	2	FD	1	1	2	39		
14	6/14	W1	1307	1616	45	5	100	SESA	D	FTP		1	DI			1	34		Flew way out to west
14	6/14	W1	1307	1616	45	5	100	CAGO	D	FTP		2	FLY			2	21	22	
14	6/14	W1	1307	1616	45	5	100	LALO	M	FTP		1	DI	1		1	20		
14	6/14	W1	1307	1616	45	5	100	LALO	M	STR		1	DI	1		1	11		
14	6/14	W1	1307	1616	45	5	100	REPH	M			3	FLY			3	7	8	
14	6/14	W1	1307	1616	45	5	100	LALO	D	FTP		2	FD	1	1	2	6		Female flew to nest off plot
14	6/14	W1	1307	1616	45	5	100	LALO	M	FTP		1	DI	1		1	2		

PL	DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
14	7/3	R2	800	1106	40	7	100	LALO				2	FD	1	1	2		3	
14	7/3	R2	800	1106	40	7	100	LALO	D			1	FD	1		1		3	
14	7/3	R2	800	1106	40	7	100	PESA				2	FD			2		3	
14	7/3	R2	800	1106	40	7	100	LALO				2	FD	2		2		5	
14	7/3	R2	800	1106	40	7	100	PAJA				2	HU			2		10	
14	7/3	R2	800	1106	40	7	100	LALO				2	FD	1		1	1	11	
14	7/3	R2	800	1106	40	7	100	AGPL				1	FD			1		12	
14	7/3	R2	800	1106	40	7	100	SESA				1	FD			1		15	
14	7/3	R2	800	1106	40	7	100	LALO				3	CH	3		3		23	
14	7/3	R2	800	1106	40	7	100	LALO				1	FD			1		23	
14	7/3	R2	800	1106	40	7	100	LALO				3	FD	1		2	1	30	
14	7/3	R2	800	1106	40	7	100	PESA				1	INC			1		24	
14	7/3	R2	800	1106	40	7	100	PEFA				1	HU			1		20	
14	7/3	R2	800	1106	40	7	100	PESA				1	FD	1		1		16	
14	7/3	R2	800	1106	40	7	100	STSA				1	AL			1		4	
14	7/10	W2	1230	1546	40	15	40												Fog moving in from north
14	7/10	W2	1230	1546	40	15	40	PESA	W			1	AL	1		1		39	Must have chicks
14	7/10	W2	1230	1546	40	15	40	LTJA	W			2	HU			2		38	
14	7/10	W2	1230	1546	40	15	40	DUNL	W			1	FD			1		38	
14	7/10	W2	1230	1546	40	15	40	SESA	W			1	FD			1		29	
14	7/10	W2	1230	1546	40	15	40	PAJA	M			2	CH			2		23	
14	7/10	W2	1230	1546	40	15	40	PAJA				1	HU			1		6	
14	7/10	W2	1230	1546	40	15	40	KIEI				5	SW	1		1	4	12	
14	7/10	W2	1230	1546	40	15	40	LALO	M			4	FD	2		4		4	
15	6/13	W1	1307	1632	50	13	100												Birds were very quiet, windy and rainy
15	6/13	W1	1307	1632	50	13	100	PESA	M			2	DI	2		2		6	
15	6/13	W1	1307	1632	50	13	100	LALO	M			1	DI	1		1		9	
15	6/13	W1	1307	1632	50	13	100	REPH	M			2	FLY	1		2		21	
15	6/13	W1	1307	1632	50	13	100	PESA	M			1	ST	1		1		24	
15	6/13	W1	1307	1632	50	13	100	BTGO	M			2	FD			2		34	
15	6/13	W1	1307	1632	50	13	100	PESA	M			1	DI	1		1		36	
15	6/13	W1	1307	1632	50	13	100	PESA	M			1	FD	1		1		37	
15	6/13	W1	1307	1632	50	13	100	LALO	M			2	DI	2		2		37	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
15 6/13	W1	1307	1632	50	13	100	PESA	M			1	FD	1	1	1	37		
15 6/13	W1	1307	1632	50	13	100	POJA	M			1	HU		1		25		
15 6/13	W1	1307	1632	50	13	100	DUNL	M		CLUMPS	1	INC		1		11		DUNL 313
15 6/13	W1	1307	1632	50	13	100	STSA	M			2	DI		2		9		Displaying and chasing
15 6/20	R1	1415	1612	48	13	100	DUNL	D	FTP		2	FD		2		10		
15 6/20	R1	1415	1612	48	13	100	PESA	M			1	FLY	1	1		14		
15 6/20	R1	1415	1612	48	13	100	PESA	M			2	CH	1	2		18		
15 6/20	R1	1415	1612	48	13	100	DUNL	M			1	FLY		1		25		
15 6/20	R1	1415	1612	48	13	100	LALO	M			1	FD	1	1		20		
15 6/20	R1	1415	1612	48	13	100	LALO	M			1	FLY	1	1		36		
15 6/20	R1	1415	1612	48	13	100	PESA	M			1	FLY	1	1		36		
15 6/20	R1	1415	1612	48	13	100	DUNL	W			1	ST		1		37		
15 6/20	R1	1415	1612	48	13	100	PESA	W	FTP		1	INC	1	1		37		PESA 333
15 6/20	R1	1415	1612	48	13	100	LALO	W	FTP		1	INC	1	1		39		LALO 334
15 6/20	R1	1415	1612	48	13	100	LALO	W			2	FD	2	2		23		
15 6/20	R1	1415	1612	48	13	100	LBDO	W		POND	1	FD		1		21		
15 6/20	R1	1415	1612	48	13	100	PESA	W		POND	1	FD		1		21		
15 6/20	R1	1415	1612	48	13	100	REPH	W		POND	2	FD	1	2		3		
15 7/3	R2	1125	1354	55	12	100	PESA				1	INC	1	1		37		PESA 333 / 4 eggs
15 7/3	R2	1125	1354	55	12	100	LALO				1	BR	1	1		39		LALO 334 / 3+chicks, chicks downy with patches of skin
15 7/3	R2	1125	1354	55	12	100	LBDO				1	FD		1		7		
15 7/3	R2	1125	1354	55	12	100	LTDU				1	FLY	1	1		19/20		
15 7/3	R2	1125	1354	55	12	100	LALO				3	FD	1	2	1	17		
15 7/3	R2	1125	1354	55	12	100	LALO				2	FD	1	1	1	19		
15 7/3	R2	1125	1354	55	12	100	DUNL				2	ST		2		31		Lots of alarming, chick off plot
15 7/3	R2	1125	1354	55	12	100	SESA				1	FD		1		31		
15 7/3	R2	1125	1354	55	12	100	LALO				1	DI	1	1		30		
15 7/3	R2	1125	1354	55	12	100	LALO				1	FLY	1	1		35		
15 7/3	R2	1125	1354	55	12	100	PAJA				2	CH		2		24		
15 7/3	R2	1125	1354	55	12	100	PESA				3	AL	1	1	2	32		
15 7/3	R2	1125	1354	55	12	100	LBDO				1	FLY		1		24		

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
15 7/3	R2	1125	1354	55	12	100	PESA				2	ST			2	30		2 extra chicks
15 7/3	R2	1125	1354	55	12	100	LALO				1	ST		1	24			
15 7/3	R2	1125	1354	55	12	100	LALO				2	FD	1	1	2	30		Female flew off plot
15 7/3	R2	1125	1354	55	12	100	LALO				1	UN			1	4		
15 7/9	W2	1207	1558	57	0	80												Mosquitos
15 7/9	W2	1207	1558	57	0	80	LALO				1	FY	1	1		39		5 chicks, body fully feathered
15 7/9	W2	1207	1558	57	0	80	LALO	W			1	FD	1	1		2		
15 7/9	W2	1207	1558	57	0	80	PESA	W			1	FD	1	1		2		
15 7/9	W2	1207	1558	57	0	80	SESA	W			1	FD				2		
15 7/9	W2	1207	1558	57	0	80	LALO				1	FD	1	1		12		
15 7/9	W2	1207	1558	57	0	80	PAJA				1	HU				16		
15 7/9	W2	1207	1558	57	0	80	PAJA				2	HU		2		18		
15 7/9	W2	1207	1558	57	0	80	PESA				1	INC	1	1		14		
15 7/9	W2	1207	1558	57	0	80	LBDO				1	FD				34		
15 7/9	W2	1207	1558	57	0	80	PESA				1	LD	1	1		34		
15 7/9	W2	1207	1558	57	0	80	PAJA				2	HU		2		30		
15 7/9	W2	1207	1558	57	0	80	DUNL				1	AL		1		29		
15 7/9	W2	1207	1558	57	0	80	LALO				1	ST			1	1		
15 7/9	W2	1207	1558	57	0	80	LALO				1	FD	1	1		21		
15 7/9	W2	1207	1558	57	0	80	LALO				1	FD	1	1		23		
16 6/13	W1	826	1225	45	11	100	PESA	M	FTP		1	INC	1	1		2		PESA 308
16 6/13	W1	826	1225	45	11	100	SESA	M	CLUMPS		1	INC				6		SESA 309
16 6/13	W1	826	1225	45	11	100	LALO	M			1	DI	1	1		3		
16 6/13	W1	826	1225	45	11	100	AGPL	M			2	AL		2		6,8		Chased by SESA 309
16 6/13	W1	826	1225	45	11	100	GLGU	M			7	FLY		7		10		
16 6/13	W1	826	1225	45	11	100	SESA	M			2	DI		2		12		
16 6/13	W1	826	1225	45	11	100	LALO	M			1	DI	1	1		11		
16 6/13	W1	826	1225	45	11	100	CAGO	M			3	FLY		3		7		
16 6/13	W1	826	1225	45	11	100	POJA	M			2	HU		2		14		
16 6/13	W1	826	1225	45	11	100	LALO	M			1	DI	1	1		18		
16 6/13	W1	826	1225	45	11	100	AGPL	M			1	ST		1		11		
16 6/13	W1	826	1225	45	11	100	PESA	M			2	CH	2	2		22		

PL DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
16 6/13	W1	826	1225	45	11	100	SESA	M			1	UN			1	29	Highly suspicious of INC, could not find a nest	
16 6/13	W1	826	1225	45	11	100	SESA	M	CLUMPS		1	INC			1	37	SESA 310	
16 6/13	W1	826	1225	45	11	100	LALO	M			2	FD	1	1	2	39	Male was also displaying	
16 6/13	W1	826	1225	45	11	100	AGPL	M			1	FD			1	36		
16 6/13	W1	826	1225	45	11	100	LALO	M			2	DI	2	2	36			
16 6/13	W1	826	1225	45	11	100	SESA	M			1	AL		1	35			
16 6/13	W1	826	1225	45	11	100	SESA	M			3	CH		3	22			
16 6/13	W1	826	1225	45	11	100	REPH	M			1	FLY		1	20			
16 6/13	W1	826	1225	45	11	100	SESA	M	FB		1	INC		1	15		Wind picked up during survey from 25 - 30 + knots	
16 6/18	R1	1412	1648	50	20	0												
16 6/18	R1	1412	1648	50	20	0	PESA	D			1	INC		1	1	2	PESA 308 / 4 eggs	
16 6/18	R1	1412	1648	50	20	0	SESA	D			1	INC		1	1	6	SESA 309 / 4 eggs	
16 6/18	R1	1412	1648	50	20	0	SESA	D			1	INC		1	1	15	SESA 312 / 4 eggs	
16 6/18	R1	1412	1648	50	20	0	SESA	M			1	INC		1	1	37	SESA 310 / 4 eggs	
16 6/18	R1	1412	1648	50	20	0	AGPL	M			1	AL		1	1	40		
16 6/18	R1	1412	1648	50	20	0	PESA	D			1	UN		1	1	2		
16 6/18	R1	1412	1648	50	20	0	LALO	D			2	FD	2	2	4			
16 6/18	R1	1412	1648	50	20	0	LALO	D			1	FD		1	4			
16 6/18	R1	1412	1648	50	20	0	LALO	D			2	DI	2	2	16			
16 6/18	R1	1412	1648	50	20	0	NOPI	D		RIVER	2	FD	1	1	2	20		
16 6/18	R1	1412	1648	50	20	0	CAGO	D		RIVER	2	FL		2	24			
16 6/18	R1	1412	1648	50	20	0	ARTE	W			1	FLY		1	26			
16 6/18	R1	1412	1648	50	20	0	LALO	W			1	DI	1	1	34			
16 6/18	R1	1412	1648	50	20	0	DUNL	W			1	FD		1	38			
16 6/18	R1	1412	1648	50	20	0	LALO	M			2	FD	1	1	2	40		
16 6/18	R1	1412	1648	50	20	0	SESA	M			1	AL		1	39			
16 6/18	R1	1412	1648	50	20	0	SESA	M			1	INC		1	39			
16 6/18	R1	1412	1648	50	20	0	PAJA	M			1	HU		1	30			
16 6/18	R1	1412	1648	50	20	0	ARTE	W			1	FLY		1	28			
16 6/18	R1	1412	1648	50	20	0	GWFG	W			6	FLY		6	25			
16 6/18	R1	1412	1648	50	20	0	POJA	D			1	HU		1	17			

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
16	6/18	R1	1412	1648	50	20	0	PESA	D			1	FD	1	1	1	15		
16	6/18	R1	1412	1648	50	20	0	PESA	D			1	DI	1	1	1	15		
16	6/30	R2	1225	1501	60	10	90	SESA	M			1	INC			1	6	SESA 309 / 4 eggs	
16	6/30	R2	1225	1501	60	10	90	AGPL				1	INC			1	38	AGPL 311 / 4 eggs	
16	6/30	R2	1225	1501	60	10	90	PESA	W	POND	EDGE	1	FD	1	1	1	1		
16	6/30	R2	1225	1501	60	10	90	LALO	M			1	FD	1	1	1	2		
16	6/30	R2	1225	1501	60	10	90	PESA	W	POND	EDGE	3	FD	3	3	5			
16	6/30	R2	1225	1501	60	10	90	SESA	W			2	FD		2	7			
16	6/30	R2	1225	1501	60	10	90	SESA	W			1	FD		1	2			
16	6/30	R2	1225	1501	60	10	90	DUNL				2	FD		2	9			
16	6/30	R2	1225	1501	60	10	90	PESA				1	FD		1	9			
16	6/30	R2	1225	1501	60	10	90	LTDU			POND	2	SW	1	1	2	7		
16	6/30	R2	1225	1501	60	10	90	SESA				1	FD		1	9			
16	6/30	R2	1225	1501	60	10	90	LALO				2	DI	2	2	11			
16	6/30	R2	1225	1501	60	10	90	PESA				1	ST	1	1	11			
16	6/30	R2	1225	1501	60	10	90	LALO				1	FLY		1	21			
16	6/30	R2	1225	1501	60	10	90	LALO	M	STREAM	EDGE	3	FD	2	1	3	23		Flew off plot
16	6/30	R2	1225	1501	60	10	90	LALO				2	FD	2	2	29			
16	6/30	R2	1225	1501	60	10	90	SESA	W			5	AL		2	3	32		Adults alarming, may be chicks from SESA 130, T-1335
16	6/30	R2	1225	1501	60	10	90	LALO				2	FD		2	33			
16	6/30	R2	1225	1501	60	10	90	PESA				1	FLY	1	1	34			
16	6/30	R2	1225	1501	60	10	90	PESA				2	FD	1	1	2	34		
16	6/30	R2	1225	1501	60	10	90	LALO				2	FD	2	2	35			
16	6/30	R2	1225	1501	60	10	90	SESA				5	FLY		5	37			
16	6/30	R2	1225	1501	60	10	90	SESA				1	INC		1	37			SESA 339 / 3 eggs
16	6/30	R2	1225	1501	60	10	90	LALO				3	FD	3	3	3			1 female flew way off plot
16	7/9	W2	755	1142	45	0	100	AGPL				1	INC	1	1	38			4 eggs / adult INC
16	7/9	W2	755	1142	45	0	100	SESA				1	INC		1	37			3 eggs / adult INC
16	7/9	W2	755	1142	45	0	100	PESA	D			2	AL	2	2	4			
16	7/9	W2	755	1142	45	0	100	SESA	D			1	AL		1	4			
16	7/9	W2	755	1142	45	0	100	PESA	D			1	FD	1	1	3			
16	7/9	W2	755	1142	45	0	100	SESA	D			1	FD		1	3			
16	7/9	W2	755	1142	45	0	100	SESA	W			2	FD		2	10			

PL DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
16 7/9	W2	755	1142	45	0	100	PESA	W			1	FD	1	1		10		
16 7/9	W2	755	1142	45	0	100	PESA	D			1	ST	1	1		16		
16 7/9	W2	755	1142	45	0	100	LALO	D			2	FD	2	2		20		
16 7/9	W2	755	1142	45	0	100	LALO	D			5	FD	2	2	4	1	22	
16 7/9	W2	755	1142	45	0	100	SESA				1	FD		1		36		
16 7/9	W2	755	1142	45	0	100	AGPL	D			1	AL		1		31		
16 7/9	W2	755	1142	45	0	100	LALO	D			3	FD	1	1	2	35		
16 7/9	W2	755	1142	45	0	100	PESA	W			2	ST	2	2		30		
16 7/9	W2	755	1142	45	0	100	AGPL	D			4	FD		4		23		
16 7/9	W2	755	1142	45	0	100	PAJA				1	HU		1		9		
17 6/13	W1	845	1249	34	15	100	AGPL	M	FTP		1	FLY	1	1		2		
17 6/13	W1	845	1249	34	15	100	CAGO	M	FTP		2	FLY		2		7\8		
17 6/13	W1	845	1249	34	15	100	DUNL	M	FTP		1	FD		1		5		
17 6/13	W1	845	1249	34	15	100	LTDU	M	FTP		2	FLY	1	1	2	3\4		
17 6/13	W1	845	1249	34	15	100	POJA	M	FTP		2	HU		2		11		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		1	DI	1	1		14		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		2	FD	2	2		14		
17 6/13	W1	845	1249	34	15	100	PESA	M	FTP		1	FD		1		15		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		3	DI	3	3		18		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		1	ST	1	1		22		
17 6/13	W1	845	1249	34	15	100	PESA	M	FTP		1	FD	1	1		21		
17 6/13	W1	845	1249	34	15	100	SESA	M	FTP		3	CH		3		24		
17 6/13	W1	845	1249	34	15	100	COEI	M	FTP		2	FLY	1	1	2	23\24		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		1	DI	1	1		26		
17 6/13	W1	845	1249	34	15	100	LALO	M	NPG		1	FD	1	1		32		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP	EDGE	1	NB		1		34		Building scrape
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		1	FD	1	1		34		
17 6/13	W1	845	1249	34	15	100	SESA	M	FTP		1	INC		1		34		
17 6/13	W1	845	1249	34	15	100	PESA	M	FTP		1	FLY	1	1		34		
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		1	DI	1	1		33		
17 6/13	W1	845	1249	34	15	100	SESA	M	FTP		1	FD		1		31		Fed after being relieved of incubation duties by partner
17 6/13	W1	845	1249	34	15	100	LALO	M	FTP		2	FD	1	1	2	31		
17 6/13	W1	845	1249	34	15	100	PAJA	M	FTP		1	HU		1		16		Flying north

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
17	6/13	W1	845	1249	34	15	100	LALO	M	FTP		1	DI	1		1		15	
17	6/13	W1	845	1249	34	15	100	PALO	M	FTP		1	FLY			1		30	
17	6/18	R1	1014	1311	40	15	10	NOPI	W	FTP		2	FD	1	1	2		2	
17	6/18	R1	1014	1311	40	15	10	LALO	W	FTP		2	DI	2		2		5	
17	6/18	R1	1014	1311	40	15	10	LALO	W	FTP		1	FD	1		1		8	
17	6/18	R1	1014	1311	40	15	10	PESA	W	FTP		1	FD	1		1		8	
17	6/18	R1	1014	1311	40	15	10	LALO	W	FTP		1	INC			1		3	
17	6/18	R1	1014	1311	40	15	10	SESA	W	FTP		1	FD			1		7	
17	6/18	R1	1014	1311	40	15	10	PESA	W	FTP		1	FD	1		1		7	
17	6/18	R1	1014	1311	40	15	10	LALO	M	FTP		1	FLY	1		1		11	
17	6/18	R1	1014	1311	40	15	10	LALO	M	FTP		1	FLY	1		1		15	
17	6/18	R1	1014	1311	40	15	10	LALO	M	FTP		1	DI	1		1		13	
17	6/18	R1	1014	1311	40	15	10	LALO	M	FTP		1	INC			1		19	
17	6/18	R1	1014	1311	40	15	10	SESA	W	FTP		1	INC			1		34	
17	6/18	R1	1014	1311	40	15	10	LALO	W	FTP		3	FD	2	1	3		38	
17	6/18	R1	1014	1311	40	15	10	STSA	W	FTP		1	ST			1		39	
17	6/18	R1	1014	1311	40	15	10	STSA	W	FTP		1	ST			1		39	
17	6/18	R1	1014	1311	40	15	10	SESA	W	FTP		1	FD			1		34	
17	6/18	R1	1014	1311	40	15	10	PESA	M	FTP		1	FLY	1		1		18	
17	6/18	R1	1014	1311	40	15	10	PAJA	M	FTP		1	HU			1		27	
17	6/18	R1	1014	1311	40	15	10	PESA	M	FTP		1	FLY			1		18	
17	6/18	R1	1014	1311	40	15	10	SESA	W	FTP		1	FD			1		8	
17	6/18	R1	1014	1311	40	15	10	SESA	W	FTP		1	INC			1		4	
17	6/30	R2	958	1152															
17	6/30	R2	958	1152				LBDO	W	STR		1	FD			1		15	
17	6/30	R2	958	1152				LBDO	W	STR		1	FD			1		16	
17	6/30	R2	958	1152				LALO	W	STR		2	FD	1	1	2		21,22	Flew off plot and disappeared
17	6/30	R2	958	1152				LALO	W	STR		1	DI	1		1		28	
17	6/30	R2	958	1152				PESA	W			1	FLY	1		1		33,34	
17	6/30	R2	958	1152				LALO	W	STR		1	DI	1		1		33	
17	6/30	R2	958	1152				DUNL	M	STR		1	FD			1		30	
17	6/30	R2	958	1152				CAGO				6	FLY			6		5,6	
17	7/9	W2	1131	1507	55	1	75	LALO				2	FD	1	1	2		1	
17	7/9	W2	1131	1507	55	1	75	PAJA				2	HU			2		5	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
17 7/9	W2	1131	1507	55	1	75	STSA				3	FD			1	2	7	Started alarming when PAJA landed
17 7/9	W2	1131	1507	55	1	75	BBSA				1	AL			1		21	Acting like there are chicks present, heard at least 2 chicks near by
17 7/9	W2	1131	1507	55	1	75	DUNL				1	ST			1		31	Bird started to take a nap to left
18 6/13	W1	1334	1625	40	15	100	KIEI	M	NPG		2	FLY	1	1	2		1	
18 6/13	W1	1334	1625	40	15	100	SESA	M	FTP		1	FD			1		11	
18 6/13	W1	1334	1625	40	15	100	SESA	M	FTP		1	DI			1		11	
18 6/13	W1	1334	1625	40	15	100	AGPL	M	FTP		1	FLY			1		5	
18 6/13	W1	1334	1625	40	15	100	REPH	M	FTP	POND	2	FD	1	1	2		12	
18 6/13	W1	1334	1625	40	15	100	LALO	M	FTP		1	DI			1		22	
18 6/13	W1	1334	1625	40	15	100	SESA	M	FTP		2	FLY			2		24	
18 6/13	W1	1334	1625	40	15	100	PAJA	M	FTP		1	HU			1		28	
18 6/13	W1	1334	1625	40	15	100	LALO	M	FTP		2	FD	1	1	2		30	
18 6/13	W1	1334	1625	40	15	100	PESA	M	STR		1	FLY			1		32	
18 6/13	W1	1334	1625	40	15	100	LTDU	W		POND	2	SW	1	1	2		40	
18 6/13	W1	1334	1625	40	15	100	PALO	W		POND	2	SW			2		40	
18 6/13	W1	1334	1625	40	15	100	NOPI	M	STR		1	FLY	1		1		7	
18 6/13	W1	1334	1625	40	15	100	TUSW	W		POND	2	FLY			2		40	
18 6/13	W1	1334	1625	40	15	100	LALO	M	STR		1	FLY	1		1		7	
18 6/13	W1	1334	1625	40	15	100	PESA	M	STR		1	ST	1		1		1	
18 6/18	R1	815	945	38	12	0	LALO	M			1	FLY	1		1		1\2	
18 6/18	R1	815	945	38	12	0	REPH	M			2	FLY	1	1	2		11\12	
18 6/18	R1	815	945	38	12	0	SESA	M	POND	EDGE	2	FD			2		23	
18 6/18	R1	815	945	38	12	0	SESA	M			3	FLY			3		27\28	
18 6/18	R1	815	945	38	12	0	LALO	W	STR		1	DI	1		1		27	
18 6/18	R1	815	945	38	12	0	SESA	W	STR		1	DI			1		27	
18 6/18	R1	815	945	38	12	0	PESA	W	STR		2	FLY			2		29\30	
18 6/18	R1	815	945	38	12	0	LALO	M			2	ST	2		2		27	
18 6/18	R1	815	945	38	12	0	LALO	M	LCP		1	FD			1		29	
18 6/18	R1	815	945	38	12	0	KIEI	M			2	FLY	1	1	2		37\38	
18 6/18	R1	815	945	38	12	0	LALO	M			1	FD			1		38	
18 6/18	R1	815	945	38	12	0	TUSW	W			2	FLY			2		19\20	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
19 6/29	R2	821	1030	40	5	50	LALO	M			1	DI	1		1		28	
19 6/29	R2	821	1030	40	5	50	SESA	M			1	FD			1		29	
19 6/29	R2	821	1030	40	5	50	SESA			POND	1	FD			1		35	Watch for SESA nest in 36/38
19 6/29	R2	821	1030	40	5	50	LALO				1	FD	1		1		36	
19 6/29	R2	821	1030	40	5	50	LALO				1	ST				1	37	
19 6/29	R2	821	1030	40	5	50	LALO				1	INC	1	1	1		3	
19 7/9	W2	832	110	50	3	100												Thick fog bank lifted during census
19 7/9	W2	832	110	50	3	100	LALO	M	FTP		2	ST	1	1	1	4		1 adult with hopper
19 7/9	W2	832	110	50	3	100	PALO	M	FTP	POND	2	SW			2		13	
19 7/9	W2	832	110	50	3	100	KIEI	M	FTP	POND	15	FLY	15	15	15		13	
19 7/9	W2	832	110	50	3	100	LALO	M	FTP		1	FLY	1		1		28	
19 7/9	W2	832	110	50	3	100	LTDU	M	FTP	POND	2	SW	1	1	2		13	
20 6/13	W1	833	1237	35	13	100												FOG, but 1 mile + good visibility
20 6/13	W1	833	1237	35	13	100	TUSW				1	FLY			1		10	
20 6/13	W1	833	1237	35	13	100	LALO	M	HCP		1	AL	1		1		1	
20 6/13	W1	833	1237	35	13	100	LALO	M	FTP		1	FD	1	1	1		2	
20 6/13	W1	833	1237	35	13	100	PAJA	M	FTP		2	FLY			2		7	
20 6/13	W1	833	1237	35	13	100	REPH	M	HCP	POND	2	LD	1	1	2		5	
20 6/13	W1	833	1237	35	13	100	GLGU	M	HCP		1	HU			1		7	
20 6/13	W1	833	1237	35	13	100	REPH	M		POND	1	FLY	1	1	1		13	
20 6/13	W1	833	1237	35	13	100	AGPL	M	POND	EDGE	1	FD	1	1	1		15	
20 6/13	W1	833	1237	35	13	100	LALO	M	FTP		1	DI	1		1		19	
20 6/13	W1	833	1237	35	13	100	PAJA	M	FTP		1	HU			1		19	Flew off plot
20 6/13	W1	833	1237	35	13	100	SESA	M	FTP	EDGE	1	INC			1		24	
20 6/13	W1	833	1237	35	13	100	SESA	M		POND	1	FD	1	1	1		29	
20 6/13	W1	833	1237	35	13	100	PESA	M			1	FLY			1		32	
20 6/13	W1	833	1237	35	13	100	LALO	M	FTP		1	FD	1		1		36	
20 6/13	W1	833	1237	35	13	100	SESA	M	FTP	TROUGH	1	FD			1		36	
20 6/13	W1	833	1237	35	13	100	PAJA	M	FTP		1	HU	1	1	1		39	
20 6/13	W1	833	1237	35	13	100	SESA	M	FTP		1	RST	1	1	1		40	
20 6/13	W1	833	1237	35	13	100	PAJA				1	HU			1		20	
20 6/13	W1	833	1237	35	13	100	GLGU				4	FLY			4		20	
20 6/13	W1	833	1237	35	13	100	GLGU				1	HU			1		36	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
20 6/13	W1	833	1237	35	13	100	LALO	M			1	DI	1	1	1	29		
20 6/13	W1	833	1237	35	13	100	LALO	M	FTP		2	FD	1	1	2	28		
20 6/13	W1	833	1237	35	13	100	LALO	M	FTP		1	FD	1	1	1	19		
20 6/13	W1	833	1237	35	13	100	RNPH	M		POND	1	FD	1	1	1	16		
20 6/13	W1	833	1237	35	13	100	REPH	M		POND	2	FD	1	1	2	2		
20 6/13	W1	833	1237	35	13	100	LALO	M	STR		1	INC	1	1	1	12		
20 6/19	R1	1030	1242	48	0	100	LALO	D	FTP		1	INC	1	1	1	1		LALO 109 / 6 eggs
20 6/19	R1	1030	1242	48	0	100	REPH				1	INC	1	1	1	38		REPH 111 / 4 eggs
20 6/19	R1	1030	1242	48	0	100	GLGU	M			1	FLY			1	8		
20 6/19	R1	1030	1242	48	0	100	LALO	D	FTP		1	INC	1	1	1	9		LALO 330
20 6/19	R1	1030	1242	48	0	100	LALO	M			1	FLY	1	1	1	7		
20 6/19	R1	1030	1242	48	0	100	PESA	M			1	ST	1	1	1	19		
20 6/19	R1	1030	1242	48	0	100	REPH	W			1	FLY			1	17		
20 6/19	R1	1030	1242	48	0	100	PAJA	M			2	HU			2	21		
20 6/19	R1	1030	1242	48	0	100	REPH	W		POND	1	FD	1	1	1	21		
20 6/19	R1	1030	1242	48	0	100	LALO	D	STR		1	INC	1	1	1	20		LALO 331
20 6/19	R1	1030	1242	48	0	100	AGPL	M			2	AL	1	1	2	24		
20 6/19	R1	1030	1242	48	0	100	SESA	W		POND	2	FD			2	25		
20 6/19	R1	1030	1242	48	0	100	LALO	M			1	FD	1	1	1	25		
20 6/19	R1	1030	1242	48	0	100	LALO	M			1	DI	1	1	1	26		
20 6/19	R1	1030	1242	48	0	100	TUSW	M			1	FLY			1	18		
20 6/19	R1	1030	1242	48	0	100	PESA	W		POND	1	DI	1	1	1	35		
20 6/19	R1	1030	1242	48	0	100	PESA	M	TROUGH		1	INC	1	1	1	33		PESA 332
20 6/19	R1	1030	1242	48	0	100	LALO	M			1	FLY	1	1	1	26		
20 6/19	R1	1030	1242	48	0	100	PALO	M			1	FLY			1	23		
20 6/19	R1	1030	1242	48	0	100	REPH	W		POND	2	FD	1	1	2	16		
20 6/19	R1	1030	1242	48	0	100	DUNL	W		POND	1	FD			1	16		
20 6/19	R1	1030	1242	48	0	100	PESA	W		POND	1	FD	1	1	1	10		
20 7/1	R2	1210	1416	35	10	100												Sleet
20 7/1	R2	1210	1416	35	10	100	LALO	D			2	AL	1	1	2	1		LALO 109 / 3+ chicks ready to go
20 7/1	R2	1210	1416	35	10	100	LALO	M			3	FLY	1	1	2	9		
20 7/1	R2	1210	1416	35	10	100	PESA				1	INC	1	1	1	33		PESA 332 / 4 eggs
20 7/1	R2	1210	1416	35	10	100	REPH				1	INC	1	1	1	38		REPH 111 / 4 eggs
20 7/1	R2	1210	1416	35	10	100	REPH	D	POND	EDGE	1	INC	1	1	1	2		REPH 037 / 3 eggs
20 7/1	R2	1210	1416	35	10	100	PESA	D	POND	EDGE	1	FD	1	1	1	5		

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LAND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
20	7/1	R2	1210	1416	35	10	100	REPH	M	STR		1	INC	1		1		21	REPH 038 / 4 eggs
20	7/1	R2	1210	1416	35	10	100	LALO	M			5	FD	2	1	3	2	27	
20	7/1	R2	1210	1416	35	10	100	SESA	M	STR		1	FD			1		27	
20	7/1	R2	1210	1416	35	10	100	LALO	M			2	FD	1	1	2		35	
20	7/1	R2	1210	1416	35	10	100	LALO	M			1	ST				1	39	
20	7/1	R2	1210	1416	35	10	100	LALO	M	FTP	TOP	2	INC	1	1	2		22	LALO 039 / 5 eggs
20	7/9	W2	1206	1525	57	0	70												Mosquitos, very few birds, dead
20	7/9	W2	1206	1525	57	0	70	LALO				1	BR			1	1	22	4 eggs, 1 chick, 95% naked
20	7/9	W2	1206	1525	57	0	70	PESA				1	INC			1	1	33	4 eggs / female INC
20	7/9	W2	1206	1525	57	0	70	LTDU	M			1	FLY	1		1		5/6	
20	7/9	W2	1206	1525	57	0	70	LALO	D	FTP		2	FLY			1	1	34	
20	7/9	W2	1206	1525	57	0	70	LALO	M	FTP	RIM	1	NB			1	1	38	Female lining scrape with grass
20	7/9	W2	1206	1525	57	0	70	PESA	D	FTP	RIM	1	INC			1	1	39	PESA 042 / 4 eggs
21	6/13	W1	1302	1653	35	15	100												Light drizzle during second half of survey
21	6/13	W1	1302	1653	35	15	100	REDP	M	FTP		1	FD			1		2	
21	6/13	W1	1302	1653	35	15	100	LALO	M	FTP		1	DI	1		1		2	
21	6/13	W1	1302	1653	35	15	100	SESA	M	FTP		1	INC			1		2	SESA 113
21	6/13	W1	1302	1653	35	15	100	LALO	M	FTP		1	DI	1		1		5	
21	6/13	W1	1302	1653	35	15	100	AGPL	M	FTP		1	LD	1		1		14	
21	6/13	W1	1302	1653	35	15	100	SESA	M	FTP		1	AL			1		19	
21	6/13	W1	1302	1653	35	15	100	LALO	M	FTP		2	FD	1	1	2		19	
21	6/13	W1	1302	1653	35	15	100	KIEI	M			16	FLY			16		28	
21	6/13	W1	1302	1653	35	15	100	NOPI	M			2	FLY			2		28	
21	6/13	W1	1302	1653	35	15	100	PESA	M			1	PR	1		1		29	
21	6/13	W1	1302	1653	35	15	100	SESA	M		POND	1	FD			1		37	
21	6/13	W1	1302	1653	35	15	100	CAGO	M			2	FLY			2		30	
21	6/13	W1	1302	1653	35	15	100	PESA	D	HCP		1	DI	1		1		36	
21	6/13	W1	1302	1653	35	15	100	CAGO	M	DLB		2	AL			2		31	
21	6/13	W1	1302	1653	35	15	100	SESA	M	FTP		1	INC			1		30	SESA 115
21	6/13	W1	1302	1653	35	15	100	SESA	M	LCP		1	RST			1		24	
21	6/13	W1	1302	1653	35	15	100	KIEI	M	STR		4	FLY	2	2	4		22	

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
21	6/13	W1	1302	1653	35	15	100	PAJA	M			1	HU			1		7	Crossed plot and moved on
21	6/13	W1	1302	1653	35	15	100	SESA	M		POND	1	FD			1		8	
21	6/13	W1	1302	1653	35	15	100	DUNL	M			1	DI			1		4	
21	6/19	R1	838	1014	45	5	100	SESA	D	FTP		1	INC			1		2	SESA 113 / 4 eggs
21	6/19	R1	838	1014	45	5	100	SESA	D	FTP		1	INC			1		30	SESA 115 / 4 eggs
21	6/19	R1	838	1014	45	5	100	LALO	D	FTP		1	FLY	1		1		6	
21	6/19	R1	838	1014	45	5	100	LALO	D	FTP		1	INC			1		6	Nest found
21	6/19	R1	838	1014	45	5	100	REPH	M	FTP	POND	1	FD	1		1		12	
21	6/19	R1	838	1014	45	5	100	LALO	M	FTP		1	FLY	1		1		14	
21	6/19	R1	838	1014	45	5	100	LALO	D	FTP		1	DI	1		1		22	
21	6/19	R1	838	1014	45	5	100	LALO	D	FTP		1	FLY	1		1		26	
21	6/19	R1	838	1014	45	5	100	REPH	D	FTP	POND	2	FD	1	2			26	
21	6/19	R1	838	1014	45	5	100	SESA	D	FTP		1	INC			1		39	
21	6/19	R1	838	1014	45	5	100	PESA	D	FTP	PONDEDG	1	FD	1		1		31	
21	6/19	R1	838	1014	45	5	100	LALO	D	FTP		1	FD	1		1		33	
21	6/19	R1	838	1014	45	5	100	PESA	D	FTP		4	FLY			4		33	
21	6/19	R1	838	1014	45	5	100	DUNL	D	HCP		1	FLY			1		27	
21	6/19	R1	838	1014	45	5	100	PESA	D	HCP		1	ST	1		1		19	
21	6/19	R1	838	1014	45	5	100	NOPI	D	HCP		3	FLY	1	2	3		15	
21	6/19	R1	838	1014	45	5	100	PESA	D	HCP		1	FD	1		1		13	Building scrape
21	6/19	R1	838	1014	45	5	100	KIEI	M	HCP	PONDEDG	1	INC			1		5	
21	7/1	R2	858	1144	40	13	100												Light rain
21	7/1	R2	858	1144	40	13	100	LALO	D			1	DI	1		1		2	
21	7/1	R2	858	1144	40	13	100	LALO	D			1	FD	1		1		2	
21	7/1	R2	858	1144	40	13	100	LALO				1	FD	1		1		8	
21	7/1	R2	858	1144	40	13	100	REPH	D			1	INC	1		1		14	
21	7/1	R2	858	1144	40	13	100	LALO				1	FD	1		1			
21	7/1	R2	858	1144	40	13	100	LALO	M			1	AL	1		1		20	
21	7/1	R2	858	1144	40	13	100	REPH				1	FD	1		1		20	
21	7/1	R2	858	1144	40	13	100	LALO				1	FD	1			1	24	
21	7/1	R2	858	1144	40	13	100	LTDU				2	FLY	1	1	2		30	
21	7/1	R2	858	1144	40	13	100	SESA				2	FD	1		2		29	
21	7/1	R2	858	1144	40	13	100	PESA				1	FD	1		1		31	
21	7/1	R2	858	1144	40	13	100	SESA				3	CH			3		36	
21	7/1	R2	858	1144	40	13	100	PESA	M			1	UN	1		1		31	

PL	DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
21	7/1	R2	858	1144	40	13	100	LALO	M			1	INC	1	1	1		21	
21	7/9	W2	817	1140	50	5	100												ARFO den in 36, 2 holes. Bones, fur, scat, predated eggs, freshly trampled entrances. Huge ARFO den off 27\29, 10+ holes + afore mentioned.
21	7/9	W2	817	1140	50	5	100	LALO				2	FY	1	1	2		20	3+ chicks, 1-2 days
21	7/9	W2	817	1140	50	5	100	LALO				2	FY	1	1	2		21	4+ chicks, 6-7 days, pins just starting
21	7/9	W2	817	1140	50	5	100	LALO	M			2	FLY	2	2	2		9\10	
21	7/9	W2	817	1140	50	5	100	LALO	D			2	FD	1	1	1	1	12	
21	7/9	W2	817	1140	50	5	100	GWFG				2	FLY	2	2	2		19\20	
21	7/9	W2	817	1140	50	5	100	LTDU	W			1	SW	1	1	1		29	
21	7/9	W2	817	1140	50	5	100	LALO	D	HCP		2	FD	1	1	1	1	33	
21	7/9	W2	817	1140	50	5	100	LALO	M	FTP		1	FD	1	1	1		13	Took food way off east
22	6/14	W1	1419	1859	50	10	80	LALO	M	FTP		1	FD	1	1	1		1	
22	6/14	W1	1419	1859	50	10	80	GWFG	M	FTP		1	FLY	1	1	1		38	
22	6/14	W1	1419	1859	50	10	80	PESA	W	FTP	FB RIM	1	INC	1	1	1		8	
22	6/14	W1	1419	1859	50	10	80	LALO	W	FTP		1	FD	1	1	1		18	
22	6/14	W1	1419	1859	50	10	80	PESA	W	FTP		1	FD	1	1	1		14	
22	6/14	W1	1419	1859	50	10	80	AGPL	W	FTP		1	ST	1	1	1		17	
22	6/14	W1	1419	1859	50	10	80	LALO	W	FTP		2	DI	2	2	2		19	
22	6/14	W1	1419	1859	50	10	80	PESA	W	FTP		1	ST	1	1	1		19	
22	6/14	W1	1419	1859	50	10	80	PESA	M	FTP		1	INC	1	1	1		20	
22	6/14	W1	1419	1859	50	10	80	CAGO	M	FTP		3	FLY	3	3	3		2	
22	6/14	W1	1419	1859	50	10	80	PESA	M	FTP		1	FLY	1	1	1		27	
22	6/14	W1	1419	1859	50	10	80	LBDO	W	FTP		1	DI	1	1	1		30	
22	6/14	W1	1419	1859	50	10	80	PESA	W	FTP		1	FD	1	1	1		32	
22	6/14	W1	1419	1859	50	10	80	LALO	M	FTP		1	FD	1	1	1		30	
22	6/14	W1	1419	1859	50	10	80	PESA	M	FTP		1	DI	1	1	1		30	
22	6/14	W1	1419	1859	50	10	80	LALO	M	FTP		1	DI	1	1	1		40	
22	6/14	W1	1419	1859	50	10	80	CAGO	M	FTP		1	FLY	1	1	1		37	

PL	DATE	TV	START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
22	6/14	W1	1419	1859	50	10	80	LBDO	M	FTP		2	FLY			2		37	
22	6/14	W1	1419	1859	50	10	80	CAGO	M	FTP		2	FLY			2		19	
22	6/14	W1	1419	1859	50	10	80	PALO	M	FTP		1	FLY			1		11	
22	6/14	W1	1419	1859	50	10	80	LALO	M	FTP		1	FD	1		1		1	Precip enroute to plot, clearing during survey
22	6/22	R1	853	1021	45	15	90												
22	6/22	R1	853	1021	45	15	90	PESA				1	INC	1	1	1	7	7	PESA 209 / 4 eggs
22	6/22	R1	853	1021	45	15	90	LALO	W	FTP		1	DI	1		1	2	2	
22	6/22	R1	853	1021	45	15	90	LALO				1	FD		1	1	2	2	
22	6/22	R1	853	1021	45	15	90	PESA				1	FD	1		1	2	2	
22	6/22	R1	853	1021	45	15	90	LALO				1	BR	1		1	28	28	
22	6/22	R1	853	1021	45	15	90	LALO				2	CH	2		2	32	32	
22	6/22	R1	853	1021	45	15	90	LALO				1	DI	1		1	32	32	
22	6/22	R1	853	1021	45	15	90	LALO				1	INC		1	1	34	34	
22	6/22	R1	853	1021	45	15	90	PAJA				1	HU			1	7	7	
22	7/6	R2	835	922	48	7	60												1 lemming on grid 2
22	7/6	R2	835	922	48	7	60	LALO	W	STR		1	FD	1		1	29	29	
22	7/6	R2	835	922	48	7	60	LALO	W	STR		1	FLY			1	31	31	Hopper
22	7/6	R2	835	922	48	7	60	LALO	W	STR		1	FLY			1	36	36	Hopper
22	7/6	R2	835	922	48	7	60	LBDO	W	STR		1	FLY			1	36	36	
22	7/10	W2	847	1115	50	10	100												Male and female LALO feeding hoppers 50 m N of plot at 840. 2 PAJA SE of plot at 850.
22	7/10	W2	847	1115	50	10	100	LBDO	W	STR		1	FLY			1	36	36	
22	7/10	W2	847	1115	50	10	100	PAJA	W	STR		2	HU			2	40	40	
22	7/10	W2	847	1115	50	10	100	LTJA	W	STR		1	HU			1	16	16	
22	7/10	W2	847	1115	50	10	100	PAJA	W	STR		1	HU			1	16	16	
23	6/13	W1	838	1329	40	5	100	LALO	M	STR		1	DI	1		1	5	5	
23	6/13	W1	838	1329	40	5	100	SESA	M	STR		1	DI			1	3	3	
23	6/13	W1	838	1329	40	5	100	LALO	M	STR		1	DI	1		1	4	4	
23	6/13	W1	838	1329	40	5	100	PESA	W	STR		1	DI	1		1	20	20	
23	6/13	W1	838	1329	40	5	100	LALO	W	STR		2	DI	2		2	22	22	
23	6/13	W1	838	1329	40	5	100	STSA	W	STR		1	FD			1	19	19	

PL DATE	TV START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
23 6/13	W1 838	1329	40	5	100	LBDO	W	STR		1	DI			1		19	
23 6/13	W1 838	1329	40	5	100	LALO	W	STR		1	FLY	1		1		23	
23 6/13	W1 838	1329	40	5	100	PALO	W		POND	2	SW			2		29	
23 6/13	W1 838	1329	40	5	100	LALO	M	FTP		2	FD	2		2		36	
23 6/13	W1 838	1329	40	5	100	LALO	M	FTP		1	DI	1		1		35	
23 6/13	W1 838	1329	40	5	100	LALO	W	STR		3	DI	3		3		40	
23 6/13	W1 838	1329	40	5	100	AGPL	M	FTP		1	FLY	1		1		39	
23 6/13	W1 838	1329	40	5	100	GWFG	M	FTP		4	FLY			4		34	
23 6/13	W1 838	1329	40	5	100	REPH	M	FTP		1	FLY			1		17	
23 6/13	W1 838	1329	40	5	100	LBDO	M	FTP		1	DI			1		17	
23 6/13	W1 838	1329	40	5	100	AGPL	M	FTP		6	FLY	6		6		15	
23 6/13	W1 838	1329	40	5	100	LALO	M	FTP		2	FD	1	1	2		1	
23 6/13	W1 838	1329	40	5	100	LALO	M	FTP		1	INC			1		14	
23 6/13	W1 838	1329	40	5	100	SESA	M	FTP		1	INC			1		36	
23 6/22	R1 1046	1244	52	15	100	LBDO	M	FTP		2	FD			2		4	
23 6/22	R1 1046	1244	52	15	100	LALO	W	STR		1	FLY	1		1		8	
23 6/22	R1 1046	1244	52	15	100	LALO	W	STR		3	FD	2	1	3		18	
23 6/22	R1 1046	1244	52	15	100	PESA	M	FTP		1	FD			1		28	
23 6/22	R1 1046	1244	52	15	100	PALO			POND	1	SW			1		32	
23 6/22	R1 1046	1244	52	15	100	CAGO	M	FTP		1	FLY			1		36	
23 6/22	R1 1046	1244	52	15	100	LALO	M	FTP		1	INC			1		32	
23 6/22	R1 1046	1244	52	15	100	LALO	M	FTP		1	ST	1		1		36	
23 6/22	R1 1046	1244	52	15	100	SESA	M	FTP		1	INC			1		32	
23 6/22	R1 1046	1244	52	15	100	PESA	M	FTP		1	FLY			1		35	
23 6/22	R1 1046	1244	52	15	100	PAJA	W	FTP		1	HU			1		18	
23 7/6	R2 949	1120	50	5	100												A pair of PAJA chased a third PAJA, all off plot
23 7/6	R2 949	1120	50	5	100	LALO				1	ST	1		1		17	
23 7/6	R2 949	1120	50	5	100	LALO				1	FLY				1	18	
23 7/6	R2 949	1120	50	5	100	LALO				2	FLY	2		2		24	
23 7/6	R2 949	1120	50	5	100	PESA				1	FLY	1		1		24	
23 7/6	R2 949	1120	50	5	100	PESA				7	FLY			7		28	
23 7/6	R2 949	1120	50	5	100	REPH				1	AL	1		1		27	Possible chicks / much alarming
23 7/6	R2 949	1120	50	5	100	PESA				5	FLY			5		36/35	

PL DATE	TV START	END	TEMP	WIND	CLOUD	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
23 7/6	R2	949	50	5	100	POJA				1	HU			1		28-33	
23 7/6	R2	949	50	5	100	LALO				1	INC					23	LALO 344 / 4 eggs
23 7/10	W2	1205	45	10	50												2 GLGU south of plot
23 7/10	W2	1205	45	10	50	LALO	M	LCP		1	INC	1	1	1		23	4 eggs / female INC
23 7/10	W2	1205	45	10	50	KIEI				6	SW	1	1	1	5	38	5 chicks
23 7/10	W2	1205	45	10	50	LTJA				1	HU			1		36	
24 6/14	W1	830	40	5	100	LBDO	W	STR		1	DI	1	1	1		1	
24 6/14	W1	830	40	5	100	PESA	W	STR		1	ST	1	1	1		9	
24 6/14	W1	830	40	5	100	PESA	W	STR		1	FD	1	1	1		18	
24 6/14	W1	830	40	5	100	PESA	W	FTP		2	CH	2	2	2		31\32	
24 6/14	W1	830	40	5	100	LALO	W	STR		1	FLY	1	1	1		33\34	
24 6/14	W1	830	40	5	100	RNPH	W	STR		1	FLY			1		35\36	
24 6/14	W1	830	40	5	100	PESA	W	STR		3	DI	3	3	3		39\40	
24 6/14	W1	830	40	5	100	LALO	W	STR		1	FD	1	1	1		37	
24 6/14	W1	830	40	5	100	PAJA	W	STR		1	HU			1		39\40	
24 6/14	W1	830	40	5	100	PAJA	W	STR		2	HU			2		21\22	
24 6/14	W1	830	40	5	100	LALO	W	FTP		1	DI	1	1	1		25	
24 6/14	W1	830	40	5	100	PESA	M	FTP		1	INC	1	1	1		18	PESA 014 / 4 eggs
24 6/14	W1	830	40	5	100	GWFG	W			4	FLY			4		17\18	
24 6/14	W1	830	40	5	100	LALO	W	STR		1	DI	1	1	1		7\8	
24 6/14	W1	830	40	5	100	LALO	W	STR		1	DI	1	1	1		2	
24 6/22	R1	1320	45	10	90	LALO	W	STR		1	FLY	1	1	1		5	
24 6/22	R1	1320	45	10	90	LALO	M	STR		1	FD	1	1	1		24	
24 6/22	R1	1320	45	10	90	LBDO	M	FTP		2	FLY			2		25	
24 6/22	R1	1320	45	10	90	PAJA	W	STR		1	HU			1		38	
24 6/22	R1	1320	45	10	90	PAJA	W			1	HU			1		7\8	
24 7/6	R2	1157	53	5	100	LALO	W	STR		3	FLY	1	2	3		2	Feeding hoppers on plot
24 7/6	R2	1157	53	5	100	LALO	W	STR		3	FY	1	1	2	1	9	
24 7/6	R2	1157	53	5	100	PESA	W	STR		1	FD	1	1	1		8	Sneaky but never revealed
24 7/6	R2	1157	53	5	100	LTJA	W	STR		1	RST			1		25\26	
24 7/6	R2	1157	53	5	100	LBDO	W	STR		1	INC			1		34	LBDO 040 / 4 pipped eggs
24 7/6	R2	1157	53	5	100	LALO	W	STR		3	FD	1	1	2	1	39	

PL DATE	TV	START	END	TEMP	WIND	CLOU	SPECIES	VEG	LND	MICRO	NO	BEH	M	F	AD	FL	GR	COMMENTS
24 7/6	R2	1157	1436	53	5	100	LALO	M	FTP		2	FD	1		1	1	23	
24 7/6	R2	1157	1436	53	5	100	PAJA	W	STR		2	HU			2		7/8	
24 7/10	W2	856	1200	45	13	100												Sun appeared during last half of survey
24 7/10	W2	856	1200	45	13	100	PESA	W			2	FD		1	1	1	5	
24 7/10	W2	856	1200	45	13	100	LALO	W			3	FD	1	1	2	1	2	
24 7/10	W2	856	1200	45	13	100	LALO	W			2	FD		2	2		6	
24 7/10	W2	856	1200	45	13	100	LALO	W			1	FD		1	1		40	