

Avian Diet Sampling

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Food Items for Gulls

We will use boats, ground observations and fixed-wing aircraft to identify the locations on the GSL where the birds from each colony or nesting site are foraging (henceforth called the food-item sampling area, or FISA). FISAs will be named after their respective nesting site, and each nesting site will have one FISA associated with it.

We will collect food items from a FISA by seining behind a boat. By using a seine with a proper mesh size, we can collect a pure sample of adult brine shrimp. At those sites where the water is less saline, some corixids may be mixed in with the shrimp. If so, corixids are large enough that they will be removed individually. To collect a sample of brine fly larva, we will seine with a smaller mesh net that collects both brine shrimp and brine fly larva. Once brought back to the boat, this net is placed in a tray containing water from the GSL. The brine fly larvae are small enough to wiggle out of the net, but the shrimp are too large and immobile to do so. The contents of the water container are then poured through a finer mesh that strains the larva from the water. We will collect up to 5 brine shrimp, 3 brine fly larva, and 3 corixid (when present in a FISA) samples per FISA. Samples will be collected in a systematic manner across each FISA. Each sample will be frozen in a Whirl-pak or new Nalgene bottle. Each sample will be labeled with its location and collection date. All food items from a single colony will be stored together in a 9 X 12 envelope upon which is ascribed the date and FISA where the enclosed samples were obtained.

Food Items for Shorebirds

FISAs will be delineated from the point birds were first detected foraging to the point where they are collected. During a 15-min. feeding observation, we will record the amount of time each bird spends within each foraging microhabitat (e.g., exposed mudflat, shallow water, moderate water, deep water). After each shorebird observation/collection, invertebrates will be collected from the mudflat, benthos, and water column within each foraging area. Invertebrate food items (brine fly adults and/or larvae or pupae and brine shrimp, depending on what the birds are eating) will be collected opportunistically in the general area of each foraging area. If available, three samples of each species and life stage (i.e., larvae, pupae or adult of brine flies) will be collected at each area, with sufficient biomass for analysis (target 5 grams) and additional biomass when that is feasible. However, the

numbers and types of invertebrate samples will be based on what the birds are eating. Each sample will be frozen in a Whirl-pak or new Nalgene bottle. Each sample will be labeled with its location and collection date. All food items from a single FISA will be stored together in a 9 X 12 envelope upon which is ascribed the date and FISA where the enclosed samples were obtained.

Water Samples

We will collect 1-5 water samples from each FISA. Each water sample will be a composite water sample with 20% of the composite water sample coming from 5 different sites systematically distributed across the FISA. Water will be filtered through a 1-mm mesh to remove large items from the sample. All samples will be collected in new Nalgene bottles and stored at room temperature. After 48 hours, the water in each bottle will be decanted and placed in a new Nalgene bottle to separate the water sample from any sediment in the sample.

Sediment Samples

We will collect 1-3 sediment samples for each colony. The sediment sample will be a composite sample with 20% of the composite sample coming from each of 5 sediment core samples collected from 5 sites systematically distributed across each FISA. Each sediment samples will be taken to a maximum depth of 5cm being careful to collect any fine organic matter at the surface. The sediment sample will be stored under refrigeration or frozen until they are shipped to the laboratory for selenium and total organic carbon analyses.