and could not be collected because of the absence of approach cover. But, based on the high degree of similarity of benthic-water column samples from diving and tip-up areas, extensive examination of the pond bottom before flooding, and known food selection of pintails in the area, I concluded that diving birds were also feeding on swamp timothy. Newly flooded swamp timothy marsh is always heavily used for feeding by pintails in the Sacramento (Miller, unpubl.) and San Joaquin valleys (Connelly and Chesemore, California Fish and Game 66: 233–237, 1980; Beam, unpubl.; Eulis, unpubl.).

Previous reports of forage dives by dabbling ducks suggest that the birds were forced to dive because shallow feeding areas were frozen over (Bourget and Chapdelaine 1975), food was in short supply in shallows (Cottam, Condor 47:39, 1945) or because birds were responding to availability of high energy grains such as wheat (*Triticum aestivum*) and corn (*Zea maize*) (Kutz, J. Wildl. Manage. 4:19–20, 1940, Cottam 1945; Chapman et al. 1959). Pintails observed during this study were not forced to feed on swamp timothy by diving. Timothy was available in the same pond and neighboring habitat in densities readily acquired by tipping-up. Also, other foods such as rice (*Oryza sativa*), millet (*Echinochloa crusgalli*), and smartweeds were available nearby and being used by large numbers of pintails.

Diving for food in deep water must be energetically more costly for pintails than tipping-up for the same food in shallow water. Animals would not likely use a higher energy consuming method of foraging unless it conferred some advantages, perhaps increased search efficiency (Norberg, J. Anim. Ecol. 46:511–529, 1977). Pintails may have obtained enough additional food to offset the high energy costs of diving, in which case diving behavior would have been related to efficient consumption of a highly preferred food. However, benthic sample size was not sufficient to reliably measure possible food quantity differences between the two feeding sites. Conclusions based on optimal foraging theory are not warranted without additional research.

Although this was a fortuitous observation, management implications are evident. Pintails are highly adaptable in their ability to obtain food under less than ideal conditions. However, swamp timothy could be made more accessible by managing water levels to allow tip-up feeding. Swamp timothy is obviously a preferred food, and habitat management could be used to improve stands at favorable sites.

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California Gull captures flying Barn Swallow with its bill.—Gulls are opportunistic in both their diet and feeding behavior (Bent, U.S. Natl. Mus. Bull. 113, 1921; Witherby et al., The Handbook of British Birds, Witherby Ltd., London, England, 1948; Bannerman, The Birds of the British Isles, Oliver and Boyd, London, England, 1962). Although there are many records of adult birds being captured and eaten (e.g., Drost, Bull. Int. Comm. Bird Preservation 7:108–111, 1958; Harris, Ibis 107:43–53, 1965; Jyrkkanen, Can. Field-Nat. 89: 77–78, 1965) and numerous records of gulls capturing winged insects with their bills while in flight (Bent 1921; Witherby 1948; Pettingill, Jack-pine Warbler, 36:154, 1958), there is no explicit mention of gulls catching birds in flight with their bills.

The incident reported here occurred at 10:00 on 21 October 1979 on the southwest corner of Tule Lake National Wildlife Refuge, Siskiyou Co., California. It was a clear day with no

wind. An adult California Gull (*Larus californicus*) was flying east 5 m above the water, 50 m from the shore, close to 150 Barn Swallows (*Hirundo rustica*) that were foraging low over the water. One swallow, heading west, passed 1 m below the gull, which dropped suddenly and caught the swallow with its bill, glided for a few meters and settled on the water. The gull proceeded to manipulate the swallow in its bill for 30 sec before swallowing the still moving bird head first. The gull sat on the water for 20 min, then continued its flight to the east.

Most reports of adult birds being taken by gulls have occurred while the prey were on land or water, e.g., Manx Shearwater (*Puffinus puffinus*) and Common Puffins (*Fratercula arctica*) in nesting colonies as they go to and from their burrows (Harris 1965), sick or injured birds up to the size of geese (Witherby 1948), Rock Doves (*Columba livia*) (Jyrkkanen 1975) and Eurasian Starlings (*Sturnus vulgaris*) (Drost 1958) at grain piles and ground-dwelling birds which associate with gulls (e.g., Witherby 1948). Gull predation of adult birds on water is much rarer but does occur (Hafft, Condor 73:253, 1971).

Attacks and capture of avian prey on the wing has rarely been reported and generally occurs over sea on migration (Drost 1958). Bannerman (1962) reports Herring Gulls (*L. argentatus*) capturing and eating Redwings (*Turdus musicus*) and Eurasian Blackbirds (*T. merula*) as they migrate over water by knocking the weary birds into the water.

The present account of gull predation on a Barn Swallow, while not a new method of capturing prey as evidenced by gulls catching flying insects, it is the first report of avian prey being captured in this manner.—STEPHEN A. LAYMON, *Dept. Forestry and Resource Management, Univ. California at Berkeley, Berkeley, California 94720.* *Accepted 15 Oct. 1982.*

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Factors affecting feeding and brooding of Brown Thrasher nestlings.—The nestling period is a particularly stressful time in the lives of birds. In altricial species, the time and energy demands upon parent birds are great and are related to the requirements of their offspring and to environmental factors affecting the adults. Recently, many studies have examined nestling growth and energetics (e.g., Ricklefs, Ibis 115:177–201, 1973; Ricklefs, Publ. Nuttall Ornithol. Club 15:152–292, 1974; O'Connor, Symp. Zool. Soc. Lond. 35:277–306, 1975; O'Connor, J. Zool. Lond. 185:147–172, 1978). Most studies of parental behavior are of cavity-nesting species, probably because of the relative ease of collecting observational data at nest boxes (e.g., Kluyver, Ardea 38:99–135, 1950; Kessel, Am. Midl. Nat. 58:257–331, 1957; Pinkowski, Wilson Bull. 90:84–98, 1978; Walsh, Wilson Bull. 90:248–260, 1978). In contrast, fewer researchers have quantified factors affecting parental care in open-nesting passerines. In our study, patterns of feeding and nest attendance during the nestling period were observed in male and female Brown Thrashers (*Toxostoma rufum*) in relation to nestling age, time of day, and weather.

Study area and methods.—The study was conducted near Ames, Story Co., Iowa during May–July 1978 on a 15-ha pasture used for grazing cattle. The vegetation was a mixture of woodland and shrub habitat (67%), interspersed with grassland (26%). A stream (7%) meandered through the hilly, lightly grazed range.

Feeding frequencies and nest attendance (time spent brooding and shading) were recorded at four nests with brood sizes of two, three, four, and five young, respectively. Before hatch a portable blind was set up about 20 m from the nest, and a small mirror (10-cm diameter) was positioned above the nest to facilitate watching its contents with 20 × 60 binoculars. Observations began as soon after hatch as possible and continued throughout the nestling