OYSTERCATCHER REDUX

by Lawry Sager

As I write this in mid-March, while still in the cold grip of winter, there are already reports of American Oystercatchers *(Haematopus palliatus)* returning to Massachusetts. To many of us, the oystercatcher is one of several southern avian species that have successfully expanded their range into New England over the past few decades, but for the oystercatcher, this apparent northward expansion is actually a reestablishment of its historical range.

In this article I discuss the historical and current distribution of the American Oystercatcher in Massachusetts, its general physical characteristics, and some results of my research on the bird's feeding behaviors. The American Oystercatcher is the largest and most distinctive shorebird breeding in Massachusetts. It is a member of a cosmopolitan genus and a superspecies complex (i.e., closely related species) of as many as eleven species. It is subdivided into five subspecies, most of which are Central or South American (Hayman et al. 1986). Our subspecies, *Haematopus palliatus palliatus*, is found along the eastern coast of North America and south to Colombia and Brazil (AOU 1957).

Historical and Current Status in Massachusetts

Virtually all species accounts of the American Oystercatcher written in this century begin with Audubon's 1840 assertion that they bred coastally as far north as Labrador. Some authors, however, contend that Audubon probably saw stragglers of the closely related European Oystercatcher, *H. ostralegus* (Bent 1929; Forbush 1912). Nonetheless, it is generally agreed that *H. palliatus* historically bred in Massachusetts and along the Maine coast wherever suitable habitat and resources were found.

By 1900 oystercatchers had been extirpated from their range north of Virginia, and only occasional sightings were reported during the next half century. As in the case of other shorebirds, most notably the Piping Plover, market gunning and indiscriminant sport hunting were assumed to be the primary reasons for this extirpation (Forbush 1912). I never found the oystercatcher mentioned in an impressive account of birds seen in and taken primarily from Massachusetts (McKay 1929). Writing specifically of oystercatchers, Bent (1929) states that "It is one of the shyest and wildest of our shore birds . . . I have never shot one and seldom have had half a chance to do so." In light of these accounts, it is perhaps more likely that human coastal activity and development or undetected environmental changes were major factors in the extirpation of these animals from their former range.

It is also possible that oystercatchers never bred in large numbers in Massachusetts. The paucity of locally collected specimens in many venerable

collections provides indirect evidence for this possibility. For example, the Museum of Comparative Zoology at Harvard University, with almost 200 *Haematopus* specimens, has only a single American Oystercatcher from New England prior to 1955—a subadult male collected in Chatham, Massachusetts, in August 1899 (MCZ #291095).

In the late 1930s American Oystercatchers began expanding their range northward, reestablishing themselves wherever human encroachment and disturbance had failed to destroy or alter the beaches, marshes, and mudflats that they prefer. This expansion is part of the global increase in both range and numbers noted in most oystercatcher species by Safriel (1985).

During the 1950s and 1960s oystercatcher sightings became more common in Massachusetts. In 1969 a pair nested successfully on Chappaquidick, Martha's Vineyard (Finch 1970). By 1974 oystercatchers nested on Muskeget, Tuckernuck, Nantucket (Finch 1974) and Monomoy Island. A 1984 census recorded six pairs nesting on Nantucket (Melvin 1984). During a 1993 study on that island, I observed nineteen breeding pairs. At least four pairs nested in Boston Harbor in 1993—three at Logan Airport and one on Sheep Island (personal observation). These pairs currently represent the northernmost known breeding sites of the American Oystercatcher.

These northern populations are migratory, while those nesting from the Delmarva peninsula (located between Chesapeake and Delaware bays) and south are less migratory or sedentary. Oystercatchers breeding in Massachusetts are therefore subject to the additional energy requirements and stress inherent in migration. The wintering locations of these birds are not yet known. Breeding season food resources are likely to be important in determining their breeding success and the survival of juvenile birds about to undertake their first fall migration.

Physical Characteristics

Boldly patterned in black and white and sporting a large (six-to-nine centimeters) bill of bright orange-red, American Oystercatchers add to their conspicuousness with loud "kleep" calls and aggressive territorial displays. Still, for all their visibility, these large waders (averaging approximately forty-seven centimeters) can be shy and retiring. The black head and velvet brown back blend into the thick piles of wrack along the low sand dunes and salt-marsh margins of their preferred habitat. Only the careful observer will note the vigilant, lemon-yellow eye encircled by an eye ring, which is the same vivid color as the bill. Even during the behaviors known variously as "mock-brooding" or "mock-incubating" or when engaged in "pseudo-sleeping," oystercatchers are watchful and wary.

Sexing, like aging, of American Oystercatchers in the field can be difficult because the species is not highly sexually dimorphic. Females are slightly larger

and have longer and brighter bills (Lauro et al. 1991). These differences may be small enough in some populations that it is difficult to tell the sexes apart even with a bird in hand (Durell et al. 1993) due to the size overlap between the largest males and smallest females.

Aging of oystercatchers after their first winter, when most of their juvenile plumage persists, is not easy, as most current literature reports attest (Hayman et al. 1986; Prater et al. 1977). Chandler (1989) states that bare parts (legs, bill, and eye cere) are transitional until the third winter plumage is attained, at which time the birds are sexually mature. This transition is from a dull reddish brown on the narrow eye ring and bill (the bill tip being brown) to the eventual bright orange-red color, and from dull green-gray legs to the pale pink legs of adult birds.

Feeding Behavior

Oystercatchers are perhaps the only shorebirds in the world that can eat bivalves. However, the literature contains conflicting information on the extent to which bivalves constitute the oystercatchers' diet, which also includes marine invertebrates and other prey items. For example, Wilcox (1947) reported that ". . . some of the various species [of oystercatchers], now widely dispersed along the sea margins all around the globe, may have departed somewhat from the ancient mode of feeding and now live on food not requiring this specialization and this skill. . ."

The fact that oystercatchers can eat bivalves does not necessarily mean that they do eat bivalves. Oystercatchers feed by several methods. They pick prey items detected by sight from the substrate or probe to a depth of about eight centimeters with the bill closed or slightly open. Hammering is the preferred method of gaining access to the flesh of bivalves by some oystercatchers. The bird lays the prey on either its side or on one valve on the substrate (it may be carried to an area of harder surface first) and strikes it with closed bill until the flesh within is exposed. Stabbing is a more complex method that requires the targeted mollusk, most commonly mussels *(Mytilus edulis)*, be partially opened as normally occurs when immersed. The bird's bill is inserted quickly, and the abductor muscle severed or damaged. The valves are then pried apart and the flesh eaten (Norton-Griffiths 1967). The upper mandible of oystercatchers is wider than the lower mandible, allowing freedom of motion by the latter in the event that the bill has missed its mark and been held fast by the intended prey. However, a bill held fast may still lead to death.

Three major shapes of oystercatcher bill tips were described for European Oystercatchers by Swennen et al. (1983) and correlated with the three feeding techniques discussed above. They are pointed, blunt, and intermediate (or chisel-shaped), associated with probing, hammering, and stabbing, respectively. A recent study of museum specimens (Sager 1993) failed to find a distinct

intermediate tip shape (that of the "stabber") in American Oystercatchers, strongly suggesting that intensive field study of prey and foraging method as well as bill morphology throughout the species range may be necessary to determine the scope and diversity of diet. But, for all the skill and dexterity displayed in obtaining food, oystercatchers are not, as species, feeding specialists (Safriel 1985). Individuals, however, tend to be specialists. Seasonal shifts in diet are common.

The reported disparity in the bird's diet led me to conduct a field study in July and August 1993 on various aspects of the American Oystercatcher's feeding behavior. In addition to investigating prey items taken, I also paid particular attention to inter- and intraspecific relations, which included feeding interference from conspecifics as well as interference by Herring Gulls and humans.

I studied seven breeding pairs and their nine chicks on Coatue peninsula on Nantucket. Coatue is a narrow barrier beach peninsula enclosing and defining Nantucket Harbor in a southwest to northeast alignment. When the study began, the chicks were about five to six weeks old, and all were self-feeding and fledged. Haematopodidea are unique among North American shorebirds in that they practice parental feeding and care of their precocial young for four to six weeks after the young are fledged. Old World *H. ostralegus* siblings are known to establish a strict social hierarchy (Safriel 1983). Observations of the Nantucket American Oystercatcher population feeding regimen and the outcome of the occasional sibling confrontation it engendered suggests that American congeners share this characteristic.

In my study, the sample population opportunistically captured and consumed a wide range of marine invertebrates (Table 1). All feeding bouts were primarily probing; in some cases, other methods were also used, varying with the type of prey encountered. Clam worms *(Nereis species)*, other annelids of the intertidal zone, and sea cucumbers (mostly *Leptosynapta* species) made up the bulk of their diet. Except when prey were fed to chicks, individual items were not visible because the food was eaten at or below the substrate. At no time was hammering observed on Coatue. One juvenile, however, was seen to hammer ribbed mussels at Folger's Marsh, located across the harbor from Coatue peninsula. Stabbing was also observed at that time by one of the adult oystercatchers in the group. Peak feeding times extended from approximately two hours before to two hours following dead low tide.

Parental feeding was observed only when initiated by a chick, and then, only until the chicks were eight weeks old, when they were presumably independent of their parents. Adult rejection, either by turning away from or by chasing the chick was not observed prior to July 25, or twelve days after the start of my study and three days before family groups began to abandon feeding territories.

TABLE 1. American Oystercatcher Prey Species

Prey Species	Number	Method	Bird Age	Determined
Marine "Worms"[1]	62[2]			
Mollusks				
bay scallop	3	S	U	C
transverse ark	1	S	U	C
knobbed whelk	1	SC	J	C
slipper shell	1	S	U	C
razor clam	2	H	U	C
common periwinkle	1	AT	A	O
ribbed mussel	2, 4	H, S	J, A	O, O
soft-shelled clam	1	AT	J	O
false angel wing	1	H	A	O
Arthropods				
horseshoe crab	1	SC	J	O
lady crab	1	H, S	A	O
fiddler crab	2	P	A, J	O

[1] Includes *Nereis*, *Leptosynapta*, and *Arenicola* species.
[2] Number of feeding bouts; all other numbers in table are of numbers of individual prey taken.
Method: P = probe; H = hammer; S = stab; AT = attempt; SC = scavenge.
Bird Age: A = adult; J = juvenile; U = unknown.
Determined: O = observed; C = circumstantial; F = fecal sample analysis.

The study animals displayed strong territorial behavior on the two occasions when conspecifics intruded. On one such occasion, two adults, members of adjacent families, met at the common boundary and engaged in a brief "parallel run." The other incident was a skirmish involving fluttering jumps and bill jabs directed at the opponent. The jumps and jabs alternated with aerial displays by both pairs while a single chick watched from a crouched position nearby. I also saw interspecific territorial defense. An oystercatcher was supplanted by another species, a Herring Gull, on only one occasion. Piracy, also by a Herring Gull, was only successful one time. The lack of interaction between oystercatchers and the larger and (usually) more aggressive Great

Black-backed Gull is unexplained and begs investigation. An estimated 2000 pairs of Great Black-backed and Herring gulls nest on Coatue (D. Evans, personal communication). My observations on the strong territoriality displayed by the study birds are consistent with literature reports on the American Oystercatcher (e.g., Lauro et al. 1991).

That the American Oystercatcher, a species so well adapted both morphologically and behaviorally to use a specialized niche, should prove to be a feeding generalist is interesting, but is it significant? It may well be, as nonspecialized feeding allows the birds to exploit a wide range of prey in response to changes in food type availability and in habitat. This generalized diet may be considered a factor in the present reestablishment of oystercatchers in New England where shellfish beds have been seriously depleted from historical levels. Past research has shown that birds feeding on marine worms and small crustacea by probing are able to raise offspring to independence more quickly than those employing the more difficult hammering or stabbing methods (six to eight weeks versus twenty-two to thirty-eight weeks in *H. ostralegus*) (Norton-Griffiths 1967). The shorter time frame is consistent with my observations, where the chicks gained independence at approximately eight weeks. It would be interesting to study and compare chicks, in terms of time to independence, raised on Coatue peninsula with those that foraged on the rock jetties extending into Nantucket Sound, where probing is not possible. I did not determine which, if any, of the study birds were those seen foraging regularly among the granite blocks.

All American Oystercatchers observed rearing young (sample size equal to eight pairs) on the salt marshes of Nantucket successfully raised two young, while of the seven pairs that I studied on Coatue, only two pairs successfully raised two young, and five raised one. The salt marshes may be less desirable habitat presumably because it is more difficult to feed and provide protection for the chicks simultaneously in a marsh than on the open beach (Nol 1989). At the same time, however, the topographical relief and tall vegetation may offer concealment from predators, such as gulls. Predation by gulls and mammals accounted for most chick loss in a Virginia study (Nol 1989), but because Coatue has no known mammalian predators, gulls were the most likely predator on the peninsula, as they were in a Monomoy Island study (Humphrey 1987).

Although conservation and management concerns were not the primary focus of this study, they are, nonetheless, intrinsic in work on marginal species. American Oystercatchers are, along with many other organisms, indicators of environmental quality. Their recent breeding success on Nantucket speaks well for the efforts of local conservation organizations to maintain and preserve suitable breeding habitat. I have no doubt that the signing, area closures, and dissemination of printed information by the various groups serve to mitigate the disturbances that would surely limit oystercatcher reproductive success.

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