

# Habitat Restoration at Joppa Flats

*Bill Gette*

I'm sure that you all have seen many advertisements showing before and after scenes: there's the couple exalting over the transformation of their dirty carpets; the woman appearing decades younger after using a moisturizing lotion; and the middle-aged man reveling in his restored hairline. You may wonder, however, about the truth of these testimonials. Well, here is a real-life, before and after scene that you can experience for yourself. The habitat restoration project at the Joppa Flats Education Center and Wildlife Sanctuary on the southern shore of the Merrimack River in Newburyport was completed in December 1999, and the transformation has been nothing less than miraculous! A tangle of invasive plant species and trash has been replaced by magnificent wildlife habitat.

In December 1993 the Massachusetts Audubon Society purchased the 3.3-acre site of the Sportsmen's Lodge, an internationally known birding destination. It was the vision of the Society to establish an education center and meeting place for birders at the gateway to the Merrimack River estuary and the Parker River National Wildlife Refuge, and to restore the degraded habitat. An important element of site development for the Joppa Flats Education Center was to restore the badly damaged salt marsh. The salt marsh had been filled during the past decades by both human and natural causes. Sand, construction materials, and trash of almost every description had been deposited in the area. As the salt marsh was filled, tidal flow through the area was restricted, and salinity levels decreased. As a result, invasive plant species such as the common reed (*Phragmites australis*) and Japanese knotweed (*Polygonum cuspidatum*) overran the area. The encroachment of invasive plants was so bad that monitoring efforts by Thomas Rawinski, Staff Scientist for Massachusetts Audubon, revealed that these two exotic species made up over 98 percent of the vegetation in large sections of the Joppa Flats site. In late summer and fall, individuals standing in the Joppa Flats parking lot could not see the Merrimack River through the enormous standings of common reed and knotweed. For all practical purposes, the area was completely unusable for shorebirds, waders, and waterfowl.

## **The Restoration Plan**

Working with local, state, and federal regulators and the Massachusetts Wetlands Restoration and Banking Program, Massachusetts Audubon and its contractor, Great Meadow Farm, developed a restoration plan for the site. This ambitious plan called for the removal of huge quantities of fill and plant material, the development of three salt pannes (impoundments), and the creation of two tidal creeks. After thorough review by regulators, work began in September 1998. The three salt pannes were constructed at different elevations to create a variety of tidal inundation periods, water depths, and salinity levels and therefore, a variety of habitats. While one of the pannes would be flooded on every high tide (twice per day), the other two would only be flooded on the highest tides. The tidal creeks were built to ensure adequate tidal flow throughout the site.

Workers graded the area surrounding the pannes to create extensive mudflats — excellent feeding habitat for a variety of shorebirds.

In June 1999 as the major features of the restoration were taking shape, we began informal monitoring at the site. We were very pleased to see that egrets, herons, and ducks were utilizing the area. Large schools of fish, often containing several hundred individuals, were swimming in the tidal creeks and in the pannes. The wildlife was returning to the area despite the fact that men and equipment were still working there. It was as if, after decades of inactivity, the site had suddenly come alive!



**Before:** Note the Japanese Knotweed and Common Reed infestations, and the Merrimack River and the north end of Plum Island in the background.



**After:** Note that the knotweed and reed have been removed, fill has been removed, and a salt panne and mud flats have been constructed.

*Both photographs courtesy of Great Meadow Farm (contractor for the restoration)*

We began a formal monitoring program in August 1999. The initial findings were amazing! We observed 44 species of birds feeding and roosting within the area of work. Four additional species were added in September. Three species of fish were caught in monitoring traps in August. Prior to restoration, only a dozen or so bird species, all landbirds, were observed within the area of work. These birds included the Mourning Dove, American Crow, European Starling, Song Sparrow, Red-winged Blackbird, and House Sparrow. No waterfowl, waders, shorebirds, or fish were present.

## Species seen within the restored area:

### Birds

---

Double-crested Cormorant	Semipalmated Sandpiper
American Bittern (September)	Western Sandpiper (September)
Great Blue Heron	Least Sandpiper
Great Egret	White-rumped Sandpiper (September)
Snowy Egret	Short-billed Dowitcher
Green Heron	Long-billed Dowitcher (September)
Black-crowned Night-Heron	Ring-billed Gull
Glossy Ibis	Herring Gull
Canada Goose	Common Tern
Green-winged Teal	Rock Dove
American Black Duck	Mourning Dove
Mallard	Belted Kingfisher
Blue-winged Teal	Tree Swallow
Merlin	American Crow
Peregrine Falcon	American Robin
Black-bellied Plover	Northern Mockingbird
Semipalmated Plover	European Starling
Killdeer	Song Sparrow
Greater Yellowlegs	Bobolink
Lesser Yellowlegs	Red-winged Blackbird
Solitary Sandpiper	Common Grackle
Spotted Sandpiper	House Finch
Marbled Godwit (August 28)	American Goldfinch
Sanderling	House Sparrow

### Fish

---

Striped Killifish	Mummichog
	Threespine Stickleback

We welcome you to visit the Joppa Flats site during your next birding trip to the Newburyport/Plum Island area. We would very much appreciate it if you could provide listings of the wildlife you observe within the restored wetland. Please call 978-462-9998, or send your observations to the Joppa Flats Education Center, PO Box 1558, Newburyport, MA 01950. Also, check out our kiosk for upcoming sanctuary events and information on development efforts for the education center building.

As part of its on-going monitoring efforts and community outreach programs to demonstrate the value of wetlands, Joppa Flats will conduct its "Second Annual Big Sit by the River" on May 6, 2000. During this 24-hour event that starts at 12:01 a.m. on Saturday, we will attempt to observe as many species as possible from within a 25-foot diameter circle overlooking the restoration area. In May 1999, we saw 64 species including a Parasitic Jaeger. So we're a little crazy. We have great fun and would love to see you! See Rob Gough's article, "The First Annual Big Sit By The River: Foggy Flats and a Seabird Surprise," in this issue. ↗

**Bill Gette** is the Sanctuary Director of the Joppa Flats Education Center. He leads adult- and family-oriented natural history adventures to Costa Rica, Kenya, Trinidad and Tobago, Alaska, and many other locations.