LAKES, RIVERS & STREAMS

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The View from Israel. 2003-2004. Schuchat, S., Coastal Conservancy, 1330 Broadway, 11th Fl., Oakland, CA 94612. **California Coast & Ocean** 19(4):35.

In the midst of the second intifada, an ecological restoration project brought together Israeli and Palestinian peoples to heal habitat for rare Nile soft-shell turtles (*Trionyx triunguis*). Only about 100 of the turtles remain in the Alexander River, which flows from the West Bank city of Nablus into Israel, and carries 230 million ft^3 (6.5 million m^3) of sewage per year. Together, local Palestinians and Israelis built the world's largest cattle manure-to-biogas plant, a large settling basin, a constructed wetland, and a restored riparian corridor. According to the author, the key to the project's success was that only local community officials and citizens were involved, rather than the Israeli or Palestinian governments.

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Giving Nature a Second Chance. 2004. Winter, L., U.S. Fish & Wildlife Service, Gulf of Maine Coastal Program, 207/781-8364, lois_winter@fws.gov. **Endangered Species Bulletin** 24(1):12-13.

After three years of negotiation between state, federal, local, and nonprofit organizations, the Sennebec Dam on the St. George's River in Maine was replaced in 2002 by a low, roughened ramp that allows fish passage while maintaining the water level of the upstream pond. The inexpensive ramp is easy to maintain and aesthetically pleasing. Access to upstream portions of the river will benefit commercially and ecologically important alewives (*Alosa pseudoharengus*) and, ultimately, endangered Atlantic salmon (*Salmo salar*).

COASTAL & MARINE COMMUNITIES

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Community-Based Collaboration Restores Tidal Flow to an Island Estuary (Bahamas)

Craig A. Layman, Dept. of Ecology and Evolutionary Biology, Yale University, New Haven, CT 06520-8106, 203/314-4402, cal1634@yahoo.com; D. Albrey Arrington, Perry Institute for Marine Science, 100 N. U.S. Hwy 1, Jupiter, FL 33477; and Margo A. Blackwell, Bahamas Environmental Research Center, The College of The Bahamas, Andros Island, Bahamas

About 60 years ago, local people seeking access to the ocean built a raised limestone footpath across Man-o-War Sound, a relatively small estuary on the east coast of central Andros Island. Unfortunately, the path blocked the majority of water flow from the ocean, creating an isolated wetland system (Figure 1a), and stopping nearly all upstream movement by aquatic organisms. Red mangroves (*Rhizophora mangle*) encroached into tidal channels, thereby slowing water velocities, increasing sediment deposition, and providing additional substrate for mangrove growth. This feedback cycle resulted in significant loss of critical aquatic habitat (Layman and others 2004).

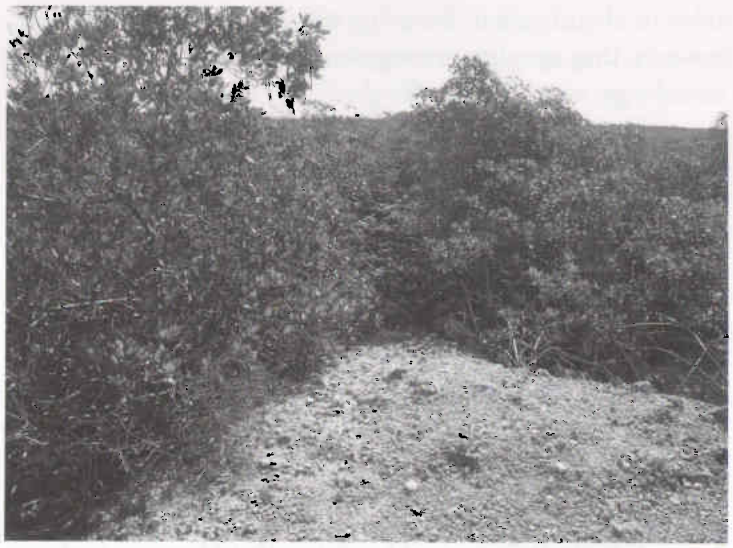

Figure 1a. Before restoration, a limestone footpath in Man-of-War Sound blocked tidal flow, which led to mangrove encroachment and decreased the amount of quality aquatic habitat.

Figure 1b. By removing two sections of the path, the restoration partners restored tidal flow and made upstream habitat accessible to aquatic organisms. *Photos by D. Albrey Arrington*

In May 2004, local community members and representatives from academic institutions in the Bahamas and the United States, with support from the Bahamas Environmental Research Center and The Andros Conservancy and Trust, implemented a project designed to restore tidal flow to the fragmented estuary. Participants removed rocks from the footpath, creating two 6.8-ft (2.1-m) wide corridors for water flow and constructed small wooden bridges to allow pedestrian traffic over the new tidal channels (Figure 1b). Although construction costs were minimal (about $200), tangible ecological changes were immediately apparent. The more natural tidal regime and hydrologic connectivity enabled transient organisms to move into previously isolated upstream habitat. For example, an adult blue crab (*Calli-*

nectes sapidus) moved through one of the new tidal channels and into the previously isolated wetland habitat only minutes after work on the channel was completed.

In August 2004, faunal movement into upstream areas suggested that habitat quality and overall estuarine function were recovering rapidly. We noted seven new species in the previously fragmented portions of the estuary, including Atlantic needlefish (*Strongylura marina*), great barracuda (*Sphyraena barracuda*), checkered puffer (*Sphoeroides testudineus*), horse-eye jack (*Caranx latus*), redfin needlefish (*Strongylura notata*), sergeant major (*Abudefduf saxatilis*), and southern stingray (*Dasyatis americana*). Notably, four of these species feed at a higher trophic level than fishes resident in the previously fragmented system. This reflects a shift in food web structure toward that of unfragmented tidal estuaries, where predatory fishes are common (Layman and others 2003, 2004).

In the fragmented state, two species tolerant of extreme physicochemical conditions—mosquitofish (*Gambusia hubbsi*) and sheepshead minnow (*Cyprinodon variegatus*)—were the numerically dominant species. Our preliminary data indicate that following restoration, mojarra (*Gerres cinereus* and *Eucinostomus* spp.) are now numerically dominant in the open water regions, while the two tolerant species are largely restricted to marginal habitat adjacent to newly inundated areas. We also found that mojarra, snapper, and blue crabs are now characterized by significantly larger individuals, likely due to increases in available habit associated with an increase maximum water depth (to 2.6 ft or 0.8 m from 0.6 ft or 0.2 m) and less extreme temperature fluctuations.

We believe that the Man-o-War Sound project can serve as model for restoring other fragmented Bahamian estuaries, where habitat for Nassau grouper (*Epinephelus striatus*), spiny lobster (*Panulirus argus*), and other socio-economically important species has been critically impaired. In addition, this project will be used to educate students from elementary school to college level. The rapid changes in species composition will be used to demonstrate the short-term benefits of restoration, while monitoring the trajectory of change following restoration will provide a means to train Bahamian students, scientists, and natural resource managers for many years into the future.

Acknowledgments

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Enhancing Sustainable Fisheries. 2004. Anonymous. **Coastal Heritage.** 18(4):12-15.

South Carolina researchers are testing techniques to keep water within aquaculture systems in order to reduce polluted discharge. Promising technologies include partitioned aquaculture systems (PAS), which rely on filter-feeding fish, such as tilapia (*Oreochromis* spp.), to clean water in which Pacific white shrimp (*Penaeus vannamei*) are raised, and recirculating bead filtration. Other fisheries projects include boosting red drum (*Sciaenops ocellatus*) and black sea bass (*Centropristis striata*) populations by spawning adults, releasing offspring, or developing aquaculture protocols.

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Predicting Ocean Conditions through Observations. 2004. Anonymous. **Coastal Heritage.** 18(4):11.

The SouthEast Atlantic Coastal Ocean Observing System (www.seacoos.org), a regional research group, offers meteorological and oceanographic information taken 24 hours per day from instruments just offshore of the southeastern United States. The project benefits shipping, storm preparedness and marine ecosystem management, and is a part of efforts to build a regional, long-term, and integrated approach (including data from satellites, ships, and offshore instrumentation) to data collection and dissemination. Other efforts include a southeastern regional association (www.secoora.org) for coastal-ocean observations.

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Baltic Coastal Wetlands: Back from the Brink? 2004. Joyce, C., University of Brighton, United Kingdom, and N. Burnside. **National Wetlands Newsletter** 26(1):1,12-15.

European wet grasslands are subject to dual ills—either use so intensive that it destroys habitat or no management at all, which allows only a few robust species to succeed. In a project at the West Estonian Archipelago Biosphere Reserve, researchers used field surveys and maps to classify coastal wetlands and to assess the sensitivity of biodiversity to abandonment, to monitor the effects of reinstated management, and to look for trends. Results underscored the value of regular, low-intensity haying or grazing to maintain these open wet grasslands.