

# **underwater naturalist**

Vol. 23, No. 4

## AMERICAN LITTORAL SOCIETY 1997 FIELD TRIP SCHEDULE

This listing of trips was selected from the 1997 Field Trip Schedule and is designed to tempt you into the littoral out-of-doors where you can explore with fellow Littoral Society members under the leadership of experienced naturalists.

### August 26-31

#### ISLE OF SHOALS/COAST OF NEW HAMPSHIRE

Three days at the Shoals Marine Lab on Appledore Island off the coast of New Hampshire. Whales, tide pools, birding, bird banding, boat trips, sunsets and good food.

### September 7-10

#### MAINE AND STRIPERS

Fishing on the beautiful coast of Maine. Fish for stripers from the rocks, surf fish for blues from the beach and throw in day of deep sea fishing for good measure.

### October 3-5

#### MONTAUK SURF FISHING

We take you to the best spots. Two full days in the surf at Montauk fishing for striped bass and bluefish.

### October 23-26

#### 36TH ANNUAL MEETING AT CAPE MAY NJ

Wetlands, stars, birds, whales, dunes, hawks, beaches, hiking, boat rides, slide shows, birding, raw clams, and a Saturday evening seafood bash, in and around Victorian Cape May NJ.

### November 5-9

#### SUWANEE CANOE/CAMP

You'll see crystal clear springs, towering cypress trees, alligators, hawks, owls and armadillo as you paddle this fabled river. Four days of easy paddling and three nights of riverside camping.

### November 6-9

#### ASSATEAGUE FALL WEEKEND

A late fall weekend on the ocean side of the Delmarva coast. Stay on Chincoteague Island and explore the beaches and wetlands of Assateague Island. Waterfowl, shorebirds, peregrine falcons, Sika elk, Delmarva fox squirrel, and the famous Assateague wild ponies. Red fox and river otter may be spotted too. Lots of walking, a special outing to the restricted Wash Flats area, and an "all-you-can-eat" seafood buffet on Saturday night.

### November 8

#### OYSTER/FOSSIL DIVE, CHESAPEAKE BAY

For certified divers, a day of diving near Calvert Cliffs for fossils and oysters. Good diving and a beach cookout too.

Consult your 1997 Field Trip Brochure or write or phone the office at (732) 291-0055 for a full description, summary of the trip, costs and registration deadlines.

#### AMERICAN LITTORAL SOCIETY BOARD OF TRUSTEES

##### OFFICERS

###### *President*

Herbert Trossman

###### *Vice President*

Michael Huber

###### *Secretary*

Dr. George Kowallis

###### *Treasurer*

Sheldon Abrams

##### TRUSTEES

Elias Baltin

William Feinberg

Sarah Chasis

Barbara Greenberg

Maxwell Cohen

Richard Jacks

Angela Cristini

Hannah Johnson

Thomas Dick

Frank Steimle

Cindy Zipf

##### ADVISORY COUNCIL

Margaret Bowen

A.J. Lippson

Dr. Eugenie Clark

Sharon MacLean

John R. Clark

Robert Mallory

Bruce Colette

Larry Ogren

Jack Connolly

Dr. Jack Pearce

John Cronin

Susan Peterson

Richard Ellis

George Reiger

Dr. Paul Godfrey

Paul Shave

Dave Grant

Dr. C. Lavett Smith

Margaret R. Johnston

Lee Ward

John W. Kennedy

Dr. Roberta E. Weisbrod

###### *Executive Director*

Derickson W. Bennett

###### *Counsel*

Gordon N. Litwin

##### DIVERS TECHNICAL ADVISORY COMMITTEE

Dr. Eugenie Clark

Dr. Peter Lynch

John R. Clark

Dr. Joseph MacInnis

Dr. Sylvia Earle

Dee Scarr

Richard Ellis

Stanton Waterman

Robert Wicklund

**Bulletin of the  
American  
Littoral Society**

**Volume 23, Number 4**

	To the Editor . . . . .	2
DON RIEPE	Iceland - Land of the Midnight Sun . . . . .	3
DAVE GRANT	Return of Ulysses . . . . .	8
JAMES DUGGAN	The Townsville Common - An Environmental Wonder . . . . .	.13
	FIELD NOTES	
THOMAS ALLEN STOCK	About Toadfish . . . . .	.17
DAVE BULLOCH	Monarch Butterflies in Peril . . . . .	.18
CAPT. AL ANDERSON	Biological Indicators and Striper Behavior . . .	.19
PETER MARTIN	Two Bar Jacks competing for the Use of a Sting Ray "Beater" . . . . .	.20
DANIEL TARDONA	Behavior of the Mole Crab . . . . .	.21
	TAGGING REPORT . . . . .	.26
	BOOK REVIEWS . . . . .	.29
D.W. BENNETT	THE LAST PAGE . . . . .	.32

**COVER PHOTOGRAPH**

by DON RIEPE

One of the waterfalls of Iceland,  
taken during the Society's field trip  
described in this issue.

**EDITORIAL STAFF**

D.W. Bennett, Editor  
Dennis Reynolds, Copy  
Pam Carlsen, Tagging Editor  
Mary Ann Griesbach, Circulation

Underwater Naturalist is the bulletin of the American Littoral Society, Sandy Hook, Highlands, NJ, 07732, and is mailed to members only as part of their dues. \$15 for students, \$25 for individuals, and \$30 for clubs. Except where otherwise noted, permission is granted to reprint all or part of any article provided the credit is given to "Underwater Naturalist, Bulletin of the American Littoral Society" and to the author. Printed in the United States of America. © American Littoral Society, July, 1997.

Note: Past volumes of Underwater Naturalist and individual articles are available on microfiche from UMI, Ann Arbor, MI 48106.



## To the editor

### More Immigrants

...I enjoyed the article about immigrant species by Robert Bachand in Vol. 23, #2 (and the letter by Phillip Briggs in Vol. 23, #2.)

Members of my Coventry (RI) Middle School Shell Club have been finding *Hemigrapsis sanguineus* for about 3-4 years now: (occasionally) among rocks at Matunuck and Napatree point (near Watch Hill) on our south coast. These were small, about one inch wide. This year we caught dozens—some 3-4 inches wide—at Buttonwoods Point and Oakland Beach, near Greenwich Bay (in Narragansett Bay).

Mark Hall, of BIOMES, (who stocks salt water aquaria for schools and takes classes on field trips), tells me he has seen fewer mud crabs since *H. sanguineus* started to proliferate. He also says these crabs readily reproduce in his tanks.

Cal Wright, a member of the Boston Malacological Club, who works as a docent at Odiorne Point Seacoast Center in Rye, NH, has been tracking the northward migration of the Japanese Crab. So far, he has reports of *H. sanguineus* as far north as the southern end of the Cape Code Canal—but no farther—not even at the northern end of the canal.

—just thought you'd like to know—(I was stung into letter-writing by the comment in Mr. Briggs' letter; "I expect the next record will be from Rhode Island.")

I enjoy your magazine very much. Keep it coming.

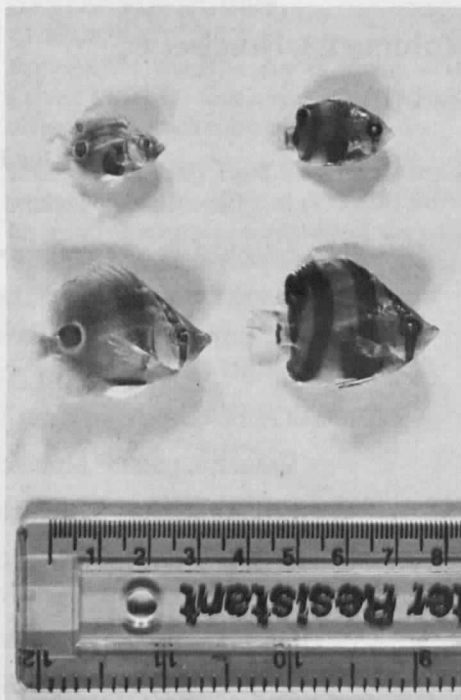
Kay Peterson  
Warwick, R.I.

### Foureye/Banded butterflyfish

...I was pleased to see my article on butterflyfish in the UN (Vol. 23, No. 3), but I was disappointed that you did not print the third photograph I submitted with the Manuscript. I have enclosed that photo again, and hope that you will include it in your next issue. This photograph shows the distinctive pigmentation of foureye butterflyfish (left) and banded butterflyfish (right) at two different sizes (top scale bar in mm). The four specimens are from the academy of Natural Sciences in Philadelphia, and were collected in tropical waters of the western Atlantic. Interested

readers may want to bring both issues to the shore, to help distinguish between the three butterflyfish species reported as occurring north of the Carolinas.

Richard McBride, Ph.D.  
St. Petersburg, FL



### Fine Dining

...Mr. Bennett's culinary suggestions arrived just in time for Thanksgiving. Since we were hosting a brave crew for dinner, we thought we'd dispense with the usual Turkey and stuffing and give the ling recipe a try.

There is one problem Mr. Bennett might address in your next issue. How do you remove Velveeta cheese from wicker?

Diane and Don Nafis  
Laural Springs, NJ 08021

### Overfishing

...Wish you'd show some interest in overfishing.

An interesting question, to me, is what effect depletion has on the eco-system. For instance, when mullet are beaten down, what does that mean for seagrasses? I suspect it is negative to nutrient cycling, light, etc.

Karl Wickstrom  
Publisher  
Florida Sportsman Magazine  
Miami, FLA

# Iceland - Land of the Midnight Sun

by DON RIEPE



Despite its name, only 11% Iceland is covered by glaciers, and winter is harsh in only the remote interior. For lovers of rugged landscapes, fjords, glaciers, waterfalls, and mutton, Iceland is the place to visit. Almost everyone speaks English, it's not crowded or polluted, there's little traffic or crime, it's clean, the water is potable and the ban on beer was lifted in 1989. All this and it's only a five hour flight from New York. About 60% of Iceland's 260,000 inhabitants live in Reykjavik and nearby surrounding towns. The other 40% are situated in small towns that ring the coast - the rest is wilderness.

Last year, the Society ventured out on its first trip to this starkly beautiful country, starting from Reykjavik's air-  
*Don Riepe directs the Society's New York Chapter and leads field trips near and far. Several years ago, he edited the special UNDERWATER NATURALIST edition on coastal birds. All photos by the author.*

port, about 40 minutes outside the city in an eerie environment of lichen-encrusted lava fields. One's first impression is that you are in a very different place. We heard a beautiful bird song which turned out to be a snow bunting. With little formality and less paperwork, we picked up two 12-passenger vans and set out across the moonscape.

The next morning the group arrived (late and bedraggled), and we brought them to the Hotel Esja in Reykjavik to get settled and to take a nap. Reykjavik ("Smoky Bay") is a small, modern city with interesting sights, museums, shops, etc. and a 20 acre pond that has many species of waterfowl including common eider, tufted duck, greyleg goose, arctic scap, whooper swan, and (of course) a sufficient number of mallard ducks to make one feel right at home. The graceful swans were revered by early Icelandic Vikings and believed to have supernatural powers.

The pond is a great place to get good photos as the birds are fairly tame and you have about 20 hours daylight at this time of year.

After touring the city and spending a few thousand dollars on Icelandic sweaters, the group headed for the Blue Lagoon, a geothermally heated pond just outside the city. Although we generally try to avoid such tourist "hot spots"(pun intended), everyone found it to be thoroughly relaxing and refreshing, and were cured of "zits" and all other ailments. Afterward, we visited an arctic tern colony, one of many that occur along roadsides, and stopped for a photo op. We didn't stay long as these little dive bombers kept us from intruding on their nesting turf by incessant aerial attacks and "scatfire"(a word exclusively coined for this article).

The next morning, after a breakfast of cornflakes(apparently the national cereal), cold cuts, and skiar(an unsweetened, thick yogurt that I actually grew to enjoy), we set out for Thingvellir National Park, a vast plain of lava en-

circled by mountains. Here we hiked along a tectonic rift between the North American and European plates. Straddling this Mid-Atlantic ridge, Iceland is literally being torn apart at a rate of 2cm(nearly an inch) a year. This area was the site of Iceland's Parliament for about nine centuries. Other attractions(which we would like to visit in 1997) include the Geysir geothermal field and the Gullfoss waterfalls.

That night we stayed in Farmhouse #260(Gardar) on the Snaefellsnes peninsula. After a home cooked dinner of plaice(flounder) and potatoes, we hiked along the coast and roadside, kicking up numerous nesting birds on our way. The most common were snipe and redshank but bar-tailed godwit, whimbrel, and gadwall duck were also encountered. The snipe make a wonderful flute-like call that seems to come from the grassy fields nearby. Actually, these aerial ventriloquist are overhead. In the distance, beyond the fields of flowers, we could see the huge glacier at the tip of the peninsula.



*A family of common eider ducks.*



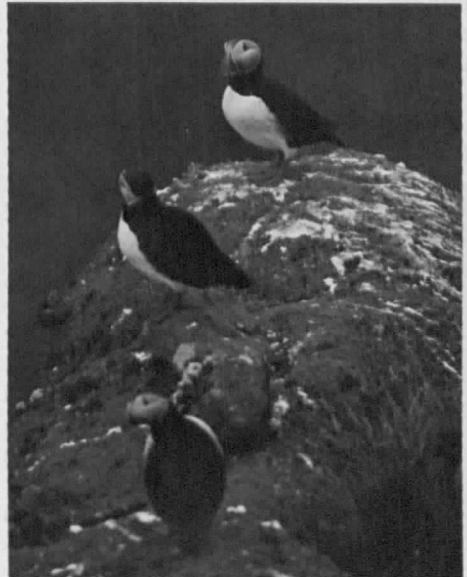
The next day we drove to the nearby bird cliffs where we saw our first puffin along with numerous kittiwakes and fulmars. The rocky shoreline was covered with a rockweed(fucus?) and the sea had carved huge arches in offshore rocks. It was a bit chilly(50 F.) but comfortable for hiking. Warm air coming up from the Gulf Stream collides with cool air coming down from the Arctic, making for constantly changeable weather. The Icelanders say that they have no real weather - just samples. It may change in five minutes and you can experience all seasons in one day. Actually, we found it fairly comfortable - never too hot or too cold.

In the morning we departed by ferry for Breidavik and the world's largest seabird colony at Latrabjarg. Along the route we glimpsed the fabled white-tailed eagle flying in the distance. The ferry made a brief stop at a small island named Flatey. In the harbor we saw a number of shag(a small cormorant) and a drake king eider that flew by the boat. The drive to the farmhouse took us over a spectacular mountain pass and along a white sandy beach with aquamarine

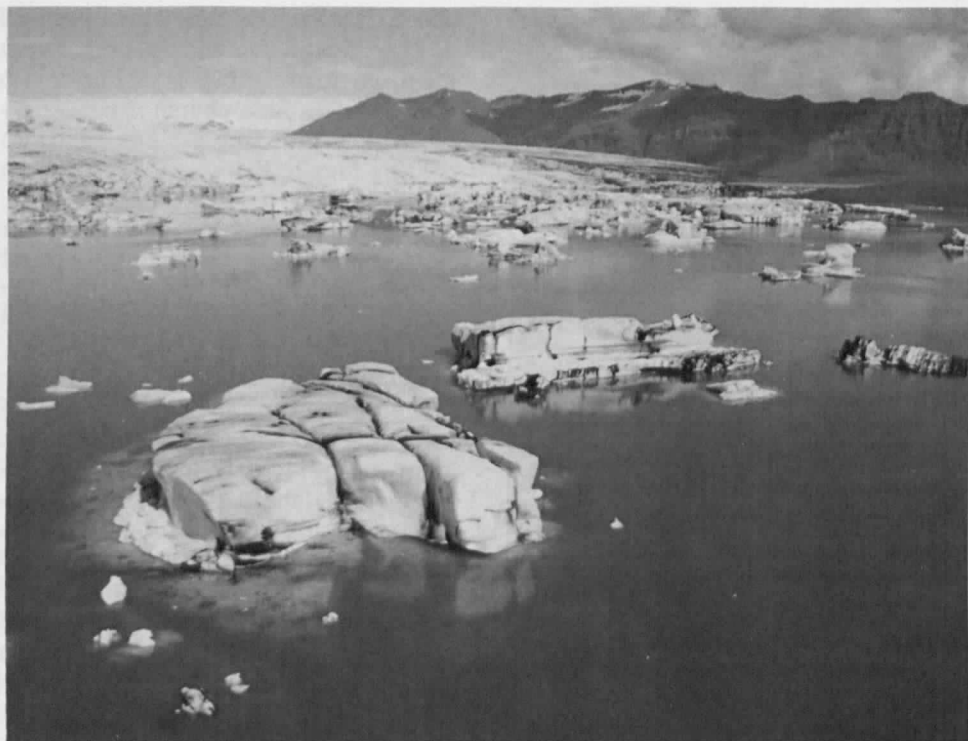
water. The town of Breidavik consisted of about three houses and a church. Every town, no matter how small, seems to have a quaint little church. I never saw any of the local folk use one however; perhaps they're there so the tourist can pray for paved roads ahead.

The cliff at Latrabjarg averages about 300 feet in height and meanders for about eight kilometers. Here we were treated to puffins galore(many thousands) as well as greater numbers of murres, both common and thick-billed. Also nesting were fulmars, black-legged kittiwakes, and razorbills. It is a phenomenal place, full of noise and activity, with birds at all levels, including offshore rafts. I felt as if I was in a diorama at the American Museum of Natural History. What I liked most was that there were few people and no signs, roped off areas, safety hazard areas, park rangers, fees, or concession stands. You can risk your life anywhere in the country and not be hassled by a litigious public.

Next we headed inland to Lake Myvatn and a farmhouse at Narfastadir. It was a long drive around a series of fjords and short-cuts over mountains. Along the way each day we'd stop for a



*Atlantic puffins.*



*Why they call it Iceland.*

picnic lunch at a scenic spot. The problem was finding the right scenic spot as they were ubiquitous and better ones were just down the road from where we stopped. Myvatn has Europe's largest concentration of breeding waterfowl. (Yes, Iceland is considered part of Europe and its inhabitants are among the most literate and long-lived in the world.)

Driving by the swift-moving Laxa River, we saw a family of harlequin ducks. The ducklings are spotted and look like bobbing ladybird beetles forging through the torrents. When alarmed, they skitter over the surface with amazing speed. The most common bird on the lake is the tufted duck, followed by arctic scap and Barrow's goldeneye. Myvatn is Icelandic for "Midge Lake" and here we encountered our first insect - droves of 'em. They didn't bite but were in your face constantly, Some of the group bought headnets, the rest of the group wished we had. The farmhouse owner told us about a gyrfalcon nesting nearby,

but you'd have to bushwhack through hordes of myvatn to get there. Three members of the group paid the price and won the prize.

Lake Myvatn is 14 square miles and relatively shallow(10 - 40 feet) and fed by underground hot springs. In winter it never completely freezes thanks to this input of warm water from adjacent volcanic areas. In fact, this area is one the most active volcanic regions on earth. We climbed to the top of a nearby cindercone that was used by U. S. astronauts to prepare them for landing on the moon. Inside the crater we saw our first graffiti - actually names written with colored stone placed on the black lava background.

A short drive brought us to another volcanic area. Here the air reeked of rotten eggs from steaming sulfurous pots of bubbling mud and open fissures in the earth. The landscape was painted with splotches of ochre and varying shades of brown. We hiked to the top of a small



mountain along a narrow path. The sweeping view and painted rocks were worth the anxiety.

Aside from the bizarre volcanic formations, Lake Myvatn also has some forested promontories along its shoreline. Hofdi is a preserve where paths run through a forest of diminutive birch and end at rocky outcrops above the lake. Here we searched for the elusive Icelandic wren, but to no avail.



*Thick billed murrelets.*

Our next sojourn was to cross the vast expanse of barren desert landscape along the northeast section of the ring road. Here we took a 20km detour to visit the mighty Dettifoss, Europe's largest waterfall. Again, there were no constraints like boardwalks or railings; you can walk to the edge of this powerful falls. Nothing is installed to detract from its natural splendor. During our visit we saw a beautiful rainbow - one of 11 that we saw on that day alone. Heading south we drove around many scenic fjords and here the landscape was green and covered with flowers.

The southern coast passes by the Vatnajökull, a huge ice cap that is up to 3,200 feet thick and 3,200 square miles in area (bigger than all the other ice caps in Europe put together). We crossed a vast black lava glacial runoff plain by a series of wooden bridges - all of which were obliterated a few months later by an eruption of the volcano beneath the great ice cap that sent a huge slug of water (about

two kilometers cubed) and bits of glacial ice across this outwash plain.

During the trip around Iceland we saw about 300 waterfalls (slight exaggeration), but my favorite was the Svartifoss in Skaftafell National Park (see cover photo). This waterfall is flanked by basaltic columns which give it a huge pipe organ effect. The area is dotted with wildflowers.

The last stop before heading back to Reykjavik was in the town of Vik. Vik means bay and here we hiked along a dramatic black sand beach before returning to a wonderful meal of braised lamb. That night a few of us drove to the top of Dyrholaey, a huge rock arch the juts out from the shoreline and is home to a colony of puffins. On the way, we photographed some whimbrel sandpipers and their young. It was 10:00 pm and the light was just right for photography. At the top of Dyrholaey is an old lighthouse and a view of the black sand beach below that stretched onward for about eight kilometers with only a speckling of white dots (drake eiders) to break up the pattern.

Our last day was spent in a frenzy of last minute shopping for more sweaters, ceramics, T-shirts, and posters and another visit to the pond for more photos of kids feeding the baby eiders. I saw a restaurant that advertised "breast of puffin" for lunch and was tempted to try it. Maybe next time... □



*The Blue Lagoon,  
a geothermally heated pond*

# The Return of Ulysses

by DAVE GRANT

“There was a panic in the parlor and a howling in the hall,  
There was crying in the cow-shed and shrieking in the stall,  
When the Toad came home.”

*The Wind in the Willows (Grahame)*

On a warm July evening in 1992, I was driving out to Sandy Hook to meet a class for an evening field trip of seining and beach combing when I experienced one of those curious events in one's life. Preoccupied with the heat, humidity, worries about finding the time to replace the bald front tires on my car, and concern about how I was going to entertain thirty students if the approaching thunderstorm lingered overhead, I swerved too late to miss a gray rock in the road. An ominous “pop” caused me to stop and check my tires and to my delight it was not what I had feared. However, I was dismayed to discover I'd just waffled a toad that, not understanding that fundamental rule of physics - The Law of Overwhelming Mass - had puffed itself up with air for defense as my car approached it. This is a great tactic against hungry snakes that must swallow their prey whole, but it is not at all effective against automobiles.

I thought this incident ironic because this was one of “our” toads, one that had been reintroduced to Sandy Hook. I might have been more moved by this small tragedy had I not soon observed several other toads in the road ahead. Reasoning that this was probably an acceptable loss to the population (In military jargon that's when the other guy gets killed.), I raced ahead of the storm to meet my class.

*David Grant directs Brookdale Community College's Ocean Institute on Sandy Hook and serves as the Society's chief naturalist, equally at home on sea or land, or, for that matter, in the air.*

Toads are not unusual on barrier beaches, in fact, the Fowler's toad I had inadvertently merged with the macadam is the amphibian you are most likely to discover in your daytime ramblings along the coast. However, it was always a bit surprising to me that until ten years ago they were not present on Sandy Hook.

The Fowler's toad is named after an early Massachusetts naturalist and is oftentimes described as being “extremely abundant” in sandy locations along the Atlantic Coastal Plain from Massachusetts to Texas. Adults tend to be nocturnal but congregate under outside lighting to catch insects; this fatal attraction to the streetlights around Fort Hancock is what determined the fate of the toad I encountered. Juvenals are more likely to be seen during the day, but their gray to reddish coloration tends to work so well as camouflage that, like other sand dwellers, they are essentially invisible until they move.

Even if you can't find one during the day, a reliable indication of the toad's presence is its voice at night. The toad's breeding season extends late into summer; it tips itself off with its unmusical, nasal “w-a-a-h” near ponds and vernal pools of shallow water, on barrier beaches and sandy inland locations. Fowler's toads are so ubiquitous in some coastal areas that they are even reported to lay their eggs in brackish water, although there's no reason to think any of their tadpoles survive the osmotic onslaught of even a small dose of salt water.

Although secretive, like most of its tribe, Fowler's toads can appear suddenly and in large numbers after rain showers stimulate them to leave the shelter of moist sand and piles of driftwood. The toad's mysterious appearance with rain has added to a wealth of English folk

beliefs about its powers, and these harmless creatures were thought to bring both good and bad luck during colonial times. Warts notwithstanding, toads were said to poison both cattle and people. But as Shakespeare wrote, they were also capable of detecting poison for the prudent carrier of the toadstone, a jewel believed to form in the toad's head...

"Sweet are the uses of adversity  
Which, like the toad, ugly and venomous  
Wears a precious jewel on his head."

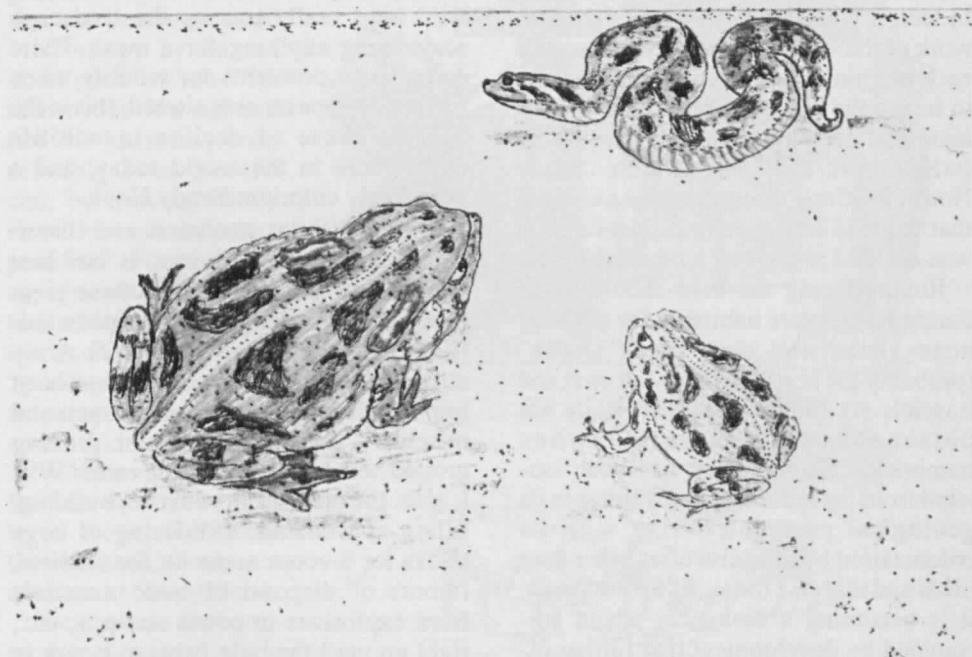
...Killing one would surely bring a shower - good luck for a farmer, I suppose; bad luck for me and my class. And, of course, bad luck for the toad who was patiently waiting under the streetlight for a meal.

Curiously, charms made from the blood and bones of a toad were once thought to give the bearer power over horses (and pigs), and when prepared

ceremoniously, instilled the strength to meet and fight with the devil at night in the stable, as Grahame alludes to in Toad's last little song in *The Wind in the Willows*. (See Above)

Well, if the toad is so powerful and ubiquitous, why was it absent from Sandy Hook until the mid-1980's?

A casual inquiry by the National Park Service's resource biologist Bob Cook, about the presence or absence of reptiles and amphibians at Sandy Hook rekindled our discussions on the possibility of introducing the little toad here. It seemed logical that toads should be here since they are fairly common in sandy locations on the mainland and several of the employees here had discussed a transplant, but we didn't want to risk introducing something that shouldn't be here in the first place. Especially in these days of diminishing habitats, introduced plants and animals can become serious



*Fowler's toads and hognose snake. Illustration by D. Grant.*

pests if there is a niche available to them and no natural control over their population growth.

We did a little forensic ecology and recalled a passage from a locally reprinted article entitled *Sandy Hook* - in 1879 by George Houghton. Midway through his discussion of the squatters on Sandy Hook, their unrestrained hogs, their hen-coops and cow-sheds; he mentions with regret, that the place is an insect paradise for mosquitoes and is inhabited by "sand adders...quite partial to the Hook...that during the past few years they have increased in proportion to the decrease in hogs, whose fondness for them proves more fatal than man's hatred. Black snakes are also occasionally seen, much to the terror of the cattle."

Now, you are probably saying to yourself "I thought this was about toads," and indeed it is. Ask any snake aficionado and you'll learn that hognose snakes (or sand adders, puffing adders, and hissing sand snakes as they have been called) are especially fond of toads, perhaps more dependent on them than any other prey. In fact, if you correctly interpret the network of tracks that are present in the sand each morning, the presence of one seems to insure the other is a resident too. This historical account of the hognose snake (which was also absent from Sandy Hook) is strong circumstantial evidence that the toad was once in residence, so it was decided to attempt a reintroduction.

Reintroducing the toad should make Sandy Hook more habitable for the hognose snake and the "black snake" (probably the northern racer - an alert and irascible six-foot serpent that, while not poisonous, bites severely when cornered.) Sandy Hook has been isolated from the mainland many times in its geological past, interfering with its colonization by land creatures other than birds and insects. Today, like most parks, it is becoming a biological island surrounded by development that further inhibits the natural movement of wildlife. As the rest of the coastal area is

developed, the peninsula is rapidly becoming a final outpost for wildlife, justifying the reintroduction of beleaguered species and preservation of remaining habitat.

What happened to the toads and snakes in the first place? We may never be sure, but animals disappear from an area for several reasons. They may be forced out by other creatures that compete for resources — one obvious concern when introducing new or non-native species anywhere. That seems unlikely for the toad, hognose, and black snake because there don't seem to be any replacements here today filling their niches. Or they might be hunted to extinction by predators or humans, which is a possibility for a conspicuous or unappreciated creature like a snake living in an already stressed environment like the barrier beach. Houghton's mention of unrestrained hogs and people may be significant. A Florida "cracker" I know, kills every snake he sees and calls them all "rattlers." He used to tell me, "A pig will eat anything that doesn't eat it first," and wild hogs really tear up the landscape scavenging anything for a meal. There can also be problems for wildlife when habitat disappears or is altered; this is the biggest cause of decline in wildlife everywhere in the world today, and a very likely culprit at Sandy Hook.

I think habitat alteration and disturbance by human activities is our best guess as to what wiped out these creatures. There is a long history of potentially disruptive activities by the U.S. Army during its tenure here, and they have been implicated in all sorts of environmental mischief. There was a major proving ground here for guns until the end of WW I; also, the testing of ordnance, building, filling of wetlands, bulldozing of large tracks for bivouac areas for the soldiers, rumors of disposal of toxic materials from explosives in ponds and pits, etc., right up until the base became a park in the 1970's. But my pet theory is that the prime suspect is mosquito control.

As an army brat in the 1950's, I can remember getting yelled at for running behind the "fog trucks" that cruised Ft. Hancock, undoubtedly spraying DDT to control the mosquitoes. I also recall seeing planes spraying the woods on at least one occasion and suspect the Army was knowledgeable enough about the mosquitoes' life cycle that it was also draining, spraying or oiling the fresh-water wetlands to kill their larvae. Such activities could have had a serious impact on much of the Hook's wildlife, especially the water dependent toads. Snakes like the hognose, already weakened by human and porcine persecution, might disappear with their food source.

Moving animals around is not a casual endeavor, even if the candidate is a harmless toad and the intentions are good. Collecting permits must be secured from the state, justifications written, and most importantly, possible impacts must be reviewed. It was decided that the Fowler's toad was probably a past resident that had been extirpated — perhaps by human activities — and its reintroduction should not be harmful, conceivably even beneficial, by making Sandy Hook less of an "insect paradise". For example, an agricultural publication of the 1950's touts the toad for having a "prodigious appetite" for crop-destroying insects, and being worth \$20. apiece to lucky farmers who share land with them. Certainly there is room for such a creature at Sandy Hook.

Well, where does one recruit colonists? It is only logical to use local animals as a source to

restore a population, since they are already adapted to the rigors of a particular place and climate. Volunteers and park staff helped recruit specimens of all ages from two coastal locations with viable populations — Highlands and Island Beach State Park. Murray's Pond is located in an odd little mainland dune field in Highlands that is the last undeveloped parcel along the waterfront (and perpetually, it seems, on the verge of being

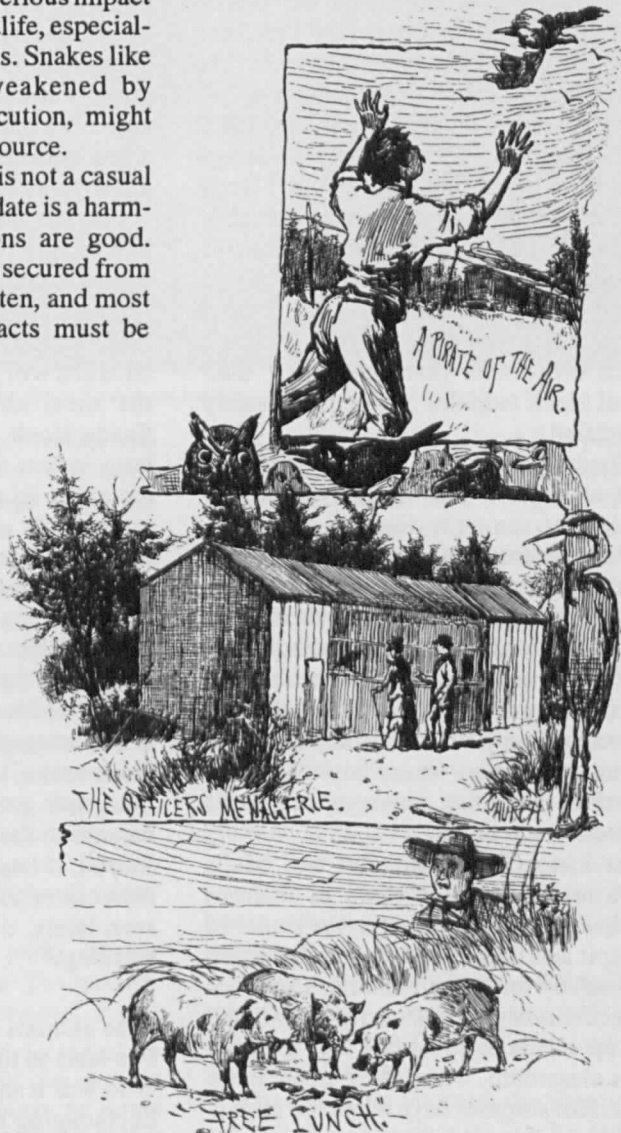


Illustration from "Sanday Hook - 1879" by George Houghton.

developed.) Island Beach is much more secure, since it is the premiere barrier beach park for the State of New Jersey.

For three summers, dozens of adult and immature toads, along with scores of tadpoles, were collected at both sites and released at the freshwater ponds at the center of Sandy Hook. How do you know you're collecting the right toads, since there are several species in our area? Fowler's toads are identified by several physical features, habitat, and the time of year they appear and begin their distinctive breeding chorus. The frogs and toads in our region follow a consistent order of appearance and singing that is correlated with the rising temperature in spring. Heralded by spring peepers in March (another amphibian that would probably thrive here), the Fowler's toad is preceded in order by: leopard frogs, wood frogs, American toads, pickerel frogs and green frogs. Since Fowler's toads breed later than the others, their small black tadpoles can be more easily identified.

Toads will spawn in a variety of places, and elsewhere I've found temporary pools that are quite literally swarming with tadpoles that are racing the approaching dry weather to develop legs and escape the confines of their nursery before it dries up. Too often the hot summer sun prevails and hundreds will shrivel up in a day, leaving behind a depression with an inconspicuous layer of little mummies where hours before a blissful, writhing mass of creatures thrived.

At Sandy Hook, tadpoles and adults were released near a chain of shallow, freshwater ponds that are at the center of the spit and dominated (before the toads arrived) by turtles and insects. The toads have obviously thrived and are now turning up all over, including our ground-floor classroom, where they create quite a stir. Hot summer days when the park is overpacked with people notwithstand-

ing, the toads may soon be the most abundant land vertebrate here.

I've done a rough survey of the toad population by counting toads per mile as I avoid them on my drive home from work at night and as I walk around Sandy Hook during the day. There are about 5 adult and juvenal toads per acre hopping around the 1037 acres of dunes, fields and thickets that are suitable habitat; something like 5000+ toads; up from a population of zero a few years ago. While I'm not ready to declare them a plague of Biblical proportions, they are now "extremely abundant" and there is no end in sight. Not bad results for moving around a few buckets full of toads and tadpoles a few years back.

For the time being, car drivers may unwittingly be the toads' chief enemy at Sandy Hook. Except when large numbers of hawks migrate through in the spring, there is little toad predation here, but this situation will probably change. Currently the most abundant snake species at Sandy Hook is the brown snake, a foot long worm-and-spider gourmand that naturalist Paul Howes describes as "the most docile snake in the world" — certainly neither of the "serpents" that Houghton describes in Sandy Hook in 1879. But it seems logical that now that the toad has come home, it is time to reestablish its old nemesis the hognose snake (which the National Parks System is now attempting) and perhaps even the black snake, to end the halcyon days for this gentle amphibian by restoring a little balance to the natural world at the shore. Indeed, if I am correctly interpreting the network of tracks in the sand that we've seen lately, the restorations seem to be working.

"The animals sat in the Ark and cried,  
The tears in torrents flowed  
Who was it said, 'there's land ahead'?  
Encouraging Mr. Toad!" □

# The Townsville Town Common — An Environmental Wonder

by JAMES DUGGAN



*View from the Town Common looking toward the coastline.*

Australia is a continent of wonder and contrast, with a wide variety of habitats and landforms. These range from the countryside of the Bungle Bungles in Western Australia, to the vast deserts of Central Australia, to the lush tropical rain forests of North Queensland.

Approximately 125 miles south of Bartle Frere (Queensland's highest mountain) in Queensland's tropical north, is located the second largest city in Queensland—Townsville. Townsville is well known for its military base, the largest living coral aquarium in the world, the scenic landscape of Castle Rock and, of course, its sunny and warm year round climate.

One of many notable parks of the Townsville region is the Townsville Town Common Environmental Park.

*Jim Duggan is the Society's official chronicler of Australian littoral wildlife; his instructions: send us notes about things we would want to see if we get down under. All photos by the author.*

What is so incredible about this park is its close proximity to Townsville and the fact that it contains such a large diversity and abundance of flora and fauna throughout its many habitats. For instance, over 240 bird species have been identified in the park with many migrants visiting throughout the year.

The area in and around the park is a remnant of the once extensive Bohle River Basin. The park encompasses some 8000 acres of varied habitats including mangroves, salt flats, swamps, grasslands and closed and open forests.

The Town Common, as it is locally referred to, includes about six walking tracks, which pass through several of the habitats.

A friend and I have been walking these tracks for over a year. Our last walk was during the very dry and hot summer season of January.

After entering the park, the first walking track, The Forest Track, led us through an open eucalypt forest with



Swamp harrier.

other native trees and wildflowers. The puncture vine (*Tribulus cistoides*) was in full display, showing its bright yellow flowers amongst the green foliage and brown soil. There were two species of *Hybanthus*, commonly known as spade flower, identified along the edges of the trail, with either lavender or orange petals. As we continued along early that Saturday morning, several agile wallabies (*Macropus agilis*) were seen browsing on grass in the marshy areas, taking advantage of the cooler temperatures before they rise to around 96°F later in the day. As we continued along this track, we eventually entered open grasslands where various raptors such as

the wedge-tailed eagle, were seen riding the early morning thermals. In the bushes and shrubs, irregular shaped nests made out of leaves warned us of the green ant, which, if disturbed, were quite aggressive.

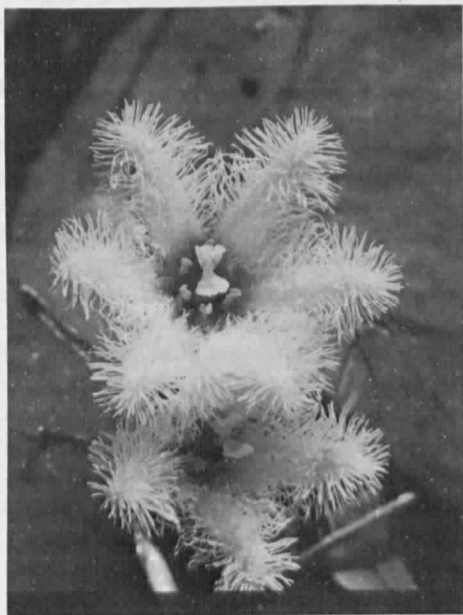
On returning to the car park, a large brownish bird with a dark head and a long tail flew low to the ground across the trail in front of us. This was a pheasant coucal (*Centropus phasianinus*), which is quite common in the park. One interesting note is that this bird's chicks have a strange, long white, hairlike covering at first, derived from extensions of the horny sheaths which cover the developing chick's feathers.

The next trail began about 500 yards down the road, where a sign indicated the direction to the Borrow Pits. Most of this walk traversed grassland and bordered on the north and eastern sides of Garbutt Airport. The Borrow Pits were created when earth was removed to build an extension to the present day airport and since then, these deep fresh-water ponds have become a refuge for waterfowl and other birds throughout the year. During the wet season (December through April), flocks of magpie geese (*Anseranas semipalmata*), large egrets (*Egretta alba*), white ibis (*Threskiornis*



White ibis.





*Water snowflake.*

*molucca*), straw-necked ibis (*Threskiornis spinicollis*) and royal spoonbills (*Platalea regia*) were a few species seen feeding and foraging in and around the margins of these ponds. During this trip, the water level was lower than usual, however many of the bird species were still feeding along the shores. These ponds also contain several water plants which are easily identified. The water snowflake (*Nymphoides indica*), which has delicately fringed white petals, grows along the shore of these ponds and is an important food item for birds, cattle and pigs. Another Australian native which was easily recognized was the blue water lily (*Nymphaea gigantea*), with beautiful pale blue flowers held well above the water's surface.

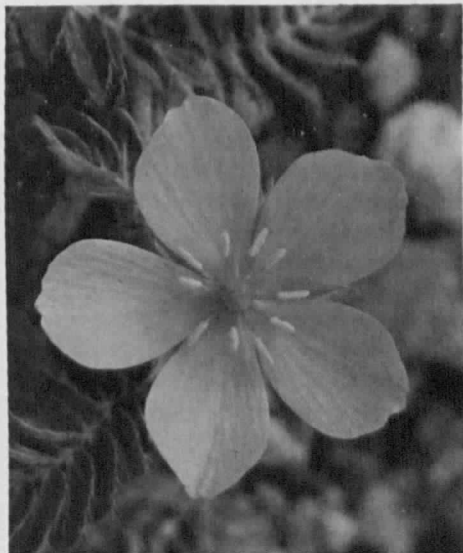
Returning to the car park, a swamp harrier was spotted in a eucalypt tree, above the surrounding swampy grasslands. This bird is one of many birds of prey in the park. Alongside the walking track, just before the car park, were many beautiful wild passion fruit (*Pasiflora foetida*) flowers, with bees and other insects attracted to their intricate white and lavender flowers. This scram-

bling vine is edible and closely related to the common passion fruit.

Driving along the Freshwater Lagoon Road, we passed Long Swamp on the left where Brolga's or Australian cranes (*Grus rubicundus*) were seen and easily distinguished by their grey colour and a pale-red area around the back of the head. These tall birds frequent the shallow swamps and flood plains in pairs or small groups, feeding among the grasses.

As we continued our drive, we saw a large lizard laying in the road which turned out to be a goanna or monitor lizard which quickly scurried into the bush as we approached. Another large bird crossed the road ahead of us and was easily identified as an Australian bustard (*Ardeotis australis*), by its slow walk and proudly raised head. The male of the species has a distinctive display during the mating season, where he clears a small display-ground or "lek" and extends his white breast-sac to the ground; fanning his tail over his back. When a female approaches, he steps from side to side so this pendulous breast-sac swings and twists and at the same time he balloons his throat, creating a roaring sound.

Approximately, 2 miles ahead, the road forked, with the right fork looping



*Puncture vine.*

to another bird hide near Freshwater Lagoon and the left took us along The Causeway which ended at a car park near the Many Peaks Mountain Range. From here, there were several walks available. We elected to try the 5 mile return walk to Shelley Beach, which traversed many habitats, including mangroves, salt pans, grasslands and open forests. At the beginning of this track, was the mangrove area. Many species of mangroves were seen including the yellow mangrove (*Ceriops tagal*) and eucalypt mangrove (*Avicennia eucalyptifolia*). In these mangrove species as in others, their mud-laden roots are so deprived of oxygen that they have evolved pneumatophores, which are erect roots projecting up to 12 miles above the mud. On the surface of these pneumatophores are lenticels, which prevent entry of water but allow air to flow into them and provide aeration for the root systems. Many fiddler crabs, with their orange claws, were seen scurrying along the mangrove forest floor, as they cleared out their burrows and fed upon algae and detritus. There was also a warning sign here stating that estuarine crocodiles inhabit these waters and to use appropriate caution.

The next area was that of the salt or mud flats. This area was virtually devoid of plant life except for various species of samphire or glasswort. These succulent herbs have no leaves and can tolerate

fairly high levels of salt, while most other plants including mangroves cannot.

This track was over level ground as it entered an open forested area, where sulphur-crested cockatoos (*Cacatua galerita*) and rainbow bee-eaters (*Merops ornatus*) were spotted in the branches. The track continued on and passed the end of an estuarine creek, where several water birds were seen feeding. Among them were black-winged stilts (*Himantopus himantopus*) and greenshank (*Tringa nebularia*). The greenshank is a common migrant from its northern hemisphere breeding grounds in Scotland and northeast Siberia. The track continued through wooded forest and eventually brought us into view of the Palm Island Group and Magnetic Island.

This park has much to offer the amateur naturalist as well as the tourist and resident. To have such a variety and concentration of so many different plants and animals in a small area so close to a major city is truly a wonder! Thanks to the Townsville City Council and the Queensland National Parks and Wildlife Service, such an area is now protected. Remember, to wear a hat, sunscreen and mosquito repellent and to bring water on the longer walks. There are guided walks on the first Sunday of every month and further information can be obtained from the QNPWS Great Barrier Reef Wonderland office in Townsville. □



*Magpie geese in the Borrow Pits.*



# About Toadfish

by THOMAS ALLEN STOCK

They are ugly. Some books say, "Economic importance - none." When caught on hook and line, anglers invariably cut the line. With such a gaping mouth, these fish are apt to swallow the hook. This is the oyster toadfish, a shallow saltwater species that is as fascinating as it is strange.

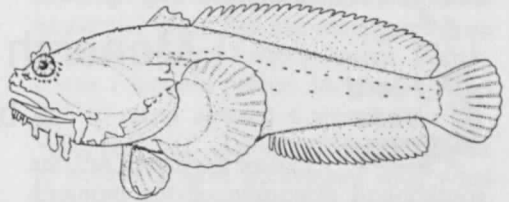
That big mouth comes in handy. It is not a fast swimmer. For that matter it doesn't swim very often. It prefers to lie in waiting. Looking the color of mud, it has various fleshy projections on its face for camouflage.

The toadfish uses ambush as its feeding technique. Let's suppose an unsuspecting killifish swims by. The toadfish waits; then at just the right moment, lunges forward suddenly opening its mouth. This creates a suction that instantly inhales the killifish. I've seen this happen in an aquarium. One day we added the contents of our seine net to an aquarium at Smith's Point on Fire Island — pipefish, silversides, shrimp, and one ornery three inch-long toadfish. In less than an hour the toadfish was the only occupant.

Toadfish have no scales. Their skin is covered with a thick coat of mucous, making them very difficult to hold. They are not exactly huggable with spines that project from the caudal fins beneath the gills.

Their fin structure is also interesting. Being a bottom fish, their anal fin is found under the gill cover. This gives the fish extra force when lunging forward to attack.

The males are territorial and protect the eggs, which are sticky and adhere to surfaces such as the insides of tin cans, rocks, old shoes, bottles or whatever else



is available. I found it amazing that the males will remain with the nest even if an exceptional low tide exposes them. Toadfish have an adaptation in their gills that allows them to do this. They have one-fifth the respiratory surface compared to ordinary fish. Therefore they need that much less oxygen. Wallowing in the mud and staying still also helps to curtail the use of oxygen. Thus they can survive this temporary dry spell.

Another interesting thing is the ability to produce grunting sounds. This may help it defend its territory. Some books call it "pugnacious." I agree.

It's easy by looking at them to understand why the common name is toadfish. They do eat young oysters, thus oyster toadfish. They also scrape vegetation and small invertebrates off bigger oysters. Their scientific name is *Opsanus tau*. They are closely related to an even uglier fish, the goosefish, with a mouth as wide as the length of its body.

They live in shallow water estuaries like the Great South or Jamaica Bay. Not many fisherman I talked to could say one way or another if they are edible. Some texts say "not edible." However, Phillip Briggs, of the New York State DEC in Suffolk County said "Great eating!"

The New York Aquarium at Coney Island has two large oyster toadfish on display. Somehow, I'm drawn to those creatures in nature that would not win a

*Thomas Stock is from Smithtown, N.Y. He last wrote for this journal in Vol. 22, No. 3 about jingle shells on Long Island beaches.*

beauty contest. Ever since my father caught one in Shinnecock Bay and didn't know what it was, I embarked on a quest to know as much as I could find about this animal. When I heard a visitor call them hackleheads, it wasn't until the next time I saw one that understood why this com-

mon and local name is descriptive as well. One other local common name is the dowdy. This is a term for someone who dresses rather shabbily. Other local names are oyster cracker and Sally growler. In the case of the oyster toadfish, it's ugliness is it's key to survival. □



## Monarch Butterflies in Peril

by DAVE BULLOCH

One of the joys of fall, the southbound migration of the monarch butterfly, may be in deep trouble. On their long trek from Canada, Maine, and the Great Lakes down the eastern seaboard, these small, stalwart flyers make their way to their winter lodgings in central Mexico.

Sometime in mid-October thousands stop off at Sandy Hook, New Jersey, to rest and refuel on seaside goldenrod before moving on. The best time to see them is when the goldenrod is at its gaudiest, brilliant yellow. Pick a clear crisp day or two following a few days of stormy weather. They will have just

*Dave Bulloch is a longtime ALS member, once its president, and for many years director of its southeastern office (headquartered in Sarasota, FL). His last major piece for this magazine dealt with Bermuda.*

crossed either Raritan Bay or Lower Bay and are exhausted from the long flight over open water. The best place to see them is easy to find. Look for stands of goldenrod that inhabit the swales behind the big dunes closest to the shoreline.

The winter of '95-'96 was tough on them. A severe snowstorm and freeze may have killed as many as 35 percent of those nestled in the fir trees where they winter in mountainous regions west of Mexico City. That, on top of a chilly spring, and a dry, hot summer in '95 has severely thinned their ranks.

They normally bounce back from losses like that. A staggering 80 percent died in a snowstorm in the mountains in the winter of '92. What may really do them in is the constant thinning of their winter forests leaving them more vulnerable to the elements. □



*Monarch butterflies at rest on the beach. Photo by D. Bulloch.*



## Biological Indicators And Striper Behavior

by CAPT. AL ANDERSON

In my career as a charter Captain and active fish tagger, I've come to recapture a few (7) of my own striped bass. Clients flatter me when they ask me where these fish ventured in the interim, but I can only guess. Would you be surprised to learn that every striper was recaptured in the same area, weeks, months and years later? As for those fish others recapture, all we can say is that they swam from here to there. We get an idea, of course, of migratory speed, particularly if the tag-recapture period was short. But where a fish goes from the time it is tagged until it is recaptured remains a mystery. Tag recapture distances are given by some agencies, but we all know fish don't (usually) swim in a straight line. As a tagger I have no control over where a fish goes and little knowledge about what they do following tagging. Up until now, that is.

On July 24, 1996, while fishing the ebbing tide over the inner bar at Block Island's North Rip, we recaptured a 27" striper of about 8.5 lbs. that we had tagged there nearly nine months prior on 9/11/95. In the interim this fish had grown about an inch and put on over a pound in weight. But hold it, this remarkable story doesn't end just yet. This fish was carrying a badly fouled tag, which was clipped off. We replaced the tag with a fresh one (ALS# 402772), and released the fish. The tag and the life adhering to it was placed in a ziplock bag, and went off with my mate to the University of Rhode Island. But I'm getting ahead of myself.

With a lots of career stripers (5,005) tagged and released for the ALS, I've

*Captain Al Anderson is a charter boat captain from Rhode Island who specializes in catching and tagging large striped bass. He graced the cover of the Society's special issue on fish tagging a year ago.*

seen many recapture letters. One was accompanied with a complaint from an anglerette that a fish she recaptured bore a fouled tag, and I was to blame. In fact, I was a terrible person for causing that fish to carry around a weeded-up tag. Well, indeed..... I doubt if I could get her to believe I have no control over what goes on in the marine environment, or where my tagged fish go. If you do any amount of salt water fishing, perhaps you've recaptured a fish bearing a tag with marine growth. I may be getting experienced in that area, as we handled 15 tag-recaptured fish this past season, each bearing marine growth fouled tags. However, as taggers, we can reduce potential fouling by keeping streamer ends short.

Getting back to this recaptured striper of ours, it bore a tag fouled with gastropods, crustaceans, bivalves, and algae. Attached to the loop and knot were specimens of linear skeleton shrimp (*Caprella linearis*), chink snail (*Lacuna vincta*), mottled tube-maker (*Jassa falcata*), blue mussel (*Mytilus edulis*), red algae (*Polysiphonia harveyi*), and red algae (*Polysiphonia fibrillosa*) (Species identifications courtesy of Matt DiMatteo, University of Rhode Island Graduate School of Oceanography).

From the evidence collected, it appears this fish spent a considerable amount of time during it's brief liberty in an environment that had fairly warm temperatures relative to the winter season. Adding to those suspicions was the presence of numerous individuals of *Jassa falcata*, the mottled tube-maker. This amphipod builds a tube out of mud, debris and mucus, attaching to surfaces over which there is a strong current flow. As a result it is able to withstand high velocity environments, and it has a large claw that it reportedly can use to hang on

with, inside it's tube. Some striped bass are fast swimmers, as many will attest, particularly when overly large and connected to your light tackle. But *Jassa falcata* doesn't exist just for the chance to go for a ride on a tag. This crustacean has been found guilty of fouling salt water pumping systems and lines, where current velocities are high. And we all know where some striped bass like to vacation during the winter months, right? In and around thermal effluents of power plant outfalls, most of which are located in areas of reduced salinity, which favors

the presence of the organisms listed. Unless I miss my guess, this fish spent a good portion of that winter in the outfall of one of Long Island Sound's electric generating plants. It probably spent several winters there before we tagged it that fall at Block Island. I suggest this because these fish seem to be creatures of habit, as illustrated by the fact that we recaptured it at the sight of the initial tagging. Which utility plant will remain a mystery, of course. But you can bet the next time I'm asked where fish go, this is one story I'll tell. □



## Two Bar Jacks Competing for the Use of a Sting Ray "Beater"

by PETER MARTIN

While snorkeling, I have often followed sting rays feeding over open bottom, searching for prey, excavating, making "muds," and moving on for more food. I am not the only one interested in their behavior, as the rays often have a fish in attendance, usually a jack, patiently waiting for the ray to flush out a shrimp or a small fish which the jack then picks off in a rush and returns to its seemingly casual shadowing of the ray.

On one occasion off the island of St. Johns I was following a ray at dusk. Two bar jacks were in attendance, one around 2 feet long, the other around 1.5 feet. The larger fish seemed to have laid claim to this particular "game 2beater" but the smaller fish kept "horning in" and the larger fish kept driving him off, expending considerable energy and probably missing a number of feeding opportunities in the process. Over a half-hour period, until I departed at dark, the larger jack drove the smaller one off over 50 times only to have him circle in again. This seemed to be an established routine that had probably been going on for a while before my arrival.

*Peter Martin, Bellmore, New York, snorkels often in the Caribbean, keeping an eye out for fishes doing interesting things.*

At dawn the next day I snorkeled the same area and located what I believe was the same ray, feeding with the attendance of only the smaller intruder of the two jacks of the evening before. I believe these were the same fish because of their appearances and the fact that I hadn't seen any other rays in the area for a few days. I can't be sure, but it seems that the persistence of the smaller fish might have induced the larger one to seek a hunting situation where it could operate without an unwanted "partner." The ray seemed oblivious to the strife of his non cartilaginous relatives. □

### Manatee Jewelry

STERLING SILVER

2" etched PENDANT \$11

1-1/2" EARRINGS \$14  
(left and right facing)

1" Mother and Calf  
solid cast CHARM \$34.50

Send check or money order to:

ASTERIAS TWO

P.O. Box 119, Highlands, NJ 07732

NJ residents please add 7% sales tax.

(Prices include shipping).

Please allow 3-4 weeks for delivery.

SEND FOR FREE CATALOG





# Behavior of the Mole Crab

by DANIEL TARDONA

As the wave breaks, flattens, spreads and laps along many a sandy shore on the Atlantic coast, I have observed varied signs of tiny animal activity. In the wet sand, as the remnants of the wave fall back to the sea, I discover a small, unusual-looking creature. Looking as if it is struggling to scramble back into the sea, the strange animal captures my undivided attention. Hiding itself just below the surface, this small sea animal is suddenly hidden from view as another breaking wave stretches out over the edge of the beach.

A member of the crab family, this small decapod lives a short but very active life. Living in a turbulent environment, the relatively thin-carapaced animal barely has time to search for food, search for a mate, and reproduce. Some fishermen know this creature as quick, free bait for catching pompano and spot. Predators such as fish, carnivorous invertebrates (including other crabs), and many shorebirds feed on these small animals of the swash zone. I know this decapod crab as a shy, speedy burrower that, when held gently, tries hard to burrow through my hand. If you have not already guessed, I am describing the mole crab or to some, the sand flea, scientifically known as *Emerita talpoida* (in Latin *talpa* means mole). *Emerita talpoida* is the Atlantic and Gulf coast species, while *Emerita analoga* is the Pacific coast species.

Sand flea is not a bad name for this crab, as it looks more like a gigantic flea than it does a member of the crustacean family. But a closer look reveals that this marvelous beach animal is a crab and a decapod. This decapod (it has five pairs of legs) is more than just fish bait. Mole crabs are beautifully adapted to the swash zone where you will sometimes find them in large quantities. These fascinating crabs behave in a way that helps them survive in the harsh sandy environment between low and high tides. In the swash zone the casual walker can encounter the mole crab.

*Daniel Tardona is a naturalist with the National Park Service and a frequent contributor to these pages.*

It has a remarkable method for gathering food. When each wave comes ashore, the water contains grains of sediment that are deposited on the beach. The water also contains a variety of microscopic plants and animals or plankton. The animals are referred to as zooplankton and the plants as phytoplankton. The mole crab takes advantage of this environment. The burrowing behavior of the mole crab requires coordinated movements of its variously specialized appendages. It burrows backward in the fine sediment at about a 45-degree angle, facing seaward. The oval shape and surface of its carapace surely enhances the mole crabs ability to burrow rather quickly.

Despite its shape and excellent digging legs, the mole crab is still dependent on the conditions of the sand within which it can burrow. The sand must be wet, because dry sand or even moist sand is too hard for the crab to penetrate. Once burrowed into the wet sand, it sticks out two of its very specialized feather-like antennae which will lie extended just on top of the sand. The antennae are extended only as the last portion of the receding wave passes over. The mole crab takes advantage of the energy left in the receding wave to help it gather food from the water. As each wave returns seaward the feathery structures capture the plankton like a strainer or screen and then the plankton is consumed. This food-capturing adaptation, along with the ability to burrow quickly in the sand, makes the mole crab extremely well suited to the swash zone environment.



*Oval shape and ridged carapace enhance the mole crab's ability to burrow in the soft, wet sand. Photos by D. Mizerak, courtesy of the Cape Lookout National Seashore.*

One of the differences between the Atlantic mole crab and the Pacific mole crab is that the latter can wave their feathery antennae to filter food in quiet water; so unlike the Atlantic mole crab, this species is not dependent upon wave energy to assist in food gathering. Another difference is that, apparently, the Pacific mole crab can even capture bacteria with its antennae.

Even though the mole crab has a remarkable ability to burrow quickly, it often falls prey to predators. In the food chain, the mole crab consumes plankton and thereby "fixes" this food source for other creatures in the chain, ones that in turn feed on the mole crab.

In order to maximize their food catch, the mole crab must follow the tide up and down the beach. At high tide, mole crabs will be found high up on the beach and will literally follow the tide to its lowest point. It appears that they are able to detect the shallowness of the water in a wave, as they will move seaward following a shallow wave and landward following a deep wave. A curious behavior still not fully understood is that adult moles

crabs appear to form colonies. A colony of adult mole crabs will move to and from an area of the swash zone almost simultaneously. They also appear to extend their feeding antennae at about the same time. In the larval stage they do not congregate in colonies, nor do they exhibit simultaneous movement behavior.

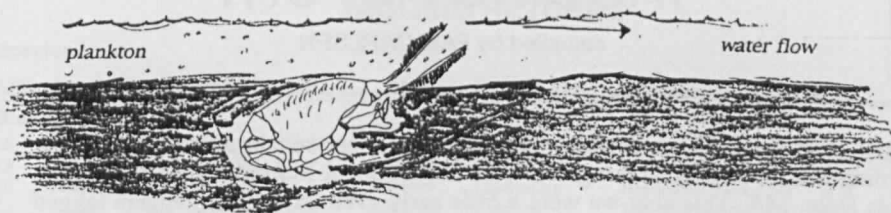
Reproductive behavior of mole crabs is also interesting. A few days before a mature yearling female lays her eggs, smaller and younger males will gather around her. A few males will then engage in a kind of parasitic behavior and attach themselves to the female mole crab by means of adhesive pads on the males' legs. Just before the eggs are laid, sperm will be emitted by the males in a gelatinous ribbon that fertilizes them. Once hatched, the offspring are transparent, very tiny, and become part of the plankton. In their larval stage, mole crabs are good swimmers. As they mature they will pass through several molts, eventually reaching the adult stage where they begin to feed from their burrowed position in the swash zone.

To find these fascinating surf creatures during the summer months (in winter they will migrate offshore to deeper



*The mole crab's legs are well adapted for digging in the wet sand.*





*The mole crab projects its feather-like antennae to strain plankton from seawater.  
Illustration by D. Tardona.*

waters), you need only to walk along the swash zone of a sandy beach. Look for the characteristic "V" impression in the sand. You might also find some other swash zone inhabitants this way, such as the colorful coquina clam (*Donax Variabilis*). If you want to observe them in their natural condition, sand fleas may be difficult to spot right away. If you gently dig into the wet sand with cupped hands, you may capture one to look at more closely. They do not bite or have claws to snip at your hand, but they will vigorously attempt to burrow. The burrowing attempt tickles and may startle

you a bit the first time, but the mole crab cannot harm you. I have been told by a friend, that along the Maryland/Virginia coast, human toes may sometimes be mistaken for mole crabs by predatory crabs, so you might feel a little pinch while walking in the swash along that coastline. It never ceases to amaze me, that no matter how often I visit the beach, I can always find some new aspect of that fragile environment to discover, and something new to learn. The swash zone is one place you can visit, that if visited gently, you will not leave even a footprint. □

### GUIDELINES FOR SUBMISSIONS

UNDERWATER NATURALIST is the Society's journal. We encourage members to submit articles, pictures, observations, comments, compliments or criticisms. Please follow these guidelines.

**SUBJECT MATTER:** Feature articles run 1,500-3,500 words (4-10 double-spaced, typed pages); please refer to back issues for guidance. For **Field Notes** and **Coast Issues**, submit no more than three pages of direct observations of interesting natural history found while walking, diving, or fishing in a coastal area. Topics can be of current interest, such as red tide in the Carolinas, whale deaths in New England, or mangrove preservation in the south; you can also submit a number of short observations or notes regarding a particular area. **Letters to the Editor** expressing thoughts on the magazine and its contents or general food for thought are especially appreciated.

**ARTWORK:** For illustrations, black and white prints are preferred, but clear color slides or color prints with good contrast, drawings, maps and charts will also be considered. For **Cover Photos**, we need clear, sharp 35mm color slides or color prints, either horizontal or vertical, of

littoral subjects above or below the water. Horizontals can wrap around from front to back. Action is not necessary. (Note: Unless otherwise requested, we keep all accepted art work until it is published).

**HOW TO SUBMIT:** Typed, double-spaced manuscripts, please. It would help, if you have access to a computer, to receive your manuscript saved as a "text only" file on a 3 1/2" double-sided, high-density disk. Use common, not Latin, species names. We do not carry footnotes; incorporate sources in your article. We edit for clarity using Strunk and White's Elements of Style as our guide and favor clear wording over specialized terminology. Send your work with a stamped, self-addressed envelope; we will acknowledge its receipt.

□ We do not pay for articles or illustrations, but we do send five authors' copies when published. Thank you for your interest. We look forward to receiving your submission.



# TAGGING REPORT

compiled by PAM CARLSEN

April 15 is the U.S. tax deadline. Similarly, it is our self-imposed deadline for recording the previous year's tag data with the National Marine Fisheries Service, Woods Hole, MA. This year we were a little early even though our taggers tagged more fish than ever. In 1996, 25,463 fish were tagged, 5,656 more than in 1995. Of these, 20,051 were striped bass; 2,354 were fluke; 1,333 were bluefish; the rest were various saltwater species up and down the coast. On the recapture side we had 1,596 tag returns, 432 more than recorded in 1995. This speaks well of the tag design and the increasing numbers of fishermen who return tags. Thirty of these returns were "out" for five years or more: two were 1988 fish, two were 1989, eight were 1990 and 18 were 1991 fish. This shows that the tag holds up and is legible after all those years. It is the reason we are unwilling to make a major change in our tag style. Respect for our data continues to grow "as federal and state agencies cut deeper into the budgets of government-supported tagging studies," this reported by John D. Field, the anomorous species coordinator for the Atlantic States Marine Fisheries Commission in the May 1997 issue of "Field and Stream". The article "Fishing for Fun & Science" by Jim Merritt is about our tagging program and is a credit to all who participate.

Bob Kyker, our tagger and computer wizard from Norwalk, CT did some analysis of our striped bass data using figures from 1984-1995. He derived this table showing the longest returns from striped bass:

Days Out	Tagger	Tag Date	Length	Cap Date	Length	Growth
3501	Scammacca, J.	10/28/78	11	05/29/88	40	29
2887	Grippo, P.	08/11/87	18	07/07/95	24	6
2842	O'Keeffe, J.	08/22/82	20	06/30/90	38	18
2726	Mester, J.	04/29/68	18	10/16/75		
2719	Gray, GS	11/02/84	16	04/13/92	32	16
2566	Mester, J.	07/08/87	26	07/17/94	39	13
2561	Woodroffe, B.	11/16/86	20	11/20/93	28	8
2489	Tabory, L. III	06/12/69	23	04/05/76		
2470	Leja, R.	10/25/86	24	07/30/93	38	14
2434	Haas, G.	07/28/73	15	03/27/80		
2384	Gray, GS	11/16/86	19	05/27/93	36	17
2349	Berger, R.	10/30/69	24			
2349	Ebner, D.	04/28/88	20	10/03/94	37	17
2331	Marburger, T.	04/27/88	14	09/14/94	38	24
2331	Leja, R.	05/18/86	23	10/14/92	35	12

He also did a time frame analysis of release to recapture:

Re-Capture Occurs	How Many of Total	Percent of Total
Same Day	16	0.025%
1 Day to 1 Month	776	12.32%
2 to 6 Months	1714	27.20%
7 Months to 1 Year	1680	26.66%
1 to 2 Years	1381	21.92%
3 to 5 Years	696	11.05%
Over 5 Years	38	0.60%

We would like to thank Bob for his work. And thank all of you for tagging and returning.

## TAGGING RETURNS

### Species

Lgth	Tagger	Place Tagged	Date	Recapturer	Location	Lgth	Date
<b>Bluefish</b>							
16	M Barrett	Old Orchard Lt., NY	06/17/95	D Wallace	Coney Is., NY		08/22/95
13	R Dayton	Great Bay, NJ	05/16/95	NMFS ObsProg.	Beach Haven, NJ	15	08/24/95
16	J Jandinski	Watch Hill, RI	07/02/95	J McDuffey	Hempstead Harbor, NY	18	08/26/95
20	J Buhl	South Amboy, NJ	05/24/95	C Bociek	3 mi. off Penfield Lt., CT	20	08/27/95
23	S Penta	Boston, MA	08/12/92	J Ciulla	Boston, MA	33	09/03/95
28	B Finke	Stamford, CT	07/31/95	D Powers	Little Neck Bay, NY	30	09/04/95
25	A Schweithelm	Northport, NY	05/30/95	J Wolfe	Offsh., The Farms, NJ		09/06/95
30	T Marburger	Shinnecock Inlet, NY	07/11/95	L Molnar	Shinnecock, NY	34	09/11/95
10	V Galgano	Sea Girt, NJ	07/15/95	W Zilinski	Hope Creek, DE Bay, NJ	13	09/18/95
12	G Dulka	Ches. Bay Brdg. Tun., VA	09/03/95	B West	Mobjack Bay, VA		09/20/95
16	M Barrett	Old Orchard Lt., NY	06/17/95	M Gulics	South Amboy, INJ		09/22/95
12	G Horvath	Spring Lake, NJ	08/23/95	J Rodriguez	Waretown, NJ	14	09/25/95

### Fluke

11	J Brittin	Cape May, NJ	08/04/95	M Villanueva	Delaware Bay, NJ	12	08/13/95
13	R Anderson Jr.	Fire Is. Inlet, NY	08/01/95	A Ryan	Fire Is. Inlet, NY	13	08/13/95
12	R Anderson Jr.	Fire Is. Inlet, NY	08/01/95	B Vanderhoeven	Great South Bay, NY	12	08/14/95
13	R Anderson Jr.	Fire Is. Inlet, NY	08/01/95	R Green	Fire Is. Inlet, NY	13	08/14/95
13	F Bovasso	Manasquan, NJ	06/04/95	G Ciriello	West Bank Lt., NY	14	08/15/95
15	C Wilcox III	Moriches Bay, NY	07/23/95	A D'Onodrio	Moriches Inlet, NY	16	08/15/95
13	J Timmermann	Point Lookout, NY	06/18/95	D Constantinou	Jones Inlet, NY	13	08/21/95
12	R Anderson Jr.	Fire Is. Inlet, NY	08/12/95	F Zaiter	Captree, NY		08/21/95
12	R Anderson Jr.	Fire Is. Inlet, NY	08/12/95	J Ward	Fire Is. Inlet, NY		08/21/95
13	W Filce	Manasquan, NJ	08/04/95	T Gabovics	Manasquan Inlet, NJ		08/24/95
13	M Greatsinger	Snow Hill Chan., NY	09/06/94	C Walsh	Wantagh, NY	17	08/25/95
13	T Marburger	Shinnecock Canal, NY	05/31/94	D Alvino	Hampton Bays, NY	16	08/25/95
13	S Knapik	Pt. Lookout, NY	08/10/95	J Morrison	Long Beach, NY	13	08/25/95
13	R Anderson Jr.	Fire Is. Inlet, NY	08/24/95	R Bonavita	Robert Moses Brdg., NY		08/27/95
14	K Miles	Manasquan R., NJ	05/20/95	K Loyst	2 mi. off Shark R., NJ	14	08/29/95
12	W Filce	Manasquan, NJ	08/02/95	M Golden	Manasquan R., NJ	13	08/30/95
13	C Wilcox III	Moriches Bay, NY	08/06/95	R Libretti	Moriches Inlet, NY		08/31/95
13	R Wellman	Fire Is. Inlet, NY	08/26/95	F Gallimore Jr.	Fire Is. Inlet, NY		09/02/95
13	E Swain Jr.	Robt. Moses Brdg., NY	08/20/95	J Stieflein	Captree Brdg., NY		09/03/95
13	A Wolenter	Sandy Hook, NJ	08/14/95	E Hyslip	Sandy Hook, NJ	13	09/07/95
17	F Heal	Staten Is., NY	07/15/95	V Gallo	Great Kills, NY		09/09/95
12	A Wolenter	Sandy Hook, NJ	08/30/95	L Salgado Jr.	Sandy Hook, NJ	12	09/09/95
14	R Anderson Jr.	Fire Is. Inlet, NY	08/24/95	J Dengler	Captree, NY		09/09/95
13	R Wellman	Fire Is. Inlet, NY	08/26/95	L Brandt	Robt. Moses Brdg., NY	13	09/10/95
12	M Barrett	Great Kills, NY	07/24/95	G Clarkson	Raritan Reach Chan., NY	13	09/10/95
12	F Haimes	Merrick Bay, NY	06/10/95	F Haimes	Merrick, NY	15	09/15/95
13	E Swain Jr.	Fire Is., NY	08/20/95	S Schachter	Fire Is. Inlet, NY		09/16/95
13	S Fries	Brighton Beach, NY	07/16/95	S Golub	Sandy Hook, NJ		09/19/95
13	J DeLuca	Great Kills, NY	07/18/95	S Sedor	Verrazano Brdg., NY	14	09/23/95
13	D Mann	Pt. Jefferson, NY	08/19/95	R Gardner	Pt. Jefferson, NY	15	09/25/95
13	T Stanik	Old Orchard Lt., NY	09/19/95	A Lott	Staten Island, NY	13	09/30/95

### Stringray

12	M Barrett	Caswell Beach, NC	08/28/95	R Brown	Cape Fear R., NC		08/30/95
----	-----------	-------------------	----------	---------	------------------	--	----------

### Striped Bass

14	J Finelli	Milford, CT	05/15/94	G Sirt	Merrimack R., MA	18	06/14/95
17	M Aiken	Milford, CT	10/29/94	S Hopkins	New Haven, CT		07/15/95
12	D Zurheide	Ellis Is., NY	07/10/94	J Strohmeier	Ellis Is., NY		07/15/95
30	B Spiro	Merrimack R., MA	07/12/95	J Traynor	Plum Is., MA	32	07/29/95
11	JO'Keefe	Stratford, CT	05/28/95	K Eaddy III	Housatonic R., CT	12	08/05/95
30	R Grobarz	Sandy Hook, NJ	06/01/94	R Fialo	Sea Bright, NJ	36	08/05/95
36	G White	Piscataqua R., NH	08/20/94	G White	Piscataqua R., NH	36	08/05/95
32	D Zambrotta	Brayton Pt., MA	06/10/95	J Martini	Race Rock, L.I. Sound		08/06/95
17	J Sullivan	Newburyport, MA	05/29/94	R Hunt	Truro, MA	20	08/06/95
22	B Quick	Barnegat Lt., NJ	12/06/94	J Sutera	Rockport, MA		08/07/95

## Species

Lgth	Tagger	Place Tagged	Date	Recapturer	Location	Lgth	Date
<b>Striped Bass (cont.)</b>							
31	A Anderson	Block Is., RI	06/14/95	N Gaffett	Great Salt Pond, RI		08/07/95
37	W Draesel	Barnegat Inlet, NJ	07/16/94	C Krenecki	Island Beach St. Pk., NJ	38	08/07/95
17	J Karolides	Danvers, MA	07/15/94	R Spraski	Norwich, CT	18	08/08/95
15	K Bilodeau	Norwich, CT	04/01/94	R Spraski	Norwich, CT	18	08/08/95
28	J Caville	Cape May Rips, NJ	11/05/94	S Pietruska	Vineyard Sound, MA	29	08/08/95
20	G Ciriello	Staten Island, NY	05/02/95	S Jablon	Wellfleet, MA		08/08/95
20	D Zurheide	Ellis Is., NY	07/14/95	J Strohmeier	Ellis Is., NY	21	08/08/95
36	H Laufgraben	Hempstead, NY	06/30/94	R Robbins	Valiant Rock, NY	39	08/10/95
25	S Penta	Boston, MA	09/07/94	J Hubert	Belle Is. Inlet, MA		08/10/95
39	S Fries	Montauk, NY	08/10/94	E Cordero Jr.	Ft. Salonga, NY	39	08/10/95
34	D Kelly	Orient Pt., NY	06/17/94	L Prentiss	Plum Gut, NY	36	08/11/95
32	G Cardel	Eatons Neck, NY	07/26/95	S Withuhn	Montauk Pt., NY	35	08/11/95
16	J Crawford	Fire Island, NY	11/07/92	J Grob	Moriches Inlet, NY	32	08/11/95
31	M DiBenedetto	Montauk, NY	12/03/94	M O'Hara	Danvers R., MA	32	08/11/95
12	M Aiken	Milford, CT	06/18/93	S Ryczer	Stratford, CT		08/11/95
30	A Anderson	Block Is., RI	09/24/94	K Court	Block Is., RI	30	08/11/95
15	J Karolides	Beverly, MA	05/25/95	R Pynn	Danvers, MA	24	08/11/95
28	D Kelly	Orient Pt., NY	07/19/95	J Swobodzinski	Orient Pt., NY	29	08/12/95
41	T Ziobo	Watch Hill, RI	06/22/95	W Gaviitt	Fishers Is., NY		08/12/95
25	F Laskowski	Fairfield, CT	06/11/94	R Nystrom	Bridgeport, CT	25	08/12/95
34	D Kelly	Orient Pt., NY	06/17/94	M Dimon	Orient Pt., NY	34	08/12/95
30	M White	Lavalette, NJ	06/03/95	T Kubota	Manasquan, NJ	30	08/12/95
29	T Pendyk	Robbins Rf. Lt., NJ	07/18/93	M Porrmann	Robbins Rf. Lt., NJ	30	08/12/95
30	K Conway	Boston, MA	07/17/94	L McKim	Boston, MA	33	08/12/95
33	S Fries	Montauk, NY	07/29/95	J Parr	Montauk, NY	34	08/13/95
22	D Kelly	Sag Harbor, NY	05/21/92	C Squires	Orient Pt., NY	32	08/13/95
33	A Anderson	Block Is., RI	11/04/94	R Foster	Salem, MA	34	08/13/95
22	R Conklin	Moriches Inlet, NY	11/09/94	M Anderson	Plum Is., MA	24	08/13/95
25	F Adams	Highlands Brdg, NJ	05/18/94	R Fay	Montauk, NY	30	08/13/95
31	G Cardel	Eatons Neck, NY	07/11/95	P Aronian	Montauk, NY	32	08/13/95
31	S Fries	Montauk, NY	07/29/95	S Withuhn	Montauk Pt., NY	33	08/14/95
14	T Currier	Waterford, CT	04/24/92	E Light	Great Kills, NY	22	08/14/95
25	J Della Porta	Winthrop, MA	06/05/95	J Cushing	Sasano R., ME	26	08/14/95
20	A Marsello	Swansea, MA	07/11/95	J Pacheco	Fall River, MA		08/14/95
23	A Anderson	Block Is., RI	06/13/95	A Lombardo	Little Compton, RI	25	08/14/95
35	A Romaine	Montauk, NY	11/12/94	J Holey	Lynn, MA	36	08/14/95
22	R Grobarz	Sandy Hook, NJ	06/14/95	F Dapolito	Atlantic Beach, NY		08/14/95
23	A Dangelo	Pt. Judith, RI	10/13/91	F Dapolito	Atlantic Beach, NY		08/14/95
37	D Goldberg	Montauk Pt., NY	08/01/95	G Ferraro	Montauk, NY		08/15/95
26	E Petronio Jr.	Block Is., RI	10/28/94	D Kraih	L. Sheepscoot R., ME	28	08/15/95
22	A Marsello	Swansea, MA	06/05/95	P Bossonneault	Swansea, MA		08/15/95
16	T Marburger	Northport, NY	02/26/95	P Davis	Ipswich, MA		08/15/95
29	G Ministeri	Wellfleet, MA	07/17/95	D Morande	Plymouth, MA		08/15/95
20	R Rizzie	Croton, NY	04/18/95	P Alves	Chatham, MA		08/15/95
17	G Horvath	Spring Lake, NJ	08/03/95	J Horvath	Shark R., NJ		08/15/95
32	J Karolides	Beverly, MA	09/18/94	W LeBrun	Salem Harbor, MA		08/15/95
32	S Fries	Montauk, NY	08/01/95	M McGrath	Montauk, NY	32	08/15/95
35	D Goldberg	Montauk Pt., NY	08/01/95	J Faber	Offsh., Montauk Pt., NY	35	08/15/95
26	P Fricano	Great Egg Inlet, NJ	05/05/95	J Commisso Jr.	Beach Haven, NJ	29	08/15/95
27	D Zambrotta	Westport, MA	06/11/95	A Perreault	Sakonnet Pt., RI	29	08/16/95
35	S Fries	Montauk, NY	11/08/94	D Friden	Boston, MA	36	08/16/95
32	B Shillingford	Cape May Rips, NJ	11/08/94	D Friden	Boston, MA	36	08/16/95
33	B Shillingford	Cape May, NJ	11/15/93	D Friden	Boston, MA	36	08/16/95
26	J Karolides	Beverly, MA	10/01/94	N Danikas	Gloucester Harbor, MA		08/17/95
16	J Karolides	Danvers, MA	09/24/93	R Jones Sr.	Cape Cod Canal, MA		08/17/95
28	T Pendyk	Newark Bay, NJ	09/20/93	M Armstrong	Bayonne, NJ	30	08/18/95
16	J Karolides	Danvers, MA	06/03/95	R Boisvert	Danversport, MA	18	08/18/95
32	G Ministeri	Wellfleet, MA	07/06/95	R Rogers	Cape Cod Canal, MA	35	08/18/95
32	D Kelly	Orient Pt., NY	06/29/95	R Lena	Plum Gut, NY	36	08/19/95
14	J Karolides	Danvers, MA	05/05/95	J Davis	Newburyport, MA	16	08/19/95
29	M Barrett	West Bank Lt., NY	11/20/94	D Stratton	Fishers Is., NY	30	08/19/95
22	A Dangelo	Charlestown, RI	10/09/91	J Miller	Montauk, NY		08/20/95
31	A Schweithelm	Montauk, NY	06/09/95	B Black	Montauk, NY	35	08/20/95
32	D Goldberg	Long Beach, NY	11/09/94	B Peters	Chatham, MA	35	08/20/95

## Species

Lgth	Tagger	Place Tagged	Date	Recapturer	Location	Lgth	Date
<b>Striped Bass (cont.)</b>							
40	D Goldberg	Montauk Pt., NY	08/01/95	S Witthuhn	Montauk Pt., NY	42	08/21/95
28	S Fries	Montauk, NY	08/01/95	F Hubner	Montauk, NY		08/21/95
33	S Fries	Montauk, NY	08/01/95	F Hubner	Montauk, NY		08/21/95
14	A Schweithelm	Fort Salonga, NY	04/11/95	G Packer	Blackstone R., RI		08/21/95
21	L Richards	Atlantic Beach, NY	07/09/95	F Castoria	Atlantic Beach, NY		08/22/95
21	H Goldblum	Rockaway, NY	11/09/93	R Balboni	Sagamore, MA	30	08/22/95
18	D Zurheide	Ellis Is., NY	07/10/94	J Strohmeier	Ellis Is., NY	22	08/22/95
12	S Radossi	Croton on Hudson, NY	04/01/95	C Mazzolla	Belleville, NJ		08/23/95
16	A LoCascio	Manhasset Bay, NY	09/06/94	A Soiefer	Manhasset Bay, NY	18	08/24/95
23	J Mettler	Fishers Island, NY	10/16/92	V Losyk	Eastham, MA	33	08/24/95
30	F Casey	Boston, MA	07/28/95	M Favale	Boston, MA	31	08/26/95
15	M Romano	Kill Van Kull, NY	10/01/93	J LaForge	Eddyville, NY	17	08/26/95
29	F Stunkel	Darien, CT	07/13/94	R Kyker	Darien, CT	34	08/26/95
28	A Dangelo	Charlestown, RI	06/05/94	S Pietruska	Vineyard Sound, MA	31	08/26/95
26	E Baracchini	Cape Cod Canal, MA	05/15/91	J Gordon	Kennebec R., ME	37	08/27/95
27	J Karolides	Danvers, MA	09/08/94	J Karolides	Danvers, MA	28	08/27/95
30	J McAfee	Monomoy, MA	08/15/94	L Davis	Ocean City Inlet, MD		08/27/95
25	D Kelly	Orient Pt., NY	07/03/93	S Rosenzweig	Jones Inlet, NY	28	08/27/95
27	B Wilkins	Salsbury, MA	08/30/93	H Calkins	Westerly, RI	30	08/27/95
34	W Johnson	Stamford, CT	07/15/94	J Stewart	Stamford, CT		08/28/95
33	S Fries	Montauk, NY	07/29/95	W Rocchetta	Montauk Pt., NY	36	08/28/95
20	F Urban	Highlands Brdg., NJ	06/09/94	D Keefe	Highlands Brdg., NJ	20	08/28/95
32	J Della Porta	Swampscott, MA	07/15/95	R Whitten	Swampscott, MA	33	08/28/95
20	F Stunkel	Stamford, CT	11/13/93	T Bartlett	Portland, ME	24	08/29/95
27	D Kelly	Orient Pt., NY	10/16/94	D Goff	Natchets Reef, CT	29	08/30/95
27	A Marsello	Cape Cod Canal, MA	10/05/94	C Grabowski	Cape Cod Canal, MA	30	08/30/95
18	D Haines	Cape May Pt., NJ	07/05/94	G Gerrity	Cape May Inlet, NJ	23	08/31/95
38	F Casey	Boston, MA	09/07/94	F Pascucci	Gloucester, MA		08/31/95
27	J Karolides	Beverly, MA	09/03/94	D Arrant	Little Egg Harbor, NJ		08/31/95
15	H Bergere	Housatonic River, CT	07/22/90	M Vargas	Milford, CT	31	09/01/95
32	J Karolides	Beverly, MA	08/14/95	J Bolotta Jr.	Monomoy Is., MA		09/01/95
34	A Marsello	Cape Cod Canal, MA	10/14/94	C Arouchon	Cape Cod Canal, MA	34	09/01/95
26	A Schweithelm	Northport, NY	06/15/95	J Faber	Nauset Inlet, MA		09/01/95
31	D Brodeur	Milford, CT	07/04/95	M Vargas	Milford, CT	33	09/01/95
23	K Conway	Hull, MA	07/18/95	S Richmond	Hingham, MA		09/01/95
18	G Horvath	Spring Lake, NJ	08/12/95	D Grimm	Normandy Beach, NJ	18	09/01/95
27	G Buono	Great Kills, NY	05/24/94	H Olearcek	Chatham, MA		09/02/95
27	C Ponte	Quick's Hole, MA	07/11/93	D Charest	Cuttyhunk Is., MA	30	09/02/95
23	K Sprankle	Outer Banks, NC	02/04/92	E Gorski	Pasadena, MD	24	09/02/95
28	J McAfee	Quick's Hole, MA	07/19/94	A McCarthy	Elizabeth Is., MA	30	09/03/95
27	F Casey	Boston, MA	08/16/94	D LaPorte	Cape Cod Canal, MA	32	09/03/95
17	G Horvath	Barnegat Inlet, NJ	06/04/95	F Strassbrugger	Bradley Beach, NJ	17	09/03/95
35	T Ziobo	Napatree Pt., RI	06/06/95	J Arasimowicz	The Race, L.I. Sound	37	09/03/95
26	R Nystrom	Bridgeport, CT	08/03/93	R Nystrom	Bridgeport, CT	31	09/03/95
26	A Dangelo	Charlestown, RI	10/31/94	L Zarella	Sandwich, MA	28	09/04/95
20	W Perlman	Atlantic Beach, NY	07/01/95	W Perlman	Atlantic Beach, NY	21	09/04/95
22	A Moore	Newburgh, NY	04/28/95	C Hurdman	New Bedford, MA	22	09/04/95
19	F Stunkel	Stamford, CT	11/01/90	B Nystrom	Bridgeport, CT	28	09/04/95
31	J Della Porta	Swampscott, MA	08/11/95	R Foster	Salem, MA	31	09/04/95
30	A Dangelo	Montauk, NY	11/27/92	D LaPorte	Cape Cod Canal, MA		09/04/95
29	S Penta	Boston, MA	08/01/95	J Conti	Boston, MA	29	09/05/95
28	F Tenore	Sandy Hook, NJ	07/05/95	J Kisonas	Sandy Hook, NJ	33	09/05/95
14	E Petronio Jr.	Westport R., MA	05/06/95	T Nowell	Plum Is., MA	16	09/05/95
29	A Schweithelm	Montauk, NY	07/12/95	T Herrera	Montauk Pt., NY		09/05/95
27	G D'Amato	Stratford, CT	08/06/93	D Terrell	Housatonic R., CT	31	09/05/95
14	A LoCascio	Manhasset Bay, NY	05/26/93	P Colonna	Triboro Brdg., NY	22	09/05/95
23	D Dibblee	Sandy Hook, NJ	06/10/95	M Fantauzzi	Rockaway Inlet, NY		09/07/95
32	K Sedlak	Stratford, CT	10/18/93	R Vargas	L.I. Sound, CT	34	09/08/95
22	T Marburger	Northport, NY	04/24/95	J Pellegrino	Stratford, CT	24	09/08/95
22	T Marburger	Northport, NY	05/31/93	T Brezniak	Thomaston, ME	30	09/09/95
17	T Marburger	Northport, NY	04/09/95	R Leja	Bridgeport, CT	19	09/09/95
23	A Dangelo	Block Is., RI	10/08/93	J Amaral	Newport, RI	27	09/09/95
19	R Grobarz	Sea Bright, NJ	06/04/95	T Powers	Shrewsbury R., NJ	23	09/09/95
20	J Mettler	Phippsburg, ME	06/22/95	J Cushing	3 mi. N of Bath, ME	22	09/10/95

**Species**

Lgth	Tagger	Place Tagged	Date	Recapturer	Location	Lgth	Date
<b>Striped Bass (cont.)</b>							
26	A Anderson	Block Is., RI	07/08/95	T Poach	Groton, CT	26	09/10/95
33	S Fries	Montauk, NY	11/08/94	A Jones	Montauk Pt., NY		09/12/95
26	R Grobarz	Sea Bright, NJ	09/25/94	D Coulson	Sea Bright, NJ	28	09/13/95
12	B Shillingford	Corson's Inlet, NJ	10/02/94	R Wigglesworth	Mays Landing, NJ	16	09/14/95
30	R Anderson Jr.	Fire Is. Inlet, NY	07/05/92	R Saggio	Fire Is. Inlet, NY	35	09/14/95
23	J Lutz	Cape May, NJ	11/26/93	W Milardo Jr.	Old Saybrook, CT		09/15/95
24	G Caputi	Sandy Hook, NJ	11/25/88	W Mendoza	Portsmouth, RI		09/15/95
14	J Karolides	Beverly, MA	06/01/95	W LeBrun	Salem Harbor, MA		09/15/95
36	A Anderson	Block Is., RI	05/26/95	A Almeida	Manchester, MA	37	09/15/95
30	W Matyka Jr.	Sugar Reef, RI	06/03/95	B Strain	Montauk Pt., NY		09/15/95
18	G Horvath	Barnegat Inlet, NJ	07/26/95	J Webb	Belmar, NJ		09/15/95
22	T Souza	Somerset, MA	06/10/94	W Boler	Fall River, MA		09/15/95
13	J Karolides	Danvers, MA	09/04/95	J Karolides	Danvers, MA	13	09/15/95
16	J Karolides	Beverly, MA	05/20/95	M Verrochi	Weymouth, MA	18	09/15/95
32	S Fries	Montauk, NY	08/01/95	D Tiefenwerth	Gilgo Beach, NY		09/15/95
35	R Paganini	Rockaway, NY	07/15/94	R Zieba	Plum Is., MA	38	09/15/95
27	B Shillingford	Cape May, NJ	04/27/95	M Peden	Montauk Pt., NY		09/15/95
21	B Kyker	Stamford, CT	11/23/92	D Rice	Bath, ME	26	09/16/95
33	M Vargas	Milford, CT	09/01/95	J Uzarski	Milford, CT		09/17/95
28	J Dotsey	Long Beach, NY	05/04/93	C Ellis	Cape Cod Canal, MA	34	09/17/95
16	T Marburger	Northport, NY	04/10/95	D Fewsten	Providence R., RI	20	09/19/95
34	J Mester	Staten Island, NY	11/16/93	J Barriera	Clason Pt. Park, NY		09/19/95
21	A Marsello	Swansea, MA	06/26/95	T Souza	Swansea, MA	25	09/20/95
31	K Kyker	Darien, CT	09/04/94	S Stenquist	Darien, CT	34	09/20/95
19	A Bettencourt	Riverside, RI	08/13/95	D Fewsten	Providence R., RI		09/21/95
12	A Bettencourt	Riverside, RI	08/13/95	F Gendron	Pawtucket, RI		09/21/95
16	M LeBlanc	E. Providence, RI	08/15/95	M LeBlanc	E. Providence, RI	16	09/21/95
27	W Perlman	Atlantic Beach, NY	06/17/95	A Seabrook	Battery Pk., NY	31	09/21/95
17	A Marsello	Cape Cod Canal, MA	10/14/94	G Blank	Piermont, NY	24	09/23/95
27	M Russo	Dannis Park, NY	09/14/94	F Neri Jr.	Shinnecock, NY	28	09/23/95
19	J Sullivan	Newburyport, MA	07/05/91	J DeRusso	Bradley Beach, NJ	32	09/24/95
15	J Karolides	Danvers, MA	05/12/95	A Bilodeau	Scarborough, ME	24	09/24/95
31	S Kellner	Mattituck, NY	06/11/95	R Thibodeau	Waterford, CT		09/24/95
18	G Horvath	Spring Lake, NJ	08/11/95	W Brown	Sea Girt, NJ	18	09/24/95
24	R Leja	Bridgeport, CT	09/23/95	F Echevaria	Bridgeport, CT	24	09/25/95
20	GS Gray	Charlestown, RI	06/07/94	J Pellegrino	Stratford, CT	22	09/25/95
17	A Becker	Sands Pt., NY	11/15/94	A Becker	Hempstead, NY	17	09/25/95
18	D Mann	Crane Neck, NY	05/13/95	W Frayler	Stony Brook, NY		09/25/95
23	O Van Helmond	Fire Is., NY	09/26/94	D Tesi	Ash Creek, CT	27	09/26/95
11	R Kalenka	Glen Cove, NY	05/10/95	D Welton	Shelton, CT		09/26/95
16	GS Gray	Charlestown, RI	05/29/91	E Pulaski	Charlestown, RI		09/26/95
24	L Quinn	New Haven, CT	07/09/94	S McGilton	New Haven, CT	26	09/27/95
29	W Matuszak	Montauk Pt., NY	07/09/93	H George	Jones Inlet, NY	33	09/27/95
26	J Gibbons	Sea Bright, NJ	06/21/95	P Lowcher	Sea Bright, NJ	27	09/27/95
21	G Kerkhan	Long Branch, NJ	09/30/93	C Selnik	Long Branch, NJ	29	09/27/95
35	A Marsello	Cape Cod Canal, MA	09/16/94	J Reilly	Cape Cod Canal, MA	37	09/27/95
13	J Brown	Noank, CT	07/06/92	J Brown	Noank, CT	26	09/28/95
30	C Wilcox III	Moriches Inlet, NY	11/16/94	P Rogers	Moriches Inlet, NY	38	09/28/95
21	B Perlman	Atlantic Beach, NY	07/18/92	J Eisenstadt	Brownsmere Bay, NY	30	09/28/95
24	W Matuszak	Gilgo Beach, NY	08/16/90	P Mancini	Fire Is. Inlet, NY	36	09/28/95
26	P Chowansky	Sea Girt, NJ	07/01/95	B Matthews	Sea Girt, NJ		09/29/95
17	G Horvath	Barnegat Inlet, NJ	07/31/95	D Neveroski	Toms River, NJ	17	09/29/95
30	J Rainone	Block Is., RI	06/23/94	C Pelletier	Montauk Pt., NY	31	09/30/95
12	M Aiken	Milford, CT	10/16/94	S Laccione	Milford, CT	16	09/30/95
25	G Kerkhan	Sea Bright, NJ	10/06/93	P Hartsgrove	Highlands Brdg., NJ	32	09/30/95
18	M LeBlanc	Somerset, MA	06/30/95	E Silvia	Fall River, MA		09/30/95
24	W Sharpe	Navesink R., NJ	10/12/93	W Sharpe	Sandy Hook Bay, NJ	30	09/30/95

**Weakfish**

26	M Matula	Princess Bay, NY	08/26/95	J Wilhelm	Staten Island, NY		08/27/95
14	M Matula	Princess Bay, NY	08/26/95	R Duznelman	Raritan Reach Chan., NY	14	09/07/95
18	B Shillingford	Corson's Inlet, NJ	07/02/95	F Valla Jr.	Sea Isle City, NJ	23	09/23/95
14	J Foti	Raritan Bay, NY	08/26/95	M Brindley	Barnegat Inlet, NJ	15	09/28/95



## Book Reviews

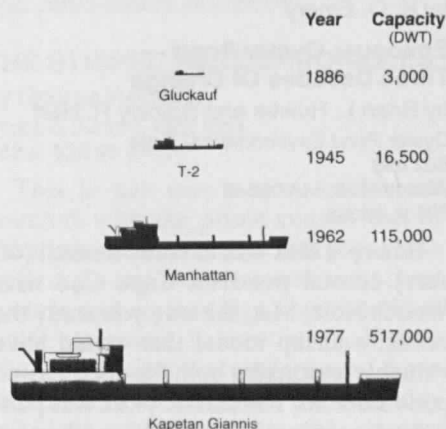
### OIL SPILLS

By Joanna Burger

Rutgers University Press,  
New Brunswick, NJ  
262 p. \$29.95 (cloth).

This book is less about specific spills than it is about all the things that make up an oil spill, and its ramifications. Most of us have read books about oil spills. There have been many written about large spills like the Exxon Valdez, about clean ups, tanker construction, and other aspects of oil spills. What sets this one apart from the others is its scope.

It begins with a history of oil, and ends with a discussion of the future of oil, oil transport, and even alternatives to oil as a fuel. One of the most interesting issues addressed in the book is the effect of oil spills on vegetation. Every spill fills the press with pictures of oiled birds, turtles, and otters. But we tend to give little thought to how plants, which can't get out of the way of the oncoming oil, cope with an oil spill and eventually recover. Tanker spills are not the only way oil finds its way into our environment. Every year large amounts of oil quietly



*Change in oil tanker size over time.*

reach our soil and water by way smaller incidents and chronic pipeline leaks. This is an issue that should be of particular interest to those of us who live on the edge of the urban waterways and in the shadow of the huge petro-chemical complex. You'll find that addressed here, also.

*Oil Spills* makes a nice companion to Burger's earlier book *Before and After an Oil Spill: The Arthur Kill*. The author's style is clear and very readable. Recommended.

### THE LIVES OF WHALES AND DOLPHINS

by Richard C. Connor  
and Dawn Micklethwaite Peterson

Henry Holt & Co., New York  
219 p. \$15.95 (paper).

This is the second in a series of books from the American Museum of Natural History that will concentrate on telling the stories of animal behavior: what, though not necessarily why, animals act the way they do. This one is about marine mammals; the first was about birds.

The Museum and the authors rightly believe that what wildlife does is important to know. Scientists need to learn behavior as they lay out the life histories of living things. The rest of us benefit from the same knowledge because it makes us more likely to accept behavior for what it is — the normal actions of creatures, not some human-like activity that can be categorized good, or bad, or cute. So the subject here is whales and dolphins, animals that have suffered from our attempts to credit them with human characteristics, leading to the spectre of captive belugas, dolphins jumping through hoops, and killer whales getting their teeth brushed.

The authors say it is better to watch and record animal behavior in the wild without feeling a need to catalogue reasons for the behavior. We don't need to know, for example, why porpoises ride bow waves of boats. Are they practicing

for some underwater olympics? Do they think the boat is daddy? Maybe they are checking their speedometers over a measured mile. Luckily, Connor and Peterson don't feel as if they must explain. They record. The reader is free to interpret. There's plenty here to wonder about.



FISHERMAN WITHOUT BOWPLUNK DOG



FISHERMAN WITH BOWPLUNK DOG

## FISHING DOGS

by Raymond Coppinger

Ten Speed Press, Berkeley, CA.

114 p. \$12.95 (cloth).

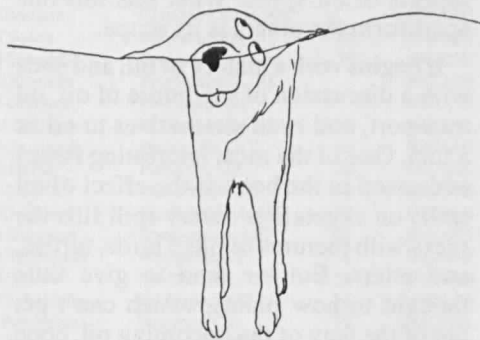
Coppinger has written a funny, silly book that satirizes dog breeding and scientific writing. It is charming and thoroughly wonderful and will appeal equally to anglers and dog lovers. Coppinger is a serious scientist, a member of the faculty at Hampshire College in Massachusetts and director of the Livestock Dog Project which, among other things, tries to get shepherds to use dogs to protect flocks instead of relying on coyote traps, poison, or guns. The book is Coppinger in a playful mood, producing what he subtitles "a guide to the history, talents, and training of the baildale, the flounderhounder, the angler dog, and sundry other breeds of aquatic dogs (*Canis piscatorius*).

You will learn about the basic beginning species — the bilge pup, which, you will surmise, lives in the boat's bilge. This is not to be confused with the monsoon dog which soaks up bilge water and,

if properly bred and trained, shakes it overboard, the floating mat dog, which lies on the surface of freshwater ponds to attract fish, the stringer spaniel which carries fish home tangled in its hair, and the tip pup, trained for ice fishing.

The book is filled with ridiculous dog lineages, good and bad puns, academic asides that are nonsense, and plenty of goofy footnotes and ersatz Latin. The charming illustrations by Peter Pinardi are simple line drawings of most of Coppinger's important species, topped off by the left-headed flounderhounder, with, you guessed it, two eyes on one side of its obviously empty head.

Highly recommended. Ten Speed Press scores again.



LEFT-HEADED FLOUNDERHOUNDER

## COASTAL POND

Studied by Oceanographic Methods

by K. O. Emery

## Epilogue: Oyster Pond — Three Decades Of Change

by Brian L. Howes and Stanley R. Hart

Oyster Pond Environmental Trust

Box 496

Woods Hole, MA 02543

105 p. (cloth).

Emery's idea was to study a small (60 acre) coastal pond on Cape Cod near Woods Hole, MA, the way you study the ocean, a cheap model that would have valuable lessons for both the deepsea and pond students. His classic work was published originally in 1969 and went through three printings. But in the mid-



eighties local residents and another generation of scientists began to notice changes in the pond — some oxygen problems and changes in salinity, nutrients, and both plant and fish populations. To pinpoint the reasons for change and possibly reverse them, a Falmouth Pond Watch Program was started in 1987; this book is the result of their observations and suggestions for pond management. There is nothing fancy here, just straightforward descriptions of the pond's topography, fresh/salt water regimes, nutrient budgets, and the like, mostly physical oceanography aimed at a body of water barely 10 feet deep. Their conclusion is that the pond's problems are not caused by nearby development and a resultant runoff from septic tanks and stormwater but by increased salinity, and should be managed with a light hand as a brackish system. The next steps are anyone's guess; the methods used to get this far are interesting and applicable elsewhere. But while the techniques can be duplicated, it would be difficult to gather as august a group as the Woods Hole scientists and Cape Cod Yankees. You can bet these "Pond Watchers" took the work seriously — lots of tweed jackets with elbow patches, pipe smoking, and "hear, hears" as they wrestled with parts per thousand and coliforms per liter. Their conclusion is that ponds are worthy of serious study, and this book will serve others as a model.

## THE STRIPED BASS CHRONICLES

by George Reiger

Lyons & Burford, New York.  
182 p. \$22.95 (cloth)

This is one man's story of his encounters with the prime coastal fish of the northeast with a range that goes south to Georgia and includes some west coast spots in and north of San Francisco Bay. At the same time, he recounts the history of the fish and the anglers who have chased them up and down the tides, day and night, with flies and bunker chunks,



nets and calcutta bamboo poles, bare hands and custom boats. Lots of great angling names are here: Van Campen Heilner, Nelson Bryant, Milt Rosko, Lefty Kreh, and John Cole, and many of the striper hotspots catch Reiger's attention: the striper rivers of Maine, Cuttyhunk's legendary fishing camps — striped bass, bluefish, and weakfish, plus freshwater ponds stocked with bass and trout, and goodly number of gamebirds and deer around for some shooting on the side. Reiger goes on down the coast to Savannah, Georgia, and then covers the bass's cross country journey as fingerlings from New Jersey rivers to the establishment of a new fishery in San Francisco Bay. He tells the story of the striped bass's rise and fall over time as it is over fished or its habitat ditched and drained. There are tales of early flyfishing for stripers, of world record fish, and of regular 20-pounders. The result is a terrific history of the fish and those who would do it in with rod and reel. It also reveals the author as combative on his way to becoming contemplative. A photo of Reiger on the book jacket shows a lefthanded fly fisherman who doesn't look as if he cares whether he catches anything or not. Maybe that's the definition of a true recreational angler.

This fine book carries equally fine illustrations by Christopher Reiger, the author's young son, only emphasizing that this is a worthy addition to the saltwater angler's bookshelf.

## The Last Page

# Littoralgate

*The U.S. Justice Department has uncovered an internal ALS document circulated to Society's trustees regarding certain proposed fund raising ideas. Rather than waiting for the details of the memo to be leaked to the press, we felt it made better sense to release the memo as written, to "fess up to" what we have been hatching. We leave it to members and the public to decide whether our thoughts and ideas are worthwhile or patently silly and illegal.*

November 1, 1996

To: ALS Board of Trustees

From: Staff

Subject: Money

You have asked us to jot down some fund raising ideas for the ALS Trustees to hash over at the next board meeting. Below is our response. Blue sky thinking? That's your call. In questionable taste? Hardly; the other side does the same kind of thing all the time.

1. To get more members to increase their level of giving, we suggest the following systems of rewards:

For the \$15 student/senior rate, members can drive past ALSHQ and wave.

\$25-\$49 members can sit on the ALSHQ porch for one sunset.

\$50 members get to look over ALS treasurer's shoulder while he prepares his financial report.

\$100 members get a choice: instant coffee with junior staff in the ALS kitchen with bagels and small talk; brunch with the Society's CPA; or a photo with the trustee executive committee.

\$250 members: brewed coffee, unlimited donuts, and inside gossip with the ALS president for one hour in the ALS library. Informal photo with the president included.

\$500 members: sleep overnight on the couch in the hall and continental breakfast with whatever staff gets into work first the next morning.

2. We have floated the idea of corporate endorsements out into the marketplace and received the following proposals which we recommend accepting:

a. For \$5000 a year, we will be called the American Plastics Council Littoral Society in recognition of predominance of plastics in beach debris.

b. The Baykeeper/Boat can be traded in for two Kawasaki Jetskis for a one-time payment of \$3000.

c. The Delaware Riverkeeper boat will be named the "RE-ESSAYONS" (We will try again) and fly the colors of the U. S. Army Corps of Engineers.

3. We recommend putting the ALS fish tagging program up for sale to the highest bidder. As of now, Gorton's, Mrs. Paul's, and Arthur Treacher's have shown an interest.

That's it for starters. We are still looking into naming the headquarters building after a bank or airline, preferably one that won't crash. And we agree that rock groups and professional athletes are too risky, although a website address of [www/airJordan/at/Sandy Hook.org](http://www/airJordan/at/SandyHook.org) is tempting. Want to troll this across the Bay and see if we get any strikes?

D. W. Bennett



AMERICAN LEGION POSTAL SERVICE

HIGHLANDS, NEW JERSEY 07033

SANDY HOOK

NON-PROFIT ENG.  
U.S. POSTAGE  
PAID  
Permit No. 100  
Ridgely, MD