

# VELADOR

The Newsletter of the Caribbean Conservation Corporation

## Turtles Will Suffer For Reluctance To Use TEDs

Sea turtles have made front-page news since spring because of a federal law requiring shrimpers to use TEDs, turtle excluder devices, in their nets. TEDs allow turtles and fish to escape through a "trap door" in the middle of shrimp nets.

The federal law went into effect May 1. It requires shrimp fishermen from North Carolina to Texas to use TEDs, but shrimpers immediately won a 60-day reprieve from the hefty fines for boats not equipped with TEDs. After the reprieve, U.S. Commerce Secretary Robert Mosbacher again bowed to the demands of shrimpers and suspended the federal regulations.

An estimated 11,000 sea turtles are drowned in shrimp nets each year. In a report commissioned in May by the Center for Marine Conservation, CCC Director of Research and Conservation, Dr. Perran Ross documented the devastating effect of this mortality on Kemp's ridley, the rarest species of sea turtle.

The late Archie Carr, the CCC's first technical director, discussed the unique distribution and problems of the Kemp's ridley in a chapter of his book, *The Windward Road*, entitled "The Riddle of the Ridley." In his last published papers, Carr returned to the continuing enigma of the juvenile distribution of this species. Unless drowning in shrimp trawls is greatly reduced, the ridley may disappear before its riddle is solved.

The TED regulations were proposed by the National Marine Fisheries Service (NMFS) in June 1987, but were delayed through a series of maneuvers by the shrimp industry lobby in the courts and Congress. After surviving these challenges, the immediate impact of TED use has been weakened by the

half-hearted measures adopted by the Commerce Department to enforce the new regulations.

Shrimper opposition to using TEDs is based primarily on their fears of reduced shrimp catch and the belief the equipment is expensive and unavailable.

Testing by the NMFS indicates that, properly fitted and used, TEDs do not reduce shrimp catch. A recent phone survey by the Center for Marine Conservation (CMC) indicated that several thousand TEDs were immediately avail-

*Continued on page 2*

## Thirty Years of Turtle Conservation



Since 1959, the CCC has been working for the conservation of sea turtles in the Caribbean and around the world. One of the most publicized efforts to increase the population of these endangered ocean creatures was Operation Green Turtle.

During the 1960s the CCC distributed tens of thousands of turtle hatchlings throughout the Caribbean from Tortuguero, Costa Rica, by U.S. Navy amphibious aircraft. The aim was to re-establish green turtle populations to areas where they had been eliminated by over-exploitation.

At the time, scientists believed that the turtle hatchlings would return as sexually mature adults in about seven years. Since then research has revealed that turtles take between 20 and 50 years to attain sexual maturity. Thus the verdict is still out on the conservation value of the project, but the favorable publicity it attracted helped educate people around the world to the plight of sea turtles.



## Celebration of U.S.-AID Grant Held in Washington, D.C.

Jane Allison "Lo" Halaby, a longtime CCC board member, and William Warner hosted a reception for the CCC at the Cosmos Club in Washington, D.C. on April 18. The occasion was to celebrate the recently awarded \$675,000 U.S. Agency for International Development (US-AID) grant, which will allow the CCC to launch a plan for the conservation and sustainable development of Tortuguero, Costa Rica.

A number of representatives from US-AID attended and David Carr, executive director of the CCC, thanked them for funding the request during a short program.

"We've always thought that Tortuguero's natural assets should be the basis of economic development in the area," said Carr. "Now US-AID has given us the opportunity to demonstrate that sustainable development can occur while protecting Tortuguero's unique natural charm."

Among the many facets of the AID proposal are plans to develop innovations at Tortuguero that may be applicable to sea turtle nesting beaches elsewhere. Since many nesting beaches

around the world are being effected by coastal development and uncontrolled tourism, a model for ecotourism development may facilitate the protection of other nesting sites.



*William Warner and Jane Allison Halaby, hosts of the US-AID reception.*

### TEDs - From page 1

able. TEDs cost from \$100 to \$450 each.

The slow implementation of the TED regulations will have a cost in terms of drowned turtles, particularly of the Kemp's ridley, which is critically endangered.

Federal authorities and conservationists are firm in their determination that TEDs will, sooner or later, be used by all shrimp fishermen. It is unfortunate that in the meantime a mixed message

from NMFS is encouraging shrimpers to continue their intransigent opposition to TEDs.

The state of Florida has taken a leadership position, moving ahead of federal regulations to require TED use in Florida waters. Alarmed by the high mortality of sea turtles in the winter shrimping season, the Florida Marine Fisheries Commission passed emergency regulations requiring TED use in the

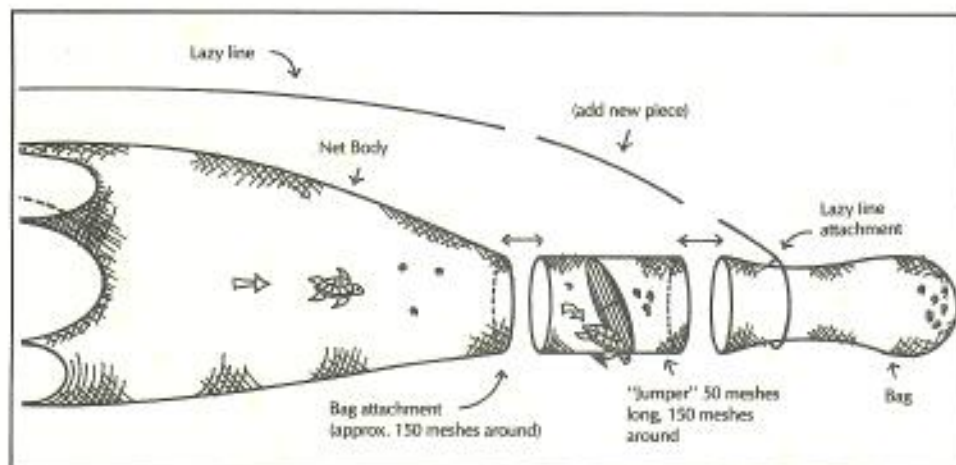
winter fishery in northeast Florida and has passed regulations requiring year-round use of TEDs in Florida waters.

### Update

As our newsletter was going to press, the Commerce Department announced that commercial shrimp fishermen must resume using turtle excluder devices (TEDs) in their nets at certain times of the year beginning September 8. This decision was announced after a temporary rule allowing shrimpers to limit the time their nets were in the water as an alternative to TEDs was about to expire.

Under Secretary John A. Knauss said, "I have now weighed all the facts and concluded that there is no other choice under the Endangered Species Act but to resume the original TEDs enforcement regime."

Although this is positive action, concern remains among conservationists because the regulation only applies to specific seasons and in-shore waters are exempt.



*Side view of a "Georgia Jumper" TED. Illustration shows how a jumper is attached to a shrimp net. Art courtesy of the Georgia Sea Grant College.*

## Briefs

DR. PERRAN ROSS, CCC director of research and conservation, and ANNY CHAVES, CCC field research director, offered two short courses at Tortuguero this nesting season, one course to Tortuguero National Park guards and one to local village residents. The guards now take an active role in sea turtle protection and tourist control.

Several of the trained local residents have begun to lead groups of tourists and are helping to minimize tourist disturbance of turtle nesting.

Welcome to new board member ROBERT TRULAND, President of Truland Systems Corporation. Mr. Truland and his wife Mary share a life long interest in wildlife conservation with a special fondness for sea turtles. In addition to serving as Trustee of the Truland Foundation, Mr. Truland founded and directs the Chelonia Institute, which is dedicated to acquiring and preserving sea turtle nesting beaches in the United States and

abroad. The Trulands live with their two children on a farm in Maryland.

"Sea Turtles: Ancient Nomads" premiered on PBS stations across the country this summer. The show tells the story of Archie Carr's attempts to protect sea turtles from extinction. The National Audubon Special is narrated by actress Jane Alexander. Copies of the special can be purchased on videocassette through National Audubon (202) 547-9009.

## Turtle Shirts Help Fund CCC's Efforts

A shirt sporting a large, full-color green sea turtle on the back and the CCC logo on the front is now available to members and friends of the CCC. Proceeds from the sale of the shirts will go directly to supporting our conservation efforts.

We would like to thank Michael Latona, owner of Harlequin Wildlife and Nature Graphics, for providing the shirts. Latona's firm is well known in environmental circles for its creative designs. If you would like to support our efforts by purchasing one or more of these unique shirts, simply complete the order form below.



One of the several components of the US-AID grant is starting to take shape in the capable hands of LUCINDA K. TAFT. She has been hired to establish and direct the CCC's Environmental Education and Interpretation Center at Tortuguero.

The U.S. Fish and Wildlife Service is proposing the establishment of the Archie F. Carr National Sea Turtle Refuge in east-central Florida. The area selected is part of a 20.5 mile stretch of Florida sea coast where 25 percent of U.S. loggerhead and 35-40 percent of green sea turtle nesting takes place. Endangered leatherbacks also nest within the project area.

Each year 10,000 to 12,000 sea turtle nests are located in the proposed wildlife refuge.

### Order form for CCC Shirt

Long sleeve shirts are 100 percent crinkle cotton and come in light yellow only. Short-sleeve shirts are 100 percent cotton knit and come in white, pastel blue and pastel pink. Both styles come in adult small, medium and large sizes and cost \$15.00 each. Make checks payable to CCC or order toll free with your Visa or Mastercard by calling 1-800-678-7853.

Style (long or short sleeve)	Qty.	Color	Size	Price
				Total merchandise _____
				Sales tax (6% for FL addresses) _____
				Postage and Handling _____
				Total <b>\$2.50</b> _____
Name _____		Home phone _____		
Address _____				
VISA MC Account No. _____				
Expiration Date _____		Signature _____		

## Making Tracks



CCC Board Member, CLAY FRICK has just returned from Bermuda after concluding the 15th year of his turtle tagging project, during which he successfully tagged and recovered more than 100 turtles. One of the turtles that Dr. Frick tagged in Bermuda was later recovered in Nicaragua.

CCC board member, LANDON CLAY, his wife Lovinia and their infant son, Landon Jr., accompanied the director of the U.S.-AID mission, CARL H. LEONARD and other AID personnel on an inspection trip to Tortuguero, Costa Rica.

Mr. Clay recently assumed the position of chairman of our development committee which he is vigorously pursuing.



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# VELADOR

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Details in the fall issue of Velador.

Watch your supermarket shelves for the new  
Demet's Turtles candy display and Adopt-a-Turtle.

# Velador



"Protecting sea turtles since 1959"

Newsletter of the Caribbean Conservation Corporation

## From the executive director



David Carr

The Caribbean Conservation Corporation is involved in three major initiatives that address this concern and merit public attention and support.

### *Preservation of critical habitat is the most pressing need to insure the survival of marine turtles.*

The proposed Archie Carr National Wildlife Refuge – four relatively undisturbed sections of beach along a 20-mile stretch of the central east coast of Florida – would preserve the most prolific marine turtle rookery in the country. The Carr Refuge would be the first wildlife refuge established in the USA specifically for sea turtles.

Contained in this modest-sized refuge would be the largest nesting assemblage of threatened loggerhead sea turtles in the Western Hemisphere – second in size only to Oman in the Arabian Sea. Also protected at the refuge in Florida would be the largest nesting population of endangered green turtles in the United States.

The total estimated cost for land acquisition is between \$50-80 million, a cost which may be spread over several years. Congress has begun the

See David Carr, Page 6

## Congress approves \$2 million for turtle refuge

One of the world's most critical sea turtle nesting beaches received a vote of confidence from the U.S. Congress late in October, when the House and Senate agreed to spend \$2 million for land acquisition within the Archie Carr National Wildlife Refuge in Florida.

The federal action follows successful state and local government efforts over the summer to acquire land within the Atlantic Coast refuge.

The largely undeveloped refuge totals about 500 ocean-front acres in an area of intense coastal development. Most of the refuge lands are privately owned, and total real estate value is estimated at up to \$80 million.

Congress' appropriation for land purchases within the refuge was approved early Sunday morning, October 28, as part of the Department of Interior's 1991 budget. The appropriation represented a compromise between an initial House proposal of \$3 million and the Senate's \$1.5 million response.

A U.S. Fish and Wildlife Service final environmental assessment, released August 24, had recommended federal acquisition of undeveloped lands within the refuge and acquisition of conservation easements on undeveloped tracts there.

The refuge, named by the USFWS in 1988 to honor the memory of the late technical director of the Caribbean Conservation Corporation, Archie F. Carr, Jr., is the site of as many as 12,000 turtle nests each year. The



Photo by Florida Today

During his successful campaign to become Florida Governor, Lawton Chiles in June met at the Archie Carr National Wildlife Refuge with the late Dr. Carr's widow, Marjorie.

beach supports the largest nesting colony of loggerhead sea turtles in the Western Hemisphere, surpassed in the world only by Oman.

The Florida refuge is also the nesting beach for 40 percent of the U.S. green sea turtle population. The late Dr. Carr's 1956 book, *The Windward Road*, fostered a world-wide movement to save the green turtle.

The refuge which bears Dr. Carr's name is also home to numerous threatened species of plants and animals,

See, Carr Refuge, Page 2.



Illustration courtesy Florida Power and Light  
Loggerhead sea turtle,  
*Caretta caretta*.

including the Florida scrub jay, gopher tortoise, and beach mouse.

The Congressional appropriation sent to the President last month followed an unsuccessful attempt last year by the U.S. House. This year, in a July 1990 letter to the Caribbean Conservation Corporation, U.S. Sen. Bob Graham of Florida cited nationwide support for the refuge, adding that he and U.S. Sen. Connie Mack, also of Florida, had "listed the

loggerhead turtle refuge among our highest priorities for 1991 funding."

At the state level this summer, Florida Governor Bob Martinez, members of the Florida Cabinet, and the Democratic nominee for the upcoming gubernatorial election all declared their support for the refuge.

Gov. Martinez' February vote with the Florida Cabinet to purchase a half-mile-long parcel within the refuge was followed in July with his meeting on the beach to accept the deed for the state's \$2.5 million purchase. The 14.8-acre parcel had been held by The Nature Conservancy since 1989 in anticipation of government purchase.

Later in the summer, Gov. Martinez and the Cabinet offered further support for the Carr Refuge. At an August 14 meeting, they required two home owners to remove boulders placed - without the required state permit - on an otherwise unarmored portion of refuge beach. Boulders and other forms of beach armoring interfere with sea turtle nesting.

At the same meeting, the Governor and Cabinet voted to expand the boundaries of undeveloped, ocean-front tracts targeted in Brevard and Indian River counties for state acquisition. The expanded boundaries bring most of the Carr Refuge into the Florida Conservation and Recreational Lands acquisition program. The new designation will allow the state to seek matching land acquisitions from the federal government. A state committee scheduled to meet in December will decide where the Carr Refuge lands will rank in a list of Florida properties slated for state purchase.

Bright prospects for continued state support of the refuge will not likely be clouded by the outcome of the fall gubernatorial election. In addition to Republican Governor Martinez' demonstrated support, Democratic gubernatorial nominee Lawton Chiles also supports the refuge project. The former U.S. Senator pledged his support for the refuge June 14, when he met on the "turtle beach" with members of the media and Marjorie Carr, the 75-year-old widow of Archie Carr, Jr.

Among the strongest proponents for the Carr Refuge, however, may be the residents and local government of Brevard County, Florida. Voters there on September 4 approved by a 16 percent margin a \$55 million bond issue to purchase environmentally sensitive lands

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*We will be continuing our purchases regardless of what the federal government does.*

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*Teresa Kramer, Director,  
Brevard County Office of Natural  
Resource Management.*

in their county. The bond will allow Brevard County over the next 20 years to purchase each year up to \$3 million worth of endangered lands.

"We will be continuing our purchases regardless of what the federal government does," said Teresa Kramer, director of the Brevard County Office of Natural Resource Management.

The nesting colonies of endangered loggerhead sea turtles at the national refuge beach in Brevard County will likely contribute to the area becoming a high priority for local acquisition. An appointed committee of scientists will take nominations this fall for lands the county will purchase first.

Brevard County already owns or manages a total of about three miles of Carr Refuge beach. The state's purchase this summer included a \$23,000 contribution from the Brevard County Commission. The Commission will manage that parcel until the federal status of the refuge is resolved. Brevard County and the state will turn over ownership of the turtle refuge lands to the USFWS following matching federal purchases.

To raise public awareness of the need to preserve the loggerhead nesting beach, the Caribbean Conservation Corporation has been working under a grant from the The Elizabeth Ordway Dunn Foundation, Inc.

## Velador

Velador: [be.la.dor] Spanish. Night watchman, keeper, guard, also, in traditional latin cultures, the hunter's assistant, who watches for sea turtles to come ashore.

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Susan W. Clarendon, Editor

The Caribbean Conservation Corporation is a non-profit organization founded in 1959 and dedicated to the protection of sea turtles and their habitats through research, conservation, and education.

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### Contact Florida officials to encourage acquisition

To voice your support for state purchase of lands within the Carr National Wildlife Refuge, write or call Tom Pelham, Secretary, Fla. Dept. of Community Affairs, 106 Ryne, 2740 Centerview Dr., Tallahassee, FL 32399. Phone (904) 488-8466. Contact him before the Florida Conservation and Recreational Lands Committee meets in December.

## New wildlife corridor consolidates large protected area

In a move that consolidates a conservation area stretching more than 40 miles — from Nicaragua south to Tortuguero National Park — Costa Rican President Rafael Angel Calderon has created a new protected zone.

President Calderon this fall signed a decree creating the Tortuguero Forest Protected Zone. The designation protects a 6.2-mile-wide wildlife corridor connecting the 227,240-acre Barra del Colorado Wildlife Refuge — adjacent to Costa Rica's border with Nicaragua — to the more-than-46,000-acre Tortuguero National Park, on Costa Rica's Caribbean Coast.

The government designation freezes land-use in the 31,863-acre corridor, preventing agricultural practices from further isolating Tortuguero National Park as a "forested island in a sea of banana plantations and cattle farms," according to James Barborak, a research fellow with Wildlife Conservation International, WCI.

Mr. Barborak has acted as an advisor to the Caribbean Conservation Corporation in its efforts with WCI and with the Neotropico Foundation of Costa Rica, The Nature Conservancy, and other local and international conservation groups to obtain protected status for the corridor.

Government protection of the corridor is an important goal of a Caribbean Conservation Corporation project funded in 1989 by U.S.-Agency for International Development, AID.

Pres. Calderon's recent designation of the corridor followed a change of government in Costa Rica over the summer. The change had temporarily stalled earlier efforts to protect the corridor.

With the government designation accomplished, conservation efforts have turned to acquiring lands within the protected corridor. Costa Rican law requires that lands be owned by the government before they can be declared a national park. The Costa Rican government owns less than 7,000 acres within the corridor. The Danish, non-government organization, *Nepenthes*, has already raised \$800,000 towards purchase and management of private lands within the new wildlife corridor.

Extensive U.S. AID-funded studies,



Photo by O.R. Foster, reprinted with special permission of the New York Zoological Society.

**Jaguars are among the species whose large range is protected under the new wildlife corridor designation.**

conducted by consultants for the Caribbean Conservation Corporation, found over 90 percent of corridor lands remain virgin forest, despite largely private ownership. Eighteen families reside in the protected area. According to Mr. Barborak, however, most families have expressed a willingness to sell their lands.

Mr. Barborak said he expects most of the new protected zone and the Barra del Colorado Wildlife Reserve to soon be upgraded to national park status. He described the government creation of the Tortuguero Forest Protected Zone as, "a vital step toward conversion of the entire area into an annex of Tortuguero National Park."

The Tortuguero-Barra del Colorado region, inundated with well over 16 feet of rain each year, includes portions of the largest and wettest rainforest around the Caribbean rim. The region's many diverse habitats include Rafia palm swamp, grass marshlands, river and estuary systems, and lowland hills that reach a maximum altitude of 800 feet.

The region is home to more than 300 species of birds and many other migrant species from North America. Of the 120 species of mammals which inhabit the region, thirteen are endan-

gered. Six of seven reptilian species identified as endangered in Costa Rica live in this region, including four sea turtle species and two species of crocodile. The area is also home to another 100 reptile species.

The Tortuguero Forest Protected Zone, combined with the contiguous Tortuguero National Park and the Barra del Colorado Wildlife Refuge, comprises a portion of the Llanuras de Tortuguero conservation area. This large protected area is adjacent to a newly created biological reserve in Nicaragua.

The combined conservation areas make Tortuguero National Park the "southern anchor of a contiguous complex of protected areas of over a million acres," Mr. Barborak said.

The protected corridor will enhance the wildlife populations and flora which thrive in the region, preventing the isolation of two biologically and geographically connected preserves.

The consolidation of these areas preserves a large habitat range required by some species, such as the puma, jaguar, white lipped peccary, manatee, and great green macaw.



## Conservation-wise holiday gifts available

This holiday season, share your conservation ideals with your friends and loved ones. Give note cards, T-shirts, and posters from the Caribbean



Conservation Corporation. Your gifts will help to support the work of the non-profit CCC, preserving sea turtles and their habitats.

T-shirts, pictured above, are 100 percent cotton and feature illustrations of sea turtles and the CCC logo. The shirts come in three colors. (See order form below.)

## Kowabunga! Adopt-A-Turtle and get a Teenage Mutant Ninja Turtles poster

Hey dudes! The green vigilantes who make their home in a New York City sewer have found another good cause to champion – sea turtle preservation.

The upcoming edition of the Archie Comic Book Series, *Teenage Mutant Ninja Turtles Adventures*, due out in November, finds the fearsome four-some battling outlaw shrimp fishers off the coast of Louisiana. In "Fight the Power," No. 17, in the series, the mutant turtles battle a wicked Cap'n Mossback, leader of a band of shrimp fishers who don't use turtle excluder devices in their nets.

Note cards feature six different endangered species in Costa Rica, including the hawksbill sea turtle, pictured above. The package of six cards also includes a jaguar, a toucan, a crocodile, a quetzal, and a harpy eagle.

The CCC is also offering two new posters this year. One features a stunning color photograph of a green

Mirage Studios Artist Dean Clarrain has donated the comic book cover artwork to the Caribbean Conservation Corporation. The CCC is offering the poster as a special premium for children and other Teenage Mutant Ninja Turtle fans who enroll in the CCC's Adopt-A-Turtle program.

The poster is offered along with a year's subscription to *Velador* and a certificate bearing the name chosen for the turtle, tagged at Tortuguero Beach, Costa Rica. *Velador* readers can order the poster and enroll in the Adopt-A-Turtle program by completing the form below.

No deposit...



No return

sea turtle on the beach at Tortuguero. (See above.) The other, pictured below, is an Archie Comic book cover featuring the Teenage Mutant Ninja Turtles riding a sea turtle. Either poster is available as a premium for enrolling in the CCC's Adopt-A-Turtle program. And the Tortuguero poster may be purchased separately.



Mirage Studios Artist Dean Clarrain donated this illustration.

### Caribbean Conservation Corporation order form.

#### T-Shirts

Adult  \$15 How many? \_\_\_\_\_ Color: White  Aqua  Peach  Size: S  M  L  Price \_\_\_\_\_  
 Youth  \$10 How many? \_\_\_\_\_ Aqua  Size: S  M  L  \_\_\_\_\_

\$2.50 shipping and handling charge for first T-Shirt, \$1 for each additional ordered \_\_\_\_\_

Green sea turtle poster \$10 How many? \_\_\_\_\_ Price \_\_\_\_\_

\$2.50 shipping and handling charge for first poster, \$1 for each additional ordered \_\_\_\_\_

Note cards (6 in a package) \$6 for one pkg., \$50 for 10 pkgs. How many pkgs? \_\_\_\_\_

\$2.50 shipping and handling charge for first pkg., \$1 for each additional ordered \_\_\_\_\_

Adopt-A-Turtle \$20 My turtle's name \_\_\_\_\_ Price \_\_\_\_\_

Please send as one of my premiums the green sea turtle poster  or the Ninja turtle poster

For orders outside U.S., add \$5 shipping and handling \_\_\_\_\_

Send to: Name \_\_\_\_\_ Grand total \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

I have enclosed a check or money order payable in U.S. dollars to Caribbean Conservation Corporation.

Charge my order to Visa  Mastercard  My account number \_\_\_\_\_ Exp. date \_\_\_\_/\_\_\_\_/\_\_\_\_

My signature for charge order: \_\_\_\_\_ To order by phone: 1-800-678-7853



## Short course has international appeal

Continuing a 30-year-long effort to engage indigenous peoples in sea turtle conservation, the Caribbean Conservation Corporation in September conducted a short course for 14 representatives of eight West Atlantic countries.

The two-week, bi-lingual course, held at the CCC's Tortuguero, Costa Rica research station during the green sea turtle nesting season last summer, included both classroom instruction and hands-on participation in field biology methodology.

"We've got a working example of a protected area that we use to demonstrate conservation in action," said Charlie Luthin, director of programs for the CCC.

During the course, Sept. 2-15, participants were instructed in sea turtle taxonomy, biology, ecology and also participated in field exercises, tagging turtles and recording data for computerized analysis.

Conservation issues presented included economic exploitation of sea turtles, merits and problems of turtle ranching, farming and headstarting, protective legislation, planning and management of protected areas, conservation education and proposal writing.

Instructors were Dr. Anne Meylan, a CCC research fellow and biologist with the Florida Department of Natural Resources, and Anny Chaves, a marine biologist with the University of Costa Rica.

Guest lecturers included John R. Clark, from the University of Miami. Mr. Clark is co-author of the 1984 *Marine and Coastal Protected Areas*. Other guest lecturers were Cindy Taft, director of the CCC's Center for Environmental Interpretation and Education at Tortuguero; Raphael Robles, the CCC's coordinator for Tortuguero tour guides; and Jim Barborak, research fellow with Wildlife Conservation International. Eduardo Chamorro, Chief Warden for Tortuguero National Park also led a tour through the park.

Participants came from Brazil, Columbia, Costa Rica, Honduras, Mexico, Panama, Suriname and Venezuela. They were sponsored by Island Foundation, the CCC, World Wildlife Fund, U.S. Park Service, U.S. Fish and Wildlife Service, Florida Sugar Cane League, Fundacion PRO-TAMAR, and

Wildlife Conservation International.

The annual short-course was first formally offered in 1983, with funding for one trainee provided through the

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*We've got a working example of a protected area that we use to demonstrate conservation in action*

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*Charlie Luthin  
CCC Director of Programs*

CCC's Joshua B. Powers Fellowship. The CCC expanded the course in 1989 with funding from Island Foundation, Inc., a philanthropic organization which supports environmental education and management.

More broadly, the short course has developed from an informal program of conservation training begun more than 30 years ago by the CCC's late technical director, Dr. Archie Carr, Jr.

"Most of the sea turtle conservationists in the Caribbean region were



Photo by C. Luthin

Dr. Anne Meylan, an instructor for the CCC's annual turtle conservation short course, demonstrates how to measure a turtle plastron.

trained by Archie Carr or his students," said Mr. Luthin. "Our goal is to create a network of resource people throughout the region, trained in research and conservation activities for sea turtles."

## Leatherback research finds big is warm

Sea turtles have changed little since their prehistoric origins. Now scientists working at the CCC's research station at Tortuguero have found new similarities between leatherback turtles and dinosaurs.

The leatherback turtle, weighing up to one ton, is the largest living reptile. To better understand how this cold-blooded animal survives throughout a vast range, from the tropics to north of the Arctic Circle, researchers examined metabolic rates of leatherbacks at Tortuguero during the 1989 nesting season.

The project, headed by Dr. James Spotila of Drexel University and Dr. Frank Paladino of Purdue, led to new evidence suggesting how dinosaurs could have survived in polar regions. The researchers found leatherback resting metabolic rates are three times higher than metabolic rates of green



Dr. Spotila's first-ever studies of leatherback metabolic rates may explain dinosaurs' vast range.

turtles and other reptiles scaled to leatherback size.

Because no leatherbacks have lived in captivity, Dr. Spotila's findings were the first to determine leatherback metabolism. Scientists previously speculated that the big turtles' adaptability to cold climates might be due to mammalian-like metabolic rates.

See leatherback study, Page 7.

process with an initial appropriation of \$2 million.

To encourage additional purchases by the State of Florida, readers should before December, write Tom Gardner, Exec. Director, Fla. Dept. of Natural Resources, 1011CA M.S. Douglas Bldg. 3900 Commonwealth Blvd., Tallahassee, FL 32399-2400. (See Page 2 for additional addresses and related story.)

For more than a year the CCC has been working to bolster the turtle beach at Tortuguero, on Costa Rica's northern Caribbean coast, against the rising tide of natural history tourism. The CCC supports natural history tourism as probably the only basis for sustainable economic development in this neglected frontier region.

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*The CCC has been working to bolster the turtle beach at Tortuguero against the rising tide of natural history tourism.*

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Development, however, must be carefully planned and visitors closely managed if this emerging and promising industry is not to destroy the overall appeal of Tortuguero or the viability of the turtle rookery at Tortuguero Beach, where the largest nesting population of green turtles in the Western Hemisphere as well as a significant number of leatherbacks and hawksbills make their nests.

With vital support from the U. S. Agency for International Development, Educational Foundation of America, and other generous donors, the CCC has embarked on a comprehensive plan to insure that Tortuguero can accommodate visitors while maintaining its rich biological diversity and charm.

One of our objectives is to promote the creation of a six mile-wide biological corridor to connect Tortuguero National Park with the nearby Barra del Colorado Wildlife Refuge. (See story, Page 3.) When joined, the two protected areas will offer much greater protection of the diversity of the Caribbean lowland rainforest, forming one of the largest parks in Costa Rica. The protected corridor will also buffer the Tortuguero coast from human en-

croachment from the interior.

Another CCC objective is the preparation and adoption of a comprehensive development and zoning plan, *plan regulador*, for the village of Tortuguero and surrounding vicinity. This plan will address development on the beach, lighting ordinances, hotel density, types of development and many other issues that will have direct bearing on what Tortuguero will look like in 50 years – and whether the turtles will find the beach to their liking and keep coming ashore.

The Costa Rican government has been very supportive of protecting Tortuguero. The government has demonstrated support for both the *plan regulador* and the creation of the *zona protectora*.

To applaud the Costa Rican Government for the protection provided Tortuguero up until now and to reinforce to government officials that Tortuguero is of international significance and valued around the world, *Velador* readers are encouraged to write to Costa Rican Ambassador Gonzalo Facio. (See address, Page 3.)

Your support of the *zona protectora* and *plan regulador* is needed.

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While Tortuguero in Costa Rica and the Archie Carr National Wildlife Refuge in Florida protect vital reproductive habitats for turtles, waters off Nicaragua's northern Caribbean coast are where many sea turtles

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*The Miskito Cays, in the shallow waters off of Eastern Nicaragua, are located within the largest known sea turtle feeding ground in the world.*

---

spend most of their lives.

The Miskito Cays, a series of keys in the shallow waters off of Eastern Nicaragua, are located within the largest known sea turtle feeding ground in the world. More than half of the Tortuguero nesting colony, as well as sea turtles from many other rookeries in the Caribbean, migrate to the Miskito Cays when they are not nesting.

The new Nicaraguan government, created in February, has embraced the establishment of a refuge around the

Miskito Cays. The Caribbean Conservation Corporation intends to provide every assistance possible to create a Miskito Cays refuge.

Recently, along with other conservation groups and Jaime Incer, the Nicaraguan minister for natural resources, we completed a reconnaissance trip to the region in order to develop a scope of work required to establish the refuge.

Revitalizing the Nicaraguan economy – the immediate task of the new administration – would be a sufficient challenge for most new governments. So we are especially delighted that the administration of Nicaraguan President Violeta Chamorro has so quickly assumed the task of protecting the country's extraordinary natural assets. In light of the value of the Miskito Cays to the welfare of sea

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*Please write to:  
His Excellency Ernesto Palacio,  
Ambassador of Nicaragua,  
Embassy of Nicaragua,  
1627 New Hampshire Ave. N.W.  
Washington, DC 20009.*

---

turtles in general – and especially to the turtles of Tortuguero – Nicaragua should be applauded for this heroic undertaking.

Let Ambassador Palacio know your appreciation of his country's efforts on behalf of international marine turtle conservation.

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Combined, the successful execution of these three projects – the Carr National Wildlife Refuge in Florida, USA, the *plan regulador* and *zona protectora* in Costa Rica, and the Miskito Cays refuge in Nicaragua – would represent a milestone for the preservation of marine turtles everywhere.

Your contributions to the Caribbean Conservation Corporation are critical to our ability to help keep these important projects on track and moving forward.

Thank you for your generous and continuing support.

Sincerely,

*David Carr*

## Skilled volunteer assistants vital to Tortuguero research projects

**A**lison Leslie, a native of Cape Town, South Africa, traveled for three years after completing undergraduate studies in zoology in 1987. Her travels ended at Tortuguero, Costa Rica in March, when she became one of the Caribbean Conservation Corporation's 18 volunteer research assistants chosen for the 1990 sea turtle nesting season.

"I've traveled for three years, and this is the wildest thing I've ever done," Ms. Leslie said. "Turtles is my future from now on. They've taken priority over all the animals of Africa."

She is among the 11 women and 7 men selected from among 30 applicants to lead groups of volunteers in nightly patrols tagging green sea turtles at Tortuguero beach. The research assistants are trained at the CCC's Casa Verde research station.

In addition to Ms. Leslie, this year's volunteer research assistants were na-

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*A student can learn more about turtle biology in a summer at Tortuguero than in a year at a university.*

||

*Charlie Luthin,  
CCC director of programs*

tives of the U.S., Canada, and Costa Rica. They paid their own travel costs to Tortuguero, where they were housed and fed by the Caribbean Conservation Corporation at Casa Verde. Most research assistants spent from 4 weeks to two months at Tortuguero, arriving in July for the start of the green turtle nesting season.

Because Tortuguero beach is also a nesting site for the endangered leatherback, loggerhead and hawksbill sea turtles, research assistants are often recruited to participate in other research projects based at Casa Verde.

Among this year's research assistants, some worked on a project examining freshwater turtle species. And one research assistant coordinated environmental education projects, including public tours of the protected beach.

Ms. Leslie was one of several who arrived in March to assist in scientific studies of leatherback respiration. Her work on the project led by Drexel



Photo by C. Luthin

*Research assistants arrive in San Jose and travel by boat to Tortuguero. Pictured above are 1990 research assistants, from left, Rebecca Warner, Chicago, Guillermo Cabezas, Costa Rica, Ben Pargman, Florida, and Gustavo Serrano, Costa Rica.*

University Professor James Spotila led to her this winter beginning graduate studies at Drexel, in Pennsylvania. Ms. Leslie said she plans to return to Tortuguero in the spring, to again participate in leatherback research there.

In addition to her work on research projects at Tortuguero, Ms. Leslie said she enjoyed regular jungle hikes and canal trips, when she and other research assistants led volunteers on weekly excursions to view jungle wildlife, including crocodiles, water otters, hundreds of birds and two species of monkeys.

Beginning with the upcoming 1991 nesting season, research assistants will be required to have had some prior natural science, field-work experience and some fluency with both Spanish and English.

According to Charlie Luthin, director of programs for the Caribbean Conservation Corporation, students of natural science can contribute the most to the research projects — and will benefit the most from the experience.

"Someone with a natural science background would be accustomed to working with animals and more likely to be comfortable with the physical and mental endurance required in the arduous and routine task of tagging turtles," Mr. Luthin said.

"A biology student has a lot to gain in hands-on field experience with our expert marine turtle biologists," he added. "A student can learn more about turtle biology in a summer at Tortuguero than in a year at a university."

### *Leatherback study, continued from Page 5.*

But the six leatherbacks studied at Tortuguero had metabolic rates only half

*Gigantothermy could explain the 77-degree body temperature of a leatherback found in 45-degree water off the Coast of Nova Scotia*

the rate of a similarly sized mammal, such as a cow.

Researchers relied upon Dr. Spotila's decades-old theory of "gigantothermy" to apply findings of leatherback metabolism to dinosaurs.

According to Dr. Spotila, gigantothermy — staying warm through sheer

size — kept cold blooded dinosaurs warm as they roamed near both the North and South Poles. Gigantothermy could also explain the 77-degree body temperature of a leatherback found in 45-degree water off the coast of Nova Scotia.

In a recent issue of *Nature*, Drs. Spotila and Paladino with Dr. Michael P. O'Connor wrote, "Mathematical modeling indicates that leatherbacks can use large body size, peripheral tissues as insulation, and circulatory changes to maintain warm temperatures in the North Atlantic and to avoid overheating in the tropics. This 'gigantothermy' probably allowed large dinosaurs to live in varied habitat, including Cretaceous polar regions."

## Legislation would prevent criminal sanctions for TEDS violations

**T**ax breaks for shrimp fishers who use turtle excluder devices in their nets and prohibitions against criminal sanctions for shrimpers who don't are among several proposals introduced in Congress this year by legislators from Gulf Coast states.

"The Trawlers Relief and Working Livelihood Act of 1990," introduced

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*The legislation distracts  
from the main problem;  
Turtles are being killed  
in the water.*

||

*Jack Woody, national sea turtle  
coordinator for the U.S. Fish and  
Wildlife Service*



Cartoon by Clay Bennett, of the St. Petersburg Times, reprinted with special permission of North American Syndicate.

July 10 by U.S. Sen. J. Bennett Johnston of Louisiana, would reward shrimpers who use turtle excluder devices (TEDs) with a 15 percent tax break, valued at up to \$50,000.

"To provide relief to shrimp fishermen from economic hardship caused by the mandatory use of turtle excluder devices....," the bill would base the tax-break on a fisher's total shrimp sales.

The bill, SB 2953, would also prohibit criminal penalties for shrimpers who fail to use TEDs, a violation of the Endangered Species Act. Sen. Johnston introduced the bill the week before the National Marine Fisheries Service imposed criminal sanctions against more than two dozen Gulf Coast shrimpers, arrested for trawling

without working TEDs in their nets.

Hatching sea turtles in captive is another goal of the senator's bill, which would provide \$2 million each in 1992 and 1993 to build a sea turtle hatchery. In the U.S. House, a sea turtle hatcheries proposal was introduced by another Louisiana Democrat, W.J. "Billy" Tauzin.

According to Jack Woody, national sea turtle coordinator for the U.S. Fish and Wildlife Service, sea turtle hatchery proposals are ineffective and misleading. "The legislation distracts from the main problem," he

said, "Turtles are being killed in the water." At a September 17 fact-finding session of the U.S. House Committee on Merchant Marine and Fisheries, he opposed the bill.

Rep. Tauzin's bill, HR 2975, is co-sponsored with two Democrats from Texas, Solomon P. Ortiz and Greg Laughlin. The bill is similar to one the trio introduced unsuccessfully in the last Congress. In a memo to Congress that year, the USFWS found "no evidence that headstarted sea turtles have survived [in the wild] to return to nesting beaches and reproduce."

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The Newsletter of the Caribbean Conservation Corporation

# VELADOR

"Protecting Sea Turtles Since 1959"

Summer 1991



## 1991 Resource Conservation Training Courses Attract American, Asian Applicants

Over 70 people from the Americas and Asia have applied for Caribbean Conservation Corporation's international short courses in marine turtle conservation for 1991. The short courses, which began as individual training programs in the 1970s, have since expanded into extended Spanish- and English-language training courses for a total of 26 participants.

The courses are designed for individuals involved in resource planning or management, especially those with responsibilities pertaining to marine turtles. Participants with little or no previous training are introduced to vital concepts of resource conservation and sea turtle biology, protected area management and hands-on field research.

The 1991 English course, September 1-15, concentrates on areas of importance to green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) turtles in the Caribbean, Asia and the south Pacific. The Spanish language course, September 16 through October 5, highlights marine turtle populations from the Pacific coasts of Central and South America, with emphasis on the olive ridley (*Lepidochelys olivacea*). The Spanish language course includes a week-long field experience on the Pacific coast of Costa Rica.

The courses, held at CCC's Tortuguero Green Turtle Research Station, provide opportunities for resource managers in developing countries to share experiences, resulting in enhanced regional management of marine natural resources.

Instructors for 1991 are Larry Ogren, a Florida sea turtle biologist recently retired from the U.S. National Marine Fisheries Service and Arny Chaves of the University of Costa Rica's Marine Turtle Program.

Some qualified applicants are still seeking funds to attend the 1991 courses. Potential sponsors are urged to contact CCC to discuss support for short course participants. The two-week English course is \$1,100 and the three-week Spanish course is \$1,500 (excluding international airfare).

## USAID Funds Historic CCC Miskito Coast Protected Area Proposal

The U.S. Agency for International Development (USAID) has funded an historic Caribbean Conservation Corporation proposal to establish the 5,000-square-mile Miskito Coast Protected Area in a zone of rich marine environments and coral islands off the northern coast of Nicaragua.

The sea grass beds in the Miskito Cays are the world's greatest foraging grounds for endangered green sea turtles (*Chelonia mydas*), supporting nearly 90 percent of the turtles tagged at CCC's Tortuguero research station.

In addition, the reefs and lagoons in the area are home to endangered hawksbill turtles (*Eretmochelys imbricata*), endangered West Indian manatees and other rare and endangered species.



Photo: Bernard Nietschmann

The Miskito Cays are also home to the indigenous Miskito Indians, skilled fishermen known colloquially as "the turtle people." The Miskitos returned to their coastal home from the 10-year Nicaraguan civil war to find foreign fishing fleets taking the resources that should rightfully be controlled by the indigenous peoples. "Resource pirates" from at least 12 countries have now entered the area to fish the rich coastal reefs and sea grass beds.

"We need to move quickly to keep the Miskito Cays from being stripped by fishermen without scruples," said Nicaraguan Minister of Natural Resources Jaime Incer, a widely respected geographer, historian and author.

*Continued Inside Back Cover*

## Paseo Pantera: Path of the Panther

The most profound event in the biogeography of the Western Hemisphere occurred during the Pleistocene, when the Earth's crust shifted to create Central America. Since then species have pushed their way in both directions along the land bridge between the Americas.

To protect the resulting rich and diverse Central American flora and fauna from accelerating degradation, the U.S. Agency for International Development has initiated a program to address urgent regional conservation issues.

Under the program, a \$1.6 million grant has been awarded to Caribbean Conservation Corporation and Wildlife Conservation International (WCI) for Paseo Pantera, a project named for the intercontinental "path of the panther" along the Central American isthmus.

The five-year Paseo Pantera project aims to protect and manage lands set aside for conservation, while making a vital contribution to the socioeconomic development of the Central American region.

Established parks will be protected by biologically sound buffer zone techniques, connected by protected wildlife corridors, and joined at international borders. Incentives for preservation will be provided through a regional ecotourism plan. Furthermore, a regional wildlands management strategy will be developed.

According to Dr. Archie Carr III, Central American coordinator for WCI, the project will give unity to conservation efforts from Panama to Mexico.

*Continued Back Cover*

## Research Report

# Bermuda's Juvenile Green Turtles

In 1620, Bermuda prohibited the killing of young sea turtles. Concerned over the "decay of the breed of so excellent a fish," legislators condemned fishermen who "catch up indifferently all kinds of Tortoyses both yonge and old little and greate and soe kill carrye away and devour them."

Any one who killed a turtle less than 19 inches wide was fined 15 pounds of tobacco, half of which went to the informant of the misdeed.

Despite the legislation, a thriving trade in sea turtles had by 1900 destroyed all the nesting colonies in Bermuda.

Over the last 22 years, however, a sea turtle tagging project directed by Dr. H. Clay Frick, a Caribbean Conservation Corporation director, reveals that a substantial number of young green sea turtles reside in the shallow, tropical waters surrounding the self-governing British colony. Dr. Frick's project is one of the world's largest and longest studies of immature green sea turtles on their foraging grounds.

To learn more about the juvenile turtles, Drs. Anne and Peter Meylan joined Dr. Frick in 1990 to study sex ratios and to assess the sexual maturity of individuals of the Bermuda turtle population.

Adult male green turtles can easily be distinguished from females because their tails are longer and the claws on their foreflippers are more strongly

developed, but juvenile green turtles do not exhibit visible sex traits.

The researchers determined the sex of 56 juvenile turtles by analyzing testosterone levels in blood samples and by using a laparoscope to view the internal sex organs of the living immature turtles. The turtles were released unharmed shortly after the laparoscopic examination.

Two methods of sex determination were used in order to compare levels of testosterone with the actual sex of the turtles as determined by laparoscopy. By using this approach, testosterone levels can be calibrated for future sex determination on the basis of hormones alone.

The sex ratio found by the Meylans was not statistically different from an equal 1:1 ratio, and is consistent with other sex ratios determined for green turtles. Sex-ratios of wild-caught turtles have rarely been determined, however, and this is one of very few such estimates being developed for Caribbean and western Atlantic green turtle populations.

In addition, the study confirmed that all of the animals were sexually immature, leading the Meylans to conclude that Bermuda serves exclusively as a developmental habitat for green turtles.

The study, continuing this summer, will contribute to understanding green turtle population structure and dynamics. The researchers can also examine other data, such as growth rates.



Clay Frick and Anne Meylan determine the sex of a juvenile Bermudan green turtle using a laparoscopic viewer.

Photo: Peter Meylan

During 1990, ten Bermuda turtles tagged in previous years were recaptured, sexed and measured for growth. Growth rates for Bermuda will be particularly interesting because of its northern location in the range of the green sea turtle.

And perhaps more effectively than the 1620s tobacco penalty, the research will aid plans to conserve and restore the "breed of so excellent a fish."

In addition to funding provided by CCC, the Meylans received Starr Fellowships through the Bermuda Biological Station. Laboratory space and logistic support for the study were provided by the Bermuda Aquarium, Museum and Zoo.

**VELADOR** [be.la.dor] *Spanish*. Night watchman, keeper, guard, careful observer; in traditional Latin cultures, the hunter's assistant who watches for sea turtles to come ashore.

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David Carr, Executive Director  
Susan Marynowski, Editor

Caribbean Conservation Corporation is a non-profit organization founded in 1959 and dedicated to the protection of sea turtles and their habitats through research, conservation and education.

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## Phipps Florida Foundation Kicks Off CCC Endowment Fund

The Phipps Florida Foundation, long a supporter of Caribbean Conservation Corporation's marine turtle program, has donated \$500,000 to open CCC's Endowment Fund. Income from the Phipps' gift will support CCC's research on Tortuguero's green turtle population, the largest in the Atlantic Ocean.

"We are very appreciative of this gift," said CCC Executive Director David Carr. "It is an outgrowth of the Phipps' incredible commitment to support CCC's green turtle research."

The foundation, created by the late John H. Phipps, who was a founding member and first president of CCC, is administered by his widow, Elinor K. Phipps, and sons, John E. and Colin S. Phipps. Colin Phipps is now president of CCC.

For three decades, the Phipps family have been the financial backbone of CCC, ardently sustaining research at Tortuguero. The endowment will enable CCC to continue to study the Tortuguero green turtle colony for years to come.

"An endowment is a particularly appropriate way to fund research and conservation of sea turtles because of their extraordinary longevity," said David Carr. "It takes a long time to develop a picture of the life history of an animal requiring 20 to 50 years to attain sexual maturity."

Additional donations are being sought to augment the Phipps' gift and expand CCC's Endowment Fund.

# Turtle Log

## First Federal Parcels Purchased For Archie Carr National Wildlife Refuge

The U.S. Fish & Wildlife Service has successfully spent the \$2 million appropriated by Congress for 1991 acquisitions in the Archie Carr National Wildlife Refuge.

The service purchased 700 ocean front feet, or about 15 acres, in Brevard County in the northernmost core area of the refuge. A 2.93-acre 178-foot Indian River County parcel was also acquired as part of a larger purchase for the neighboring Pelican Island National Wildlife Refuge.

Despite low Congressional appropriations, refuge supporters are

emphasizing that the federal government must do its share, since state, local and private spending on the refuge will soon total well over \$20 million.

The state is in the process of spending \$10 million in 1991 and has committed another \$10 million for 1992 through the Conservation and Recreation Lands (CARL) program, which is funded by the Preservation 2000 initiative.

Florida made offers on 11 parcels in Indian River County and has contracts

*Continued Next Page*

## Senator Graham Works At Turtle Refuge

Florida Senator Robert Graham spent his 253rd "workday" May 29 as a sea turtle researcher on the Archie Carr National Wildlife Refuge, declaring his support for the coastal preserve.

The Senator worked at night on the first state-purchased tract of Carr Refuge, where he joined researchers in gathering data on nesting sea turtles. The event was organized by Caribbean Conservation Corporation.

"We're doing all of the things necessary to build our information base on these turtles, which are some of the oldest and most endangered species on Earth," Graham said, before heading down to the beach with a group of researchers, conservationists, citizens and media representatives.

University of Central Florida Professor Lew Ehrhart and University of Florida researcher Blair Witherington



*Florida Senator Robert Graham, left, measures a loggerhead sea turtle with University of Central Florida researcher, Dr. Llewellyn Ehrhart.*

*Photo: Rita Alexander-Block*

coached Senator Graham on research activities and explained sea turtle biology during the evening, which was Senator Graham's first experience with nesting sea turtles.

The team tagged and measured a number of turtles, counted eggs and marked nests until about 2 a.m. The evening concluded with two sea turtles nesting 10 feet apart on the moonlit beach. The night before Graham's visit, 112 turtles had nested in the same six-mile stretch.

"Sea turtles have thrived in our oceans for 80 million years, but now the species are threatened," Graham said after the event. "Mankind can help protect these gentle creatures and their habitats or witness their departure from the planet."

"Florida is a national leader in setting aside land for conservation," he added, "and the creation of the Archie Carr National Wildlife Refuge is an outstanding example."

## **ALERT:** Congress To Settle Appropriation In Conference Committee

During August, members of U.S. Senate and House Appropriations Subcommittees will meet in conference to agree on the final appropriation for the Archie Carr National Wildlife Refuge.

Regrettably, the U.S. House of Representatives has budgeted only \$2 million for 1992 refuge acquisitions and the Senate has budgeted *no money* for the Florida sea turtle preserve.

The \$2 million House appropriation was described as "miraculous" by once Congressional staffer, because there was no money for the refuge in President Bush's budget either.

Caribbean Conservation Corporation and other groups are calling for the conference committee to at least maintain the \$2 million appropriation, and to make an even higher appropriation if possible.

Public opinion must now focus on Senator Robert Byrd and Representative Sydney Yates, chairmen of the two committees.

CCC and a coalition of major conservation groups had originally asked for \$15 million from Congress for Fiscal Year 1992, to match state, local and private efforts to date. The 19 U.S. Representatives from Florida had requested \$10 million to match the state's 1991 commitment of \$10 million to buy refuge land.

Congress appropriated the first \$2 million for the refuge for Fiscal 1991. That money has now been spent on refuge lands.

Express your opinion about Fiscal Year 1992 appropriations for the globally significant Archie Carr National Wildlife Refuge to The Honorable Robert Byrd, U.S. Senate, Washington, DC 20510 and The Honorable Sydney Yates, U.S. House of Representatives, Washington, DC 20515. Contact your own Congressional delegates, listed in the front of your telephone book.

## NEWS

### Cabinet To Jupiter: Not In Nesting Season

A beach renourishment project for Jupiter, Florida was approved by the Cabinet May 28 with the condition that the work be done outside of sea turtle nesting season. The town had asked for permission to nourish the beach during the summer turtle nesting season.

The town was denied summer renourishment because it would disrupt sea turtle nesting and necessitate nest relocation. Nest relocation is viewed by sea turtle biologists and conservationists as an unproven, expensive and potentially damaging practice. Internationally recognized sea turtle biologist and late CCC Technical Director Archie Carr called relocation an expensive way of killing little turtles.

Nests that are improperly relocated can fail and nests that are inadvertently missed during relocation are smothered under the tons of wet sand being used to nourish the beach in an attempt to reverse or reduce the effects of erosion.

While it may help to build up coastlines where the high tide level is approaching dwellings or sea walls, beach nourishment can not stop erosion and is not a permanent solution to erosion problems. Major questions remain about the compatibility of dredged sands with natural beaches and the effects of the dredging and nourishment on coastal systems.

Most sea turtle experts agree that the best approach is to eliminate man-made causes of beach erosion and disturb sea turtle nests as little as possible. The resulting naturally maintained sand beaches would be attractive to turtles and tourists alike and be Florida's best protection against major storms.

### CCC Intervenes In Armoring Hearing

Caribbean Conservation Corporation is intervening on the side of the state in an administrative hearing to determine the fate of two proposed coastal armoring projects in Indian River County.

The petitioners, Andrew Machata and Neil Lanzendorf, are attempting to reverse a 1990 decision by the Governor and Cabinet that denied them permission to build a coastal armoring structure in the dunes in front of their ocean front properties.

The beach at issue is within the Archie Carr National Wildlife Refuge, which will gain permanent protection from armoring this year through rules developed from Florida's 1990 Coastal Armoring Policy.

CCC maintains that destruction of part of this beach/dune system by coastal armoring construction will adversely affect the habitat of the endangered sea turtles which nest prolifically in the area.

CCC is co-intervenor with the non-profit Center for Marine Conservation. The intervenors are represented by the Tallahassee office of Sierra Club Legal Defense Fund.

The administrative hearing is scheduled for November 1991.

### TEDs May Be Required All Year

In July 1990, a committee of biologists in the Department of Commerce reviewed the National Academy of Sciences report *Decline of the Sea Turtles* and recommended that turtle

excluder devices (TEDs) be required in the Atlantic year round off Florida and April 1 to December 31 off North Carolina, South Carolina and Georgia. TEDs are now only required May 1 through August 31.

The NAS study cited incidental capture in shrimp trawls as the leading source of human-associated mortality for endangered marine turtles. TEDs allow the air-breathing turtles to escape drowning in shrimp trawls.

Unfortunately, TED requirements expired without an extension on August 31, 1990 and there was an escalation in sea turtle strandings along the South Carolina coast. Turtle deaths continued in early 1991, when 93 turtles were stranded along the coasts of south Georgia and northeast Florida, some of them critically endangered Kemp's ridley sea turtles.

The National Marine Fisheries Service is now proposing to extend the 1991 TED requirements through April 30, 1992. Notice of the possible extension was published in the August 1 Federal Register and the decision will be made before the end of the month.

**Turtle Log** is published as an educational tool by Caribbean Conservation Corporation's Archie Carr National Wildlife Refuge Project, under partial support of The Elizabeth Ordway Dunn Foundation, Inc.

Editor and Project Coordinator:  
Susan Marynowski, (904) 373-6441

Caribbean Conservation Corporation is a non-profit organization founded in 1959 and dedicated to the protection of sea turtles and their habitats through research, education and conservation.



Internationally recognized sea turtle biologist and late CCC Technical Director Archie Carr discussing a hatchling loggerhead sea turtle at refuge beaches.

Photo: Paul Raymond.

### Carr Refuge, Continued

pending on several of the properties. The DNR's Bureau of Land Acquisition will soon be making offers on 30 parcels in Brevard County, working north from the southern part of the refuge. The bureau administers CARL funds.

Florida spent the first \$2.5 million on the refuge in July 1990 for the half-mile-long "Disney Tract," purchased from The Nature Conservancy. The state also protects three miles of sea turtle nesting beach at Sebastian Inlet State Park.

Strong local support for Carr Refuge has continued - Brevard and Indian River counties own and manage nearly three miles of "turtle beach" and local groups have organized letter-writing campaigns, fund raisers, beach cleanups and educational events focusing on sea turtles and Carr Refuge.

To supplement these public efforts, an anonymous private foundation is involved in negotiating substantial additional purchases for the refuge.

Carr Refuge is expected to cost a total of over \$90 million and is now about 25 percent complete. It may be 40 to 50 percent complete by the end of 1991.

The refuge will protect the most important loggerhead turtle nesting beach in the Western Hemisphere and the most important green turtle nesting beach in the United States. Both species are protected under the U.S. Endangered Species Act.

Last year was a record nesting season, with over 17,000 sea turtle nests made on the 20-mile-long stretch of beaches that includes Carr Refuge.

Unfortunately, the turtles are in a race against time, with development encroaching on refuge lands and claiming parcels slated for acquisition. There is no development prohibition for refuge lands that have not yet been purchased.

It is critical to preserve this last undeveloped stretch of Florida's coast because sea turtles are less likely to nest on developed or disturbed beaches and hatchlings can be attracted away from the ocean to their deaths by the lights of beachfront development.



# Sea Turtle Considerations In Coastal Construction Laws Follow 1990 Armoring Policy

Florida's Coastal Armoring Policy, approved by the Cabinet in December 1990 is now being developed into rules governing the coastal armoring construction process.

Caribbean Conservation Corporation and other sea turtle experts and beach conservationists have recommended that the state move toward a policy of no coastal armoring.

Coastal armoring, which includes sea walls, rock revetments, bulkheads and other structures, is only a temporary measure and is generally destructive of the natural beach/dune profile. In fact, armoring causes more erosion than it prevents and ruins habitat for sea turtles and other wildlife in the process.

Other coastal states control or prohibit coastal armoring and South Carolina has developed a "no-armoring" policy which includes the removal of old sea walls from beaches. Hurricane Hugo reconfirmed the concept that natural beaches and dunes are the best protection from major storms.

The new rules will be in two parts: Rule 16B-41 which will govern coastal construction seaward of the mean high water line (i.e. in state waters) and Rule 16B-42, which will govern construction on land between the mean high water line and the coastal construction control line. Rule 16B-42 is still in development.

Both rules will contain new sections that address the protection of marine turtles and prohibit armoring within the Archie Carr National Wildlife Refuge. But while armoring is prohibited in the refuge, the rules allow armoring on all other Florida beaches.

Unfortunately, the most recent draft of rule 16B-41 still allows sea turtle nest relocation for coastal construction projects in urban areas. The draft also allows for any "acceptable" model to be used for determining erosion rates on beaches, instead of identifying one consistent state method of measuring erosion.

Copies of draft rule 16B-41 are available from Phyllis Kelley, Administrative Secretary, Division of Beaches & Shores, Department of Natural Resources, 3900 Commonwealth Boulevard MS 310, Tallahassee, FL 32399-3000 or (904) 488-3181.

Public comment on 16B-41 will be accepted for several weeks with a public hearing tentatively scheduled for September. Comments should be directed to Mr. Paden Woodruff at the address above.

# DNR Developing Comprehensive Turtle Beach Management Policy

Spurred by the 1991 Marine Turtle Protection Act and heightened public interest in the plight of endangered sea turtles, Florida's Department of Natural Resources is developing a comprehensive policy for sea turtle nesting beach management.

The department will also develop criteria for regulated beach activities, such as beach/dune restoration/nourishment, coastal armoring, beach cleaning, construction, excavation, beach fill and beach lighting.

The document may be presented to the Cabinet for approval as early as September and will then be developed into rules.

The department is striving to identify a measure of sea turtle nesting activity, such as density, to guide decisions about which activities to allow on sea turtle nesting beaches.

The problem with this method is that beaches with a low density of turtle nests are not necessarily less valuable. In fact, some historically valuable nesting beach populations are now depleted by factors affecting sea turtle survival, including loss of habitat due to the same regulated beach activities.

State designation of "critical habitat" for sea turtles may be a better solution to the problem of identifying valuable beaches. The federal government usually designates critical habitat, but it is a cumbersome process. CCC and other conservation organizations have been asking the state to designate critical habitat for sea turtles in order to control or prohibit damaging activities in important areas.

Copies of the draft policy and criteria are available from Office of Marine Programs and Planning, Department of Natural Resources, 3900 Commonwealth Boulevard, Tallahassee, FL 32399-3000 or (904) 488-2960. Public comment will be accepted at the time of Cabinet hearing of the policy or during later rules development.

Florida Shore and Beach Preservation Association will hold a public participation workshop on the new policy on Thursday, September 12, during their annual meeting in Stuart, Florida. Contact FSBPA at 864 East Park Avenue, Tallahassee, FL 32301, (904) 222-7677 for more information.

Public comment about state designation of critical habitat should be directed to Mr. Dale Patchett, Deputy Asst. Director for Marine Resources, Department of Natural Resources, 3900 Commonwealth Boulevard MS 10, Tallahassee, FL 32399-3000, (904) 488-8587.

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# New Rules Safeguard Sea Turtles In Florida Waters

## 1991 Marine Turtle Protection Act

Florida waters are home to more sea turtles than any other state in the U.S. Fortunately, these sea turtles are now more secure with the passage of a 1991 state law that provides stronger protection for the endangered marine reptiles and their nesting habitats.

The Marine Turtle Protection Act of 1991, which passed its final hurdle in the Florida Senate April 26, assembles and clarifies existing rules and strengthens sea turtle protective measures to a level equivalent with the federal Endangered Species Act.

CCC was instrumental in heightening public awareness of and support for strengthened protection, along with a statewide network of sea turtle supporters and conservation organizations.

The act requires that the protection of marine turtles be taken into consideration in all permits issued by the Department of Natural Resources. The law clarifies the importance of sea turtle considerations in coastal construction and excavation permitting and requires the DNR to condition permits for turtle protection and to deny permits under specific circumstances.

In the past, there was not always clear coordination between DNR's Division of Beaches & Shores, which issues permits, and Division of Marine Resources, which protects marine turtles and other resources.

Along with the state's new Coastal Armoring Policy, the Marine Turtle Protection Act will begin to address the destruction of sea turtle habitat, which is a major factor in the decline of marine turtle species. Other mortality factors include death and injury in fishing nets and ocean pollution.

The act establishes a \$300,000 budget to fund five positions for the state's sea turtle program, which is responsible for activities under the federal sea turtle recovery plans.

Florida must safeguard five species of marine turtles: the threatened loggerhead sea turtle and the endangered green, leatherback, hawksbill and Kemp's ridley sea turtles.

In addition, the law creates the Marine Turtle Protection Trust Fund to support the state program, to be partially funded by an optional vessel registration sticker to go on sale in 1992.

Sponsors of the bill were Gainesville Senator George Kirkpatrick and Miami Beach Representative Michael Friedman. The law became effective July 1.

## Net Fisheries Regulated for Turtles

The deaths of over two dozen endangered sea turtles on Florida's east coast in January has led to a new rule governing the near-shore net fishing industry.

The alarming number of strandings led CCC and other conservation organizations to call for immediate protective measures for the sea turtles.

The Florida Marine Fisheries Commission responded with an emergency rule which went into effect in February. A permanent rule was approved by Governor and Cabinet in May.

Over the last decade, sea turtle mortality attributed to net fishing steadily rose to a high of 110 turtles in 1990. During the first month of 1991, 28 endangered green turtles washed ashore on Florida's east coast, some with net marks or cuts where they were freed from nets.

The new rule requires boat crews to more closely tend their nets and limits total net time in the water to 60 minutes. In the past, nets could be left in the water unattended for hours.

Turtles, which must surface to breathe, can drown if they are caught in underwater nets, but they now stand a better chance of survival in net fishing areas because of the new tending and time limit requirements.

The rule also limits net lengths and requires identifying corks, so that untended or free-floating "ghost" nets can be more easily traced.

Perhaps the most important aspect of the new regulations will be enforcement through the Florida Marine Patrol. Early 1992 will see the ultimate test, since many net-related sea turtle strandings take place early in January, February and March, when green sea turtles feed on Florida's near-shore reefs and grass beds.

Florida fishermen have an incentive to comply with the regulations, since gill net fishing has been banned in some states because of the tendency of the nets to indiscriminately catch and kill anything that swims in the ocean. In addition, the U.S. Congress is in the process of restricting trade with other countries that fish with gill nets.

The new rule is effective year round in Brevard, Indian River, St. Lucie, Martin and Palm Beach counties, which are the areas of the state most heavily populated with sea turtles. A similar rule is being developed for the rest of the state.

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## Trained Guides Soften Eco-Tourism Impacts on Beaches

A comprehensive tour guide training program can benefit the Tortuguero community and ease the impact of tourists on the area's natural resources, according to a Caribbean Conservation Corporation study.

The 1990 study was carried out by Dr. Susan Jacobson, a University of Florida specialist in environmental education and sustainable development, in cooperation with Rafael Robles, CCC's Tortuguero Coordinator of Training. The study was sponsored as part of CCC's program to assist with the sustainable economic development of the Tortuguero community.

Through an extensive process of surveys, questionnaires and interviews, researchers established the information needs of potential guides and tourists, as well as the needs for turtle protection as seen by the natural resources managers and sea turtle researchers at Tortuguero. Interviews with over 2500 tourists during

the July-September study established that nesting sea turtles were the most popular reason for visiting Tortuguero.

The study also examined a pilot CCC training course and guide program. The analysis showed that guides can mitigate the impact of tourists on Tortuguero's natural resources, particularly by regulating tourism on the endangered green turtle nesting beach. The study found that the guide training process provides environmental education about natural resource management and sea turtle ecology to an important segment of the local community - information which is then passed on to tourists, enhancing visits to the area.

Using the study results and other CCC recommendations, Costa Rica has established a progressive new rule governing sea turtle tourism and Tortuguero now has the promise of extended tour guide training and increased ecotourism.

### Miskito Coast, Continued

Dr. Incer was speaking at an October 1990 gathering of Miskitos and international conservationists which set the stage for the formal Miskito Coast Protected Area proposal.

Fishing in the protected area would be scientifically managed so that Miskitos could indefinitely harvest the sea's extraordinary bounty - and begin to profit from the export of shrimp and lobster, said Dr. Incer, who called for Miskito participation in protecting the prolific fisheries.

According to University of California at Berkeley geographer Bernard Nietschmann, the foremost chronicler of the Miskitos, this is "the first time that the government has asked the Miskito people to take an active role in designing their own future."

Out of the October meeting grew a plan for a series of educational seminars to present the Miskito Coast Protected Area idea to representatives of the 23 Miskito coastal communities. The resulting February 1991 seminars were supported by World Wildlife Fund and co-coordinated by CCC.

At the seminars, CCC Program Director Charles Luthin presented information about the area's ecology, natural history and importance for sea turtles, as well as ideas about the potential for sustainable economic development through establishment of a protected area. Dr. Nietschmann presented ecological and political arguments for the protected area

to the communities and garnered support for the refuge plan through his enthusiasm and good reputation with the Miskito people. Armstrong Wiggins, a Miskito leader with the Indian Law Resource Center in Washington, DC, not only served as interpreter and translator, but also offered convincing testimony to his people for protecting their valuable resources.

The independent Miskito organization MIKUPIA, which means "Miskito Heart," grew out of the February meetings and has since been gaining widespread regional support for the protected area concept among the Miskito peoples.

"The Miskito Coast Protected Area will be unique," Luthin said. "This area will be preserved in its natural condition, but will also be managed for sustainable fisheries to support the remarkable lifestyle of the indigenous peoples."

The protected area will be managed by the Miskitos in cooperation with the Nicaraguan government.

Plans for a Miskito Cays refuge began more than 10 years ago, when Dr. Nietschmann and CCC's Dr. Archie F. Carr found a common interest in protecting the Miskito Cays. The 1980 efforts also involved Dr. Archie Carr III of the New York Zoological Society and then-Director of Nicaragua's National Parks Incer.

When Dr. Carr died in 1987, his dream for a Miskito Cays refuge was still frozen by Nicaragua's civil war. In 1990, CCC embraced the opportunity to revive

### New Tour Law Protects Turtles

Tortuguero's turtles will be more tranquil on the nesting beaches this year, thanks to a new Costa Rican law that requires trained guides to escort tourists on the beach while turtles are nesting. The rule is based on a 1990 CCC research project that reported negative impacts from increased ecotourism in the area.

The rule requires tour groups of 15 or less to be accompanied by a licensed guide. Guides, who will be trained in a cooperative program between CCC and the Costa Rican park service, must respect sea turtle protection laws and are the only ones allowed to use a flashlight on the beaches.

Tourists will be allowed to use flash photography only when it will not affect sea turtle nesting, and must leave the beach once they have observed the nesting process.

The law, in effect at night from July 1 through October 15, establishes a six kilometer tourist zone for the Tortuguero nesting beach, extending from the mouth of the Tortuguero River south to the edge of Tortuguero National Park. Tourists will not be allowed in the park at night, and the park service will organize a system of patrols to control tourism.

Rafael Robles, CCC's Tortuguero Coordinator of Training, was involved in drafting and promoting the rule. He is coordinating an extensive tour guide training program in Tortuguero this summer.

the proposal in the newly democratic Nicaragua, working in concert with the original proponents of the refuge: Dr. Nietschmann, Dr. Carr III of Wildlife Conservation International and Dr. Incer, now Nicaraguan Minister of Natural Resources.

In order to begin this ambitious project, CCC is seeking additional support to meet the USAID matching funds requirement.

## Path of the Panther, Continued

"Although Paseo Pantera originates from a phenomenon of nature, it may breach the human phenomenon of partitioning Central America into six small nations," Dr. Carr said. "Paseo Pantera asks citizens, administrators and politicians to look across the border, to reach out to neighbors, to agree that nature unites them."

"The Central American countries have a magnificent storehouse of natural splendors to present to the traveling public," Dr. Carr added, noting that a regional tourism industry could draw upon the nearby American public, as well as European and Japanese travelers.

In addition to its regional emphasis, Paseo Pantera will address specific conservation issues in four pilot protected areas: Guatemala's Maya Biosphere Reserve, Belize's Barrier Reef, Costa Rica's Tortuguero National Park and the Honduran Bay Islands.

To enhance public awareness of the need for biodiversity conservation in the area, the project will produce two books: a review of the natural and cultural history of Central America and an ecotourism guide to the region's outstanding natural areas.

"The countries of Central America have the unique opportunity to assert their common purpose to preserve and restore the land bridge as a biological wonder," Dr. Carr said. "If this biological unity is acknowledged among people devoted to saving nature, we will see new promise for the conservation of biological diversity in the American tropics."

## Tortuguero Tag Return Summary

Over 55,000 green turtles have been tagged by volunteers at Tortuguero since the 1950s. Many turtles tagged in 1989-90 have been adopted in recent years through CCC's Adopt-A-Turtle program. The metal tags yield a wealth of information during nesting season when turtles return to nest repeatedly on the same stretch of beach. The tags also provide information about the movement of the turtles the rest of the

year. When a turtle is captured, usually by fishermen, the tags are returned to the Archie Carr Center for Sea Turtle Research at the University of Florida in Gainesville. When researchers get all the information about when and where the turtle was captured and the fate of the turtle, the person who sent in the tag receives a \$5.00 reward from CCC. The turtles travel to many countries, but almost 90 percent of tag returns are from the Miskito Cays area of Nicaragua.

### Geographic Distribution of Turtle Tag Returns

Country	Number of Tags Returned in			Average % of Total for 1988-90
	1988	1989	1990	
Belize	1	2	9	1.1
Colombia	3	0	4	0.7
Costa Rica	5	6	11	2.4
Cuba	13	2	19	3.5
Honduras	5	7	9	2.4
Mexico	0	1	1	0.2
Nicaragua	194	196	452	88.0
Panama	2	3	8	1.3
Venezuela	0	1	1	0.2
Total Returns	223	218	514	

## CCC Healthy, Growing in Annual Meeting Review

Caribbean Conservation Corporation reported another year of rapid and positive financial growth and great successes at the annual meeting on May 17 in New York City.

The financial health of CCC improved dramatically in 1991, reported Treasurer Anthony Knerr, due to the generous gift of \$500,000 to CCC's Endowment Fund by the Phipps Florida Foundation. Although the 1991 operating budget is 35 percent higher than last year, the budget is still in balance at the close of the first quarter of 1991, he said.

Special guest of honor at the meeting was Ambassador Jack Vaughn, Senior Consultant for Natural Resource Management in Central America to the U.S. Agency for International Development. Ambassador Vaughn spoke eloquently of the importance of preserving biodiversity in Central America and described major new USAID efforts, such as the grant supporting the joint CCC/WCI Paseo Pantera project.

Reports on CCC-sponsored research were heard from the University of Florida's Drs. Karen Bjorndal and Alan

Bolten on projects in Tortuguero, Great Inagua and the Azores; Drs. Anne and Peter Meylan on projects in Bermuda and Panama; and the University of Lowell's Dr. David Ryan on water quality analysis at Tortuguero.

CCC Program Director Charles Luthin reported on the Miskito Cays Protected Area proposal and Archie Carr National Wildlife Refuge project, and James Barborak, coordinator of the Paseo Pantera project, reported on the progress of Central American regional conservation efforts.

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**1991 is a record nesting year at Tortuguero.**

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## Major expansion planned for Tortuguero National Park

Costa Rican President Rafael Calderon is expected to sign two decrees in 1992 which greatly increase the size of Tortuguero National Park, part of the largest lowland rainforest on the Caribbean rim and home to one of the world's most significant green turtle nesting beaches. Caribbean Conservation Corporation was instrumental in the park's establishment in 1970 as one of Costa Rica's first five national parks. CCC maintains a research and education center at Tortuguero.

Tortuguero National Park currently covers 19,700 hectares of lowland rainforest (nearly 50,000 acres), crisscrossed by a magnificent system of rivers and streams, and includes 15 miles of beach that serves as the Atlantic

Ocean's largest rookery for the endangered green sea turtle (*Chelonia mydas*).

The first phase of park expansion will include nearly 10,000 hectares of forested land in a corridor linking Tortuguero National Park to the Colorado River Wildlife Refuge to the north. With a grant from the U.S. Agency for International Development, CCC coordinated the initial 1990 land tenure and feasibility studies required to upgrade this corridor to Forest Protection Zone status, the first step in making it part of the park. It became a Forest Protection Zone in early 1991.

*Continued Inside Back Cover*



## Nicaragua officially establishes Miskito Coast Biological Reserve

In one of the most important Central American conservation acts of the decade, Nicaraguan President Violeta Chamorro signed a decree October 31, 1991 officially establishing the Miskito Coast Biological Reserve.

The Miskito Coast reserve will encompass over 8,200 square kilometers (over 3200 square miles) of rich coral reefs, sea grass beds and islands off the northeast coast of Nicaragua, as well as coastal lagoons, mangrove forests and fresh water ecosystems. The area supports major feeding grounds for endangered green and hawksbill sea turtles, manatees and other rare species, and sustains productive shrimp, lobster and reef fisheries.

The decree, a proposal presented by Nicaraguan Minister of Natural Resources Dr. Jaime Incer and a coalition of national and international groups, establishes preliminary boundaries for the area and highlights serious threats to the area's coastal resources.

The proposal was a product of an intensive September conference sponsored by the Nicaraguan Institute of Natural Resources and Environment (IRENA) with assistance from Caribbean Conservation Corporation. The conference was attended by 65 representatives of government agencies, universities and national and international organizations.

"The conference was a shining

*Continued Back Cover*

## CCC's Tortuguero Land Acquisition Campaign

In early November 1991, Caribbean Conservation Corporation launched the Tortuguero Land Acquisition Campaign to raise funds to purchase coastal parcels critical to the integrity of the expanded park. In a recent letter to CCC Executive Director David Carr, Costa Rican Minister of Natural Resources Hernan Bravo requested CCC's assistance in efforts to buy land at Tortuguero and pledged to add any land acquired by CCC to the park.

The CCC Campaign will seek to purchase Tortuguero Mountain, the remaining unprotected portion of the green turtle nesting beach, a riparian conservation zone, an area for expansion of the village of Tortuguero, and the remaining inholdings within existing park boundaries. The five areas include 33 individual parcels which total 286.5 hectares. Total cost for the tracts, many of which front the beach or rivers and have high development potential, is \$728,400 or an average price of \$2,500 per hectare (\$1,000 per acre). Contact CCC offices for a campaign prospectus.

## Research Report

# Union Creek: Studying juvenile turtles in their natural habitat

A 7-square-mile tidal bay of the southernmost island in the Bahamas is one natural feeding ground where sea turtles are not exploited. It is also the site of the longest running in-water study of juvenile green turtles in their natural habitat.

Home to at least 400 endangered green and hawksbill turtles, as well as a few loggerheads, Union Creek Wildlife Sanctuary, on the northern shore of Great Inagua Island, was preserved in 1964 through the joint efforts of Caribbean Conservation Corporation and the Bahamas National Trust.

The shallow bay, carpeted with dense stands of turtle grass interlaced with clumps of mangroves, continues to provide scientists and conservationists a unique glimpse into the lives of a large number of wild, undisturbed sea turtles,

Four long-term CCC-sponsored research projects at Union Creek examine blood profiles, growth rates, nutritional ecology, and effective sea turtle tagging methods.

Dr. Karen Bjorndal, Director of the University of Florida's Archie Carr Center for Sea Turtle Research, has been working at Union Creek since the 1970s, when she began examining the constraints and benefits of a diet of turtle grass, the primary food of slow-growing green turtles. Her 1979 dissertation, under the supervision of Dr. Archie Carr, was based on her Union Creek research examining nutritional ecology and grazing behavior of green turtles.

Having established base-line growth rates, Dr. Bjorndal's more recent research at the Bahamian sanctuary focuses on the causes of variation in

turtle growth rates. Conducted in collaboration with Dr. Alan Bolten of UF's School of Forest Resources and Conservation, the work has continued to provide new scientific understanding of growth rates of juvenile turtles and methods of measuring growth.

In addition, the researchers' development of a basic blood profile in the healthy green turtles of Union Creek will help to determine the effect of marine pollutants on turtles elsewhere.

The CCC research, funded in part by Morton Salt, will lead to improved management and conservation plans for endangered sea turtles and their habitats around the world.

Finally, the ongoing Union Creek study of turtle tags and tag application techniques addresses a critical limitation to our understanding of sea turtles: the ability to identify and track individual animals. The CCC research project, funded in part since 1983 by the U.S. National Marine Fisheries Service, has found that the location on the flipper is as vital to tag longevity as the metal chosen to withstand the corrosive powers of the marine environment.

## Development Profile

### Landon T. Clay

Since 1989, financier Landon T. Clay has served as the head of CCC's Development Committee, where he has strived to increase membership and support for the organization.

Mr. Clay has also been a constant voice for fiscal accountability in the organization, helping to lead the CCC through several years of extraordinary transition and growth. In addition, he has made significant personal contributions to the CCC, including land purchases at Tortuguero, funds for a water quality survey of the Tortuguero watershed, and an ongoing 2:1 matching program to augment major gifts to CCC.

"The CCC has been very fortunate to have Landon Clay at the helm of the development committee during this period of rapid growth," said CCC Executive Director David Carr. "Landon is the one to help us meet and exceed our goals as we enter a major new phase in our pursuit of corporate and foundation support."

It must have been an interest in conservation in the family genes that first



Board of Directors member and Development Committee Chairman Landon T. Clay. A family interest in CCC

led Landon Clay to become involved with CCC. Without knowing of his mother's membership in the original 1959 Brotherhood of the Green Sea Turtle (which became the CCC in 1961), Landon Clay donated a land rover to internationally recognized biologist and CCC Technical Director Dr. Archie Carr for research.

The donation inadvertently led to an amazing discovery as sons Chuck and David Carr drove the vehicle to Costa Rica in the summer of 1967. When the teenagers stopped to camp near the Pacific coast town of Escobilla, Mexico, they discovered piles of shells from endangered olive ridley sea

turtles (*Lepidochelys olivacea*) which were being butchered in a nearby facility. When the factory came into the international spotlight in 1971, it was estimated that well over 750,000 Mexican turtles had been killed in one year to supply the luxury European leather market. The slaughterhouse was subsequently closed.

Remembering the incident and the generous donation, newly-appointed CCC Executive Director David Carr invited Mr. Clay in 1987 to serve on the Board of Directors. It was then that Mr. Clay learned of his mother's involvement with marine turtle conservation. As a result, he pledged to purchase the first of the Emily T. Clay parcels at Tortuguero in her memory.

In addition to his support of CCC, Mr. Clay has been a long time friend and benefactor of Harvard College. In 1968 he endowed the Landon T. Clay Professorship in Mathematics and Theoretical Science. More recently he established a \$4.5 million charitable trust to benefit Harvard's Department of Mathematics. He has also served on several committees and on the Board of Overseers for Harvard.

Mr. Clay is currently Chairman and Director of Eaton Vance Corp., a Boston investment firm with which he has been connected for over 37 years. Mr. Clay is also a Trustee of the Boston Museum of Fine Arts.

# Turtle Log

## Archie Carr National Wildlife Refuge: Land Acquisition Partnership Continues

Carr Refuge was awarded \$1.5 million by the U.S. Congress for Fiscal Year 1992 acquisitions. The U.S. Fish & Wildlife Service, which manages wildlife refuges, is prepared to spend the money — appraisals are done on several parcels at the northern end of the refuge, just south of Melbourne Beach. The federal government spent \$2 million on refuge parcels in 1991.

When completed, the Archie Carr National Wildlife Refuge will include over 800 acres, preserving 10 miles of dwindling coastal ecosystems along the most significant sea turtle nesting beach in the Western Hemisphere. An average of 12,000 nests are deposited on the beach each year by threatened loggerhead sea turtles and nearly 40 percent of the U.S. population of endangered green sea turtles.

### Florida Leads in Refuge Funds

Florida is a partner in the acquisition effort, having pledged \$10 million in 1990 and another \$10 million in 1991 for land in the ocean front refuge. The state also purchased the very first refuge parcel for \$2.5 million in July 1990, for a total commitment of \$22.5 million to date.

The state purchases lands from the Conservation and Recreation Lands (CARL) priority list. Due to overwhelming public support, Carr Refuge has moved from number 20 to eighth place in 1991 and to seventh place in the 1992 listing. CARL purchases are funded by Florida's Preservation 2000 land acquisition program, which is in jeopardy due to the tight budget.

### Strong Local and Private Commitment

Brevard and Indian River Counties are also involved. The local governments already own over three miles of beach

which may become part of the refuge, purchased through Florida's Save Our Coasts program. There is also a private foundation working toward refuge acquisitions.

Brevard County's land acquisition program now proposes to purchase sensitive coastal scrub and hardwood hammock parcels between the refuge and the Indian River Lagoon, making for a more ecologically sound conservation area.

### CCC Requests \$15 Million for '93

The federal commitment so far is \$3.5 million, while state, local and private commitments are close to \$30 million. At this rate, it will take years to finish the refuge, which may cost \$90 million total.

Last year, CCC and others asked for a federal appropriation of \$15 million for the refuge. CCC and a national coalition of conservation groups are again calling for a federal commitment of \$15 million for 1993 refuge acquisitions. The refuge appropriation will come up in the spring and summer U.S. Congressional sessions.

### Continued Public Support Crucial

Carr Refuge has received federal appropriations during two tight budget years because of strong, nationwide public support for the first sea turtle refuge in the continental U.S. Because of the extraordinary public support, the refuge will be about one-third complete by late 1992.

However, continued support is crucial to the completion of the Carr Refuge. The remaining lands for the refuge must be acquired soon, before development eats the last pristine sections of Florida coast.



*An Atlantic dawn breaks over fresh turtle tracks on the Archie Carr Refuge beach.*

*Photo: Dr. Llewellyn Ehrhart, University of Central Florida*

Ocean front property is not cheap, but now is a great time to purchase lands for conservation and recreation, while real estate markets are depressed. Land values will only get higher in the future, so the sooner we act to preserve this important natural resource, the better.

### How You Can Help

This is your opportunity to help save the sea turtle by writing a letter or making a phone call to help preserve these creatures and their nesting habitat.

Remember that 1) Carr Refuge beaches are the most important nesting site for loggerhead sea turtles in the Western Hemisphere; 2) Florida can not save this globally significant refuge without federal help; 3) If we delay, we may never have another chance to save these environmentally sensitive beaches, which are threatened by development; and, 4) Carr Refuge has strong local, regional and national citizen support.

Encourage a federal appropriation of \$15 million for 1993 Carr Refuge land acquisition by contacting your U.S. Senator and Representatives, and Senator Robert Byrd (WV) and Representative Sydney Yates (IL), who chair the federal appropriations committees. Addresses are listed in the front of your phone book or at your library. Contact Caribbean Conservation Corporation for additional information. Thank you for your support.

## Why Florida Needs Preservation 2000

Steven P. Christman, Independent Consultant

In 1990 the Florida legislature enacted Preservation 2000, authorizing the sale of bonds to raise \$300 million/year for ten years for the purpose of acquiring environmentally sensitive lands. Lands purchased under P2000 would be for state and county parks, preserves, forests, refuges and wildlife management areas.

The P2000 legislation was visionary, and eclipsed all other environmental land acquisition programs in the United States. Here was a state responding aggressively to the urgent need to protect its environmental and natural heritage, now and for the future. But less than two years into the program, lawmakers are considering reducing or eliminating P2000 funding.

Florida ranks only 22nd among states in per capita parkland acreage, yet Floridians take great pride in their outdoor environment. The coral reefs, sandy beaches, crystal-clear springs, fish-filled lakes and vast swamplands have attracted people to Florida for hundreds of years. Today, Florida is the fourth most populous state and the fastest growing large state. Florida has over 13 million residents and over 40 million tourists annually. Over 300,000 people make Florida their new, permanent home each year. To many of these people, Florida's outdoor environment, its clean water, abundant fish and wildlife, and beautiful wildflowers are important reasons for being here.

Unfortunately, much of natural Florida already has been developed for residential, commercial and agricultural uses. We have drained more than half of our wetlands, destroyed 80 percent of our ancient scrub, and cleared 87 percent of our longleaf pine forests. We are losing natural habitat at the rate of 19 acres/hour.

Private land owners cannot be expected to forego profitable land development in favor of environmental preservation, and the courts are ruling increasingly that they cannot be regulated to do so without compensation. If society wants to preserve some of its outdoor environment and examples of its native biodiversity, then society must pay for it.

Unfortunately, Florida, like the rest of the nation, is now staggering under an economic recession and budgets have to be cut. But is it wise to cut spending for environmental land acquisition?

Because of the recession, development of many new subdivisions and shopping centers is temporarily on hold. Land will never be cheaper than it is right now. But

when the recession eases and developers crank up their bulldozers again, land prices will go up. Once land is developed, we know of no way to return it to its original condition. If we want parks, forests and wildlife management areas, we must buy the land before it's developed. Now is not the time to reduce funding for environmental land acquisition.

Land purchased for environmental preservation will be enjoyed by future generations. The Floridians of the future will be grateful that we did not develop all of the uplands, build houses along every waterway or drain every swamp. It's only fair that future Floridians help pay for the land that we preserve for them and their children. That's why borrowing money to fund environmental land acquisition (by issuing bonds) is a good idea. This is one case where it actually makes sense for government to go into debt. We must buy the land now or lose it forever. Floridians of the future will benefit from today's environmental land acquisition and should not object to helping pay for it.

Biologists, ecologists and outdoor recreation specialists have identified thousands of acres of natural lands still remaining in Florida that should be protected from development. Lands on the

state's Conservation and Recreation Lands (CARL) acquisition list include upland buffers to lakes, rivers, estuaries, coral reefs and first magnitude springs. The list includes critical habitat for Florida panthers, red-cockaded woodpeckers and ancient scrub species; it includes sandy uplands that recharge underground aquifers which supply 90 percent of our drinking water and vast swamps where surface waters are purified; it includes native forests that cleanse the air and provide habitat for wildlife; it includes Pakahatchee Strand, Waccasassa Flats, Aucilla River, Crystal River, Gainer Springs, Fannin Springs, Topsail Hill, Lake Wales Ridge Scrub, North-Key Largo, Paynes Prairie, Corkscrew Swamp, Archie Carr Sea Turtle Refuge and Tate's Hell.

The CARL list includes wonderful places where people will picnic, camp, launch boats, fish, hunt, ride horses, swim, hike or just enjoy natural Florida while knowing that this example of native biodiversity is being protected forever. But if these places are not acquired for public use and protection, they will be developed into so many more subdivisions and shopping centers.

Don't let the powers in Tallahassee dismantle Preservation 2000. Tell them we must go forward with environmental land acquisition while there's still environmental land left to acquire. Continued funding for Preservation 2000 will not hurt Florida's economy - it will instead ensure that Florida remains a decent place to live now and in the future. And that's good for the economy.

## Alert: Preservation 2000 in Jeopardy

Florida is a partner in the acquisition of the Archie Carr Sea Turtle Refuge. The refuge and other properties on Florida's Conservation and Recreation Lands (CARL) priority list are purchased by funds from Preservation 2000. Funding for Fiscal Year 1992-93 for P2000 is now jeopardized by the state budget crunch, but is being considered during the current Florida legislative session.

Preservation 2000 has enjoyed a high level of public support - over 80 percent of Floridians are in favor of spending money now to save lands for the future. While \$300 million/year may sound high, the actual cost for issuing the P2000 bonds is only about \$3 million/year - a very small program compared with education, health and human services and corrections, which take up nearly all of Florida's huge budget. P2000 is a bargain for the great benefit provided to the citizens of Florida, now and in the future.

Citizen support is urgently and immediately needed for P2000. Governor Chiles' first 1992-93 budget calls for zero funding; the second "investment" budget calls for only partial funding. Florida needs full funding for Preservation 2000 now more than ever. If we hope to save environmentally sensitive areas like the Archie Carr Refuge, we must act before it's too late.

To encourage funding for Preservation 2000, immediately contact your Florida senator and representative (listed in the front of your phone book), Governor Lawton Chiles, Senate President Gwen Margolis and House Speaker T.K. Wetherell. Governor Chiles' office can be reached at (904) 488-4441 and Legislators can be reached through the Capitol Switchboard, (904) 488-1234. Contact Caribbean Conservation Corporation if you need more information. Thanks for your support for P2000.





# For hatchlings, Catching the current is crucial

*Research Report*

*Hatchlings were marked with buoys for the tracking project*

Hoping to answer some basic questions about the life of marine turtle hatchlings at sea, Blair Witherington spent many days and nights in the late summer of 1991 observing loggerhead turtle hatchlings as they began their long journey to sea.

"Most of a turtle's life is spent in the ocean, but most research is done based on how they behave on shore," said Witherington, who is a doctoral student in the University of Florida's Archie Carr Center for Sea Turtle Research.

Witherington is the first researcher to attempt to follow a swimming hatchling for more than a few hours. On 15 different occasions last summer he followed a tiny hatchling into the waves in an inflatable boat, and later joined two colleagues in a 22-foot motor boat to continue the quest. Some of the hatchling pursuits lasted up to four days and nights.

Witherington developed a method to mark hatchlings with a two-inch balsa-wood float attached with fishing line. The float carried a minuscule infrared light for night tracking. Neither the light nor the float inhibited the ability of the hatchlings to swim.

"Rather than perform a rigid scientific experiment, I was hoping to draw some correlations and conclusions from observations of conditions at sea," Witherington said. Current, wind, wave size and direction, coordinates, and direction of movement were regularly measured as the hatchling swam.

The most interesting result from the arduous tracking was that not many of the hatchlings were eaten by fish. Only one of the 15 hatchlings followed was consumed.

"Because there are so many thousands of sea turtle hatchlings and so few reaching adulthood, scientists always assumed that fish predation played a major role in reducing numbers," he said. "Instead, I now believe that hatchling mortality may be primarily due to unfortunate dispersal."

It is believed that loggerhead hatchlings from Florida disperse on the Gulf Stream current around the northern Atlantic to reach nursery grounds near islands off the coast of Europe and Africa. Juvenile loggerheads then return

to coastal Florida and the Caribbean on the North Equatorial current when they are 15 or more inches long.

Witherington concludes that most of the hatchlings perish from exposure or lack of food when they catch the wrong current and end up in the freezing waters of Iceland instead of the warm, nurturing feeding grounds in the Azores. Witherington also noted that hatchlings were very difficult to see in the open water because of their coloration, another factor in the low level of predation on hatchlings.

"These results paint a picture that is not very complimentary to the practice of headstarting, which is designed to grow turtles to predator-proof size before release," Witherington said. "Headstarting ignores the importance of dispersal and early experience to hatchling survival. My research suggests that we should instead be concerned with providing a safe, natural hatching and dispersal environment to produce the strongest possible turtles."

*"Headstarting ignores the importance of dispersal and early experience to hatchling survival. My research suggests that we should instead be concerned with providing a safe, natural environment to produce the strongest possible turtles."*

Witherington observed many other interesting things about swimming patterns, resting behavior and anti-predation maneuvers during the hatchling research, which was supported by Florida Power & Light Company, the U.S. Air Force and the U.S. Fish & Wildlife Service.

The most dismal part of the numerous journeys out to sea was the full realization of how much garbage there is in the ocean. When the hatchlings finally settle down to ride the current and feed, they are sure to be affected by the rafts of gooey tar balls or to mistakenly ingest small bits of styrofoam or other ocean debris, Witherington said.

"It was astounding to be miles from shore in an indigo blue sea surrounded by fish and birds and beautiful rafts of golden seaweed and to suddenly encounter huge masses of garbage — it really destroys the moment," he said.

## Nesting levels up at Carr Refuge and around state

The last two years have seen good nesting of sea turtles at the Archie Carr National Wildlife Refuge and around Florida. In 1991, 13,192 loggerhead nests were made in the area of the sea turtle refuge. In 1990, 14,328 nests were made in the same area. In the past, there has been an average of about 12,000 nests each year in the area. The Carr Refuge beach is the most important loggerhead nesting site in the Western Hemisphere.

Because sea turtles nest only every two, three or four years, there tends to be variability in nesting levels from year to year. Although the last two years have seen above average nesting around the state, researchers are cautious to conclude that two good years mean the endangered turtle populations are recovering. Many factors, including food supply and weather can affect nesting levels.

The refuge is also important for green sea turtles nesting, supporting nearly 40 percent of the U.S. population of the endangered marine reptile. In 1991, 161 green turtles nested on the refuge beaches, while 1990 saw 477 green turtle nests made. These numbers reflect the natural variability in nesting, which is even more noticeable in green turtles.

In addition to the usual loggerhead and green nests, the researchers had nests of two giant leatherback turtles in 1991. Two unusually large hawksbill turtles also nested in the study area, leading researchers to believe that they were actually hawksbill-loggerhead hybrids. Researchers are now investigating this unusual phenomenon, which has been recorded in years past on Florida beaches.

**Turtle Log** is published quarterly as an educational tool by Caribbean Conservation Corporation's Archie Carr National Wildlife Refuge Project, supported by The Elizabeth Ordway Dunn Foundation, Inc. and the Members of CCC.

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Caribbean Conservation Corporation,  
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CCC is a non-profit organization founded in 1959 and dedicated to the protection of sea turtles and related habitats through research, education and conservation.

## National Issues: New, Improved TED Regulations Stalled in Administration

New and improved federal regulations requiring shrimpers to use Turtle Excluder Devices (TEDs) in their nets year-round were supposed to be in place by this spring. Unfortunately, the new regulations are being delayed by the Bush administration.

TEDs are devices that exclude 97 percent of turtles from entering trawl nets while still allowing shrimp to be caught — turtles then escape through a special hatch. Sea turtles are air-breathing reptiles that drown when trapped underwater in a net.

Regulations requiring TEDs during the summer season first went into effect in 1990 because research showed that many sea turtles were being drowned in shrimp nets. For example, in just three months in 1988, there were 191 documented strandings in northeast Florida and southeast Georgia, including 70 highly endangered Kemp's ridley turtles.

A 1990 National Research Council study, *Decline of the Sea Turtles*, has since reported

that shrimp trawling kills as many as 55,000 turtles each year when TEDs are not used.

This was confirmed when the seasonal TED requirement expired August 31, 1990 and there was an increase in sea turtle strandings. Turtle deaths continued in early 1991, when 93 dead turtles washed up along the coast of south Georgia and northeast Florida, including more critically endangered Kemp's ridleys.

The NRC panel of internationally respected biologists "recommends the use of TEDs in bottom trawls at most places and most times of the year from Cape Hatteras to the Texas-Mexico border."

The use of TEDs over the last two years has benefitted sea turtles. Nesting levels have increased, particularly for the Kemp's ridleys, which nest only at Rancho Nuevo, Mexico. In addition, Mexico has just passed legislation to require TEDs on all shrimp vessels in the Gulf and Pacific Ocean by December 1992. The last two years have also been good for shrimpers,

with record harvests and many new boats joining the fleet. The industry now suffers from too many boats fishing for limited resources, recession, and competition from imported shrimp. Studies have proven that TEDs do not decrease shrimp catch, so these problems can not be blamed on sea turtles.

The message is clear: TEDs save thousands of turtles without harming the shrimping industry. Sea turtles need TED protection immediately and they need it all year, every year. TED regulations should not languish in the Department of Commerce or in the administration.

Voice your concerns to Ms. Barbara Franklin, Secretary Designate, U.S. Department of Commerce, Herbert C. Hoover Building, 14th and Constitution Avenues NW, Washington DC 20230 and Vice President Dan Quayle, Chairman, President's Council on Competitiveness, 286 Old Executive Office Building, Washington DC 20501.

## Yes! I want to help Caribbean Conservation Corporation protect endangered sea turtles.

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National Wildlife Refuge Project

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\_\_\_\_ @ \$15    Adult    white    S M L XL  
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Thank You For Your Support!

## Report from Tortuguero

Short course participants learn to weigh a turtle.

# "My country is about to welcome home its new sea turtle expert"

A group of 11 international students honed skills and learned more about sea turtle conservation at CCC's 1991 International Short Course on Marine Turtle Biology and Conservation.

"The unique thing about the 1991 course was that we had more untrained people this year than ever before, which means we had a lot of ground to cover," said CCC Director of Programs Charles Luthin. "This is exactly what the course is designed for and we saw amazing results."

Students of the 1991 course showed an overall improvement of 62 percent, as measured by pre- and post-course questionnaires. The course was particularly beneficial for those who knew little about sea turtle biology: the two lowest pre-training scores showed a remarkable 209 percent improvement on the final test.

The unique combination of expert instruction and hands-on experience at Tortuguero leads to high levels of improvement during the course, Luthin said. The short courses were begun by CCC's founding Technical Director Archie Carr as informal individual training programs in the 1960s and have since expanded into formal extended training courses.

In addition to classroom training and field sessions, each course participant gives a report on their country's sea turtle conservation efforts. Course participants also conduct an independent research study during the course.

Course participant Kenneth Fournillier reported on turtle conservation efforts in his native Trinidad and Tobago, delineating the struggles and successes in preserving the leatherback population of the southern-most Caribbean islands.

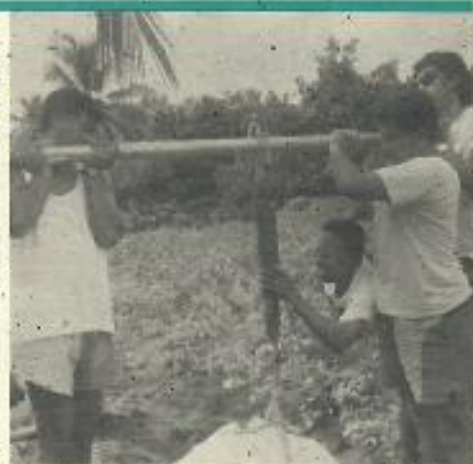
Student Halstead Lima, a conservation officer in the British Virgin Islands, evaluated for the first time sea turtle nesting levels on lit and unlit portions of Tortuguero beach. Lima determined that village lights were affecting nesting behavior. Of the turtles in the study, only 7 percent nested at the village, while 93 percent nested at dark sites.

But the real benefits of training begin to show long after the course is over.

"When graduates return to their countries they have higher self esteem, gain greater respect from co-workers and are able to take on more responsibility," Luthin said.

"I can't tell you how much the course has meant to me," Halstead Lima said. "Because I grew up with turtles, I thought that I knew a lot about them, but the course gave me a more scientific view. Since my return there have been several difficult problems I have been able to solve due to the course training."

"The 1991 course participants left Tortuguero with a sense of direction and focus that many of them didn't have before the course," Luthin said. "The course gave them inspiration for their work, hard facts and data about sea turtles, contacts with



other sea turtle experts in the region, and the positive example of the Tortuguero model of sea turtle conservation."

Participants put it another way: "My country is about to welcome home its new sea turtle expert," exulted Earl Young, of the Belize Fisheries Department.

The eleven course participants were Cecilia Baptistotte and Andre Britto of Brazil, Nicaraguans Denis Castro and Rony Pont, Jamaican Andrea Donaldson, Kenneth Fournillier of Trinidad, Puerto Rican Hector Horta, Yanick LaForest of Haiti, Halstead Lima of the British Virgin Islands, Earl Young of Belize and Jose Palma of the Philippines, the first Asian to attend CCC's short course.

Instructors for 1991 were retired U.S. National Marine Fisheries Service biologist Larry Ogren and Sri Lankan sea turtle expert Charles Tambiah. Guest lectures were presented by CCC's Protected Areas Technical Advisor Jim Barborak and Florida Audubon Society's international turtle expert, Dr. Peter C.H. Pritchard.

## VELADOR [be.la.dor]

Spanish. Night watchman, keeper, guard, careful observer; and in traditional Latin cultures, the hunter's assistant who watches for sea turtles to come ashore.

*Velador* is published quarterly by Caribbean Conservation Corporation, P.O. Box 2866, Gainesville, FL 32602 (904) 373-6441

David Carr, Executive Director  
Susan Marynowski, Editor

CCC is a non-profit organization founded in 1959 and dedicated to the protection of sea turtles and related habitats through research, conservation and education.

**Erratum:** The photograph of the Miskito fishermen in the Summer 1991 *Velador* should have been credited to Tropical Conservation News Bureau.

## Park Expansion, Continued

Most of the parcels in the corridor have now been bought or are under option for purchase by Neotropica Foundation of Costa Rica. Land acquisition funds came from the Danish rainforest group Nepenthes, which raised nearly \$1 million. The decree formalizing inclusion of these lands will be signed once the land is acquired and transferred to the government. Meanwhile, rangers are already patrolling the corridor area due to its protected zone status.

Hopes for further expansion of the park were given a strong boost in October when representatives of communities and organizations throughout northeast Costa Rica endorsed the need for major expansion of the park. The recommendations were outlined in a CCC-supported regional development strategy produced by the Costa Rican government and the World Conservation Union. In a recent statement, Minister Bravo reiterated the need to expand the park and stated clearly that the government would seek international assistance to raise funds needed to buy lands and compensate affected parties.

This second phase of expansion will begin later in 1992 and will upgrade about half of the Colorado River Wildlife Refuge to national park status. The refuge is a multiple-use reserve allowing some development, but the lands targeted for inclusion in the park are mostly coastal lowlands or swamps with limited development value. The second phase is expected to cost about \$3 million, with prices averaging under \$100 per hectare (\$40 per acre).

The fully extended park will be one of Costa Rica's "megaparks" and will protect about 80,000 hectares (200,000 acres) of rainforests, wetlands, rivers, estuaries and beaches from timbering, ranching, banana farms and uncontrolled tourism development. The park expansion is critical for survival of wide-ranging endangered species such as the white-lipped peccary (*Tayassu pecari*) and jaguar (*Felis onca*) as well as endangered green sea turtles.

The expanded Tortuguero National Park will be contiguous to Nicaragua's even larger Indio-Maíz Biological Reserve, forming the huge "Si-a-Paz" ("Yes-to-Peace") transfrontier protected area, one of the most important in the Caribbean for conservation of tropical lowland biodiversity.

## Corporate Profile

# Shell Oil Company: Beacon of support

One of CCC's steadfast corporate supporters during the last several years of growth has been Shell Oil Company, guided by a corporate citizenship policy geared to promote the overall health of the society in which Shell operates.

The Shell Oil Company Foundation was established by the U.S.-based Shell companies to contribute to broadly beneficial and worthwhile charitable, scientific and educational philanthropies. A small but significant portion of Shell's giving is for environmental protection efforts, ranging from nature centers to wildlife preservation projects. The Foundation has given nearly \$10 million in this area to date.

Caribbean Conservation Corporation is one of the environmental and scientific

organizations that the Shell Oil Company Foundation has supported. Over the past three years, Shell has contributed more than \$25,000 to upgrade CCC's marine turtle tagging operation and to provide support for CCC's conservation activities.

"CCC strikes us as a well-structured, socially responsible and politically aware organization," said Mary Dokianos, Staff Public Affairs Representative for Shell Oil. "We support CCC not so much because Shell is specifically interested in sea turtles, but because CCC is a dynamic research organization that focuses on finding and implementing innovative solutions to the problems of species and habitat preservation.

"CCC possesses a certain dynamism and the organization does very intriguing work," Dokianos added. "The CCC knows how to go after grants and knows what is important in seeking corporate support."

"Shell's contributions to the CCC have been vital and significant during our recent period of rapid growth and development," said CCC Executive Director David Carr. "We

hope that Shell's commitment to the CCC will be a beacon, challenging other corporations to pledge support for our conservation efforts."

*"We support CCC not so much because Shell is interested in sea turtles, but because CCC is a dynamic research organization that focuses on finding and implementing innovative solutions to the problems of species and habitat preservation."*

The Shell Oil Company Foundation is funded by eight U.S. companies: Shell Oil Company, Shell Mining Company, Shell Offshore Inc., Shell Pipe Line Corporation, Shell Western E&P Inc., Pecten Middle East Services Company, Pecten Chemicals Inc. and Pecten International Company. Shell Western E&P, Inc. is the sponsor for Shell's support of CCC.

## Miskito Coast, Continued

example of democracy in action," said CCC Director of Programs Charles Luthin. "All 65 entities came to the conference with their own specific agendas, yet we left with a group consensus proposal for President Chamorro."

The resulting decree sets up a multi-agency commission to oversee emergency plans to curb resource piracy by foreign fishing fleets in the area and to propose a permanent management plan for natural resource conservation in the area. The commission includes representatives of the indigenous Miskito communities, which are taking an active role in the protection of the rich resources upon which they depend for their livelihood.

CCC recently received support from the U.S. Agency for International Development and matching support from the Liz Claiborne and Art Ortenberg Foundation to undertake extensive resource inventories in the area and to help develop plans for the Miskito Coast protected area. For the

duration of the multi-year project, CCC will assist the commission and newly formed community organization "MIKUPLA" ("Miskito Heart") with implementing management plans for the new protected area.

"The Miskito Coast protected area has a promising future," said Luthin. "The strong endorsements of the project at the community level, solid governmental support and the provision of technical and financial backing by a coalition of international organizations is a recipe for success."

## The Liz Claiborne and Art Ortenberg Foundation have awarded major support to CCC's Miskito Coast Protected Area Project.

The coast is home to the indigenous Miskitos, skilled fishermen who are known colloquially as "the turtle people." The area's rich fisheries will be managed to

perpetually benefit the Miskitos and the area will be kept in its natural condition to preserve resident endangered species. For example, nearly 90 percent of the green turtles tagged at CCC's research station in Tortuguero, Costa Rica, live and feed in the Miskito Cays, making it the most important feeding ground for endangered green sea turtles in the Western Atlantic.

CCC is collaborating with University of California at Berkeley, World Wildlife Fund, Indian Law Resource Center, Cultural Survival and Wildlife Conservation International in the massive Miskito Coast conservation project, which will continue for several years with the cooperation of local, regional and national Nicaraguan agencies.

On the same day as the Miskito Coast decree, President Chamorro also created a series of mountaintop reserves and the Bosawas Reserve, inland from the Miskito Coast. At 800,000 hectares, Bosawas Reserve will be the second largest protected area in Central America.

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