

**IS UNCONTROLLED BOATING DAMAGING
THOUSANDS OF ACRES OF FLORIDA'S
SUBMERGED SEAGRASS MEADOWS?**



June 4, 1987 Whale Harbor, THE FLORIDA KEYS.

**THE ANSWER IS YES!
WE NEED YOUR HELP TO STOP THIS DESTRUCTION!**

An information package prepared by:
**THE WILDERNESS SOCIETY, FLORIDA KEYS AUDUBON SOCIETY
AND
LEWIS ENVIRONMENTAL SERVICES, INC.**

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BOATING IMPACTS IN THE FLORIDA KEYS

The Florida Keys are well recognized for extensive seagrass beds, mangrove islands, corals, and unique wildlife. Federal legislation has passed to create a Florida Keys National Marine Sanctuary stretching from the southern end of Biscayne National Park, along the reef tract to Fort Jefferson National Monument, then north to abut the Florida Bay portion of Everglades National Park. The bayside of the proposed sanctuary is dotted with Wilderness Islands within three National Wildlife Refuges. A large portion of North Key Largo is also a National Wildlife Refuge.

The State of Florida has also taken measures which affirm the ecological significance of the Keys' marine and estuarine areas. Most upland portions of the Keys are State-designated Areas of Critical State Concern and the Administration Commission has authorized the Department of Community Affairs to initiate rulemaking to include areas within 250 feet of shore in that designation. Most surface waters in the Keys are Outstanding Florida Waters. In addition to extensive public trust tidelands, the Department of Natural Resources administers several state parks, aquatic preserves and Conservation and Recreational Lands.

Despite extensive public ownership and environmental legislation, the shallow water habitats of the Keys continue to be routinely disturbed and destroyed by irresponsible boating. Physical destruction of seagrasses known as "prop dredging" and plumes of turbidity churned by improperly piloted watercraft are obvious indicators of the problem.

There are thousands of seagrass beds within Monroe County waters, virtually all beds adjacent to developed islands are impacted by prop dredging. The reduction in water quality attributed to boating activities has not been quantified, although the clarity of water has been reduced in recent decades and the symbiotic relationship between corals, algae, and other species has been altered.

Vast areas of shallow water habitat within the Great White Heron National Wildlife Refuge, Key West National Wildlife Refuge, National Key Deer Refuge, and Crocodile Lake National Wildlife Refuge are degraded by airboats, thrillcraft (personal watercraft), and repeated motorized transit. Virtually no corner of the Keys seascape is unaffected by boating impacts. Federal seagrass ecologists and fisheries experts estimate that five to ten thousand acres of Keys' seagrasses have been severely impacted.

There is considerable variety in vessel operations in the Keys. Commercial fishermen ply the waters tending lobster and crab traps, shrimping, and fishing. Charter boats escort snorkelers and divers to the coral reef tract, bonefishermen to the flats, and deep sea anglers to the Florida Straits wall. Residents and tourists race on thrillcraft, water ski or simply motor around in the labyrinthine backcountry. Each user group has an adverse impact on

marine resources. Larger vessels cause greater prop dredging; small vessels intrude into crucial fish and wildlife nurseries.

Continued efforts to maximize the individual benefit of each boater will act to the common detriment, as the "tragedy of the commons" unfolds in the nearshore environment of the American tropics.

Out of public concern over the loss of natural values in the Keys, a Boating Impact Work Group evolved. We have documented the range of day to day problems using representative aerial photographs. Other illustrations are intended to show that the most effective use of limited government assets requires implementation of a four-point program: EDUCATION, IMPROVED AND EXPANDED CHANNEL MARKING, ENFORCEMENT, and CREATION OF BOATING RESTRICTED ZONES. Progress in all of these areas will also reduce boating accidents, which have increased along with boating activity.

The Group has advocated local action on the four-point program by the Monroe County Commission, whose consideration of a shoreline speed ordinance is moving at idle speed. DNR contends that safety is the only basis for local boating laws except in critical manatee areas. Politically, many residents prefer better use of existing laws to the imposition of additional laws. Since the Sheriff's Office does not maintain a presence on Keys' waters, there are obvious limits to local legislation. Although federal and State precedent supports sanctions against damage to public property, Florida Marine Patrol officers do not investigate even major and repeated violators. Attached photos show that the damage is chronic and extensive.

We urge the Board of Trustees of the Internal Improvement Trust Fund and the Department of Natural Resources to understand the magnitude of the loss and to realize that much of the damage can be prevented. Specifically, staff within the divisions of State Lands, Marine Resources, Law Enforcement and Administration should jointly implement the four-point program and advise the Governor and Cabinet of a specific timetable for action to protect the unique shallow water resources of the Florida Keys.

Given the Marine Patrol's inventory of vessels and law enforcement capability, no other agency is capable of a practical enforcement program. It should be required to dramatically increase efforts to prosecute these dredge and fill violations on public lands. State lands inspectors should routinely accompany Marine Patrol officers on land, sea and air investigations. They should evaluate channel marking, depth, vessel size, and resources in areas which are routinely prop dredged. Within six months, the Department should report on its success in halting prop dredging in problem areas.

Education and enforcement activities should be more closely coordinated with other State and Federal agencies. A "Resource Alert" program should be reinstated and promoted specifically in the Keys. The Department should produce a brochure and public service announcements on the need for Keys' boating improvements.



1. Shallow seagrass habitats and mangrove islands of the great White Heron National Wildlife Refuge, lower Florida Keys.



2. Vessel passage through shallow channel, Florida Bay near Islamorada.



3. Live-aboard anchorage over seagrass, Boot Key Harbor, Marathon.



4. Destruction of seagrass by anchor damage, live-aboard houseboat, Key West.



ENTRANCE TO
PORT LARGO
SUBDIVISION,
PHOTO BY
C. KRUEER

LATE 1980^s

5. Prop dredging and turbidity, commercial dive boat, John Pennekamp Coral Reef State Park, Key Largo.



6. Thrill craft running shallow seagrass banks "hunting" for marine life, Great White Heron National Wildlife Refuge, Key West.



7. Part of extensive prop dredging in Lignum Vitae State Aquatic Preserve, Florida Bay, Lower Matecumbe Key.



8. Prop dredging and channel expansion, Tavernier Creek, Atlantic oceanside, Tavernier.



9. Commercial vessel passage and turbidity in seagrass beds, Niles Channel, Great White Heron National Wildlife Refuge, Lower Keys.



10. Deliberate prop dredging and turbidity at private residence near Flamingo Island, Marathon.

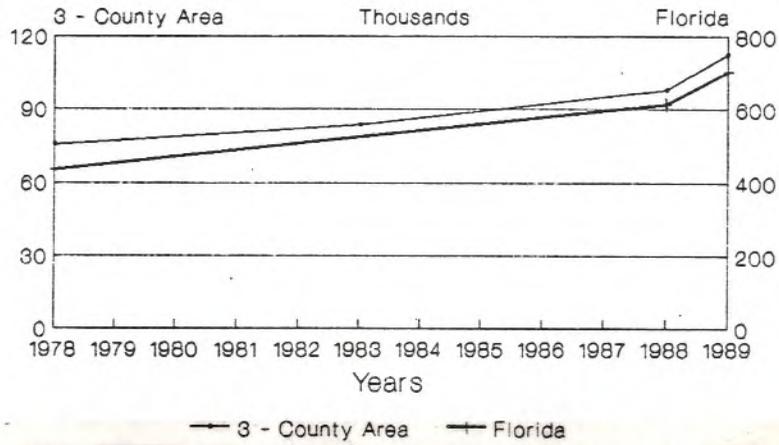


11. New condominium docking facility constructed in 1989 in shallow vegetated waters of Cow Key Channel, Key West.



12. Dredged turtle grass from passage of large inboard vessel in long, shallow backcountry channel, Big Pine Key.

BOAT REGISTRATIONS
Broward, Dade and Monroe Counties
and State of Florida



13. Boat registration figures from the Florida Department of Natural Resources.



14. A good example of boater education material.



15. Extensive prop dredging and seagrass loss in and around old marked channel at Holiday Isle, Windley Key.



16. Channel creation near illegal private aid to navigation, North Pine Channel, Big Pine Key.



17. Oversize U.S. Coast Guard Buoy tender churning waters of Pine Channel adjacent to Coupon Bight State Aquatic Preserve, Big Pine Key.



18. Recent, deliberate prop dredged channel by live-aboard commercial vessels, Bogie Channel, No Name Key.



19. Labyrinth of tidal channels and intertidal seagrass flats, Great White Heron National Wildlife Refuge, lower Florida Keys.



20. Narrow, tidal Mangrove Creek, often used by nesting birds, Great White Heron National Wildlife Refuge, Snipe Keys.

AN OUTLINE PROGRAM TO ADDRESS BOATING IMPACTS IN THE FLORIDA KEYS

I. BOATING IMPACTS ISSUES:

1. Human:

a. Safety:

- Speed boats, threat to swimmers and boaters
- Thrillcraft (jet skis, personal watercraft), threat to swimmers and boaters
- Water skiing in tidal creeks, threat to boaters
- Boat and propeller damage, \$ cost

b. Nuisance:

- Speeding in canals and nearshore area
- Noise
- Quality of life diminished
- Shallow water experience degraded

2. Environmental:

a. Endangered species:

- Four federally endangered species, American crocodile, West Indian manatee, green sea turtle and bald eagle are disturbed by boats in the Keys.

b. Prop dredging of seagrasses:

- Physical destruction extensive (5 -10,000 acres severely impacted) and cumulative
- #'s and average size of boats rapidly increasing
- Synergistic effect with other stresses on seagrasses (eutrophication, hurricanes, blow-outs, high temperatures, stormwater runoff)
- Increased turbidity and siltation documented to reduce rates of photosynthesis and seagrass growth
 - Resuspension of nutrients bound in soft bottom sediments
 - Habitat value of seagrasses for commercial and recreational fish and invertebrate species reduced
 - All user groups responsible: transient vessels, commercial fishing vessels, weekend boaters, tourists, tugs and barges, flats fishermen, dive and tourist charter vessels, liveboards, etc.

- c. Disturbance factor:
 - Shallow water fish (bonefish, tarpon, permit, barracuda, sharks, rays and others) affected
 - Impacts local economy by reducing potential of directed fisheries
 - Shallow water feeding habitats for marine turtles, manatees and dolphin continually degraded and disturbed
 - Illegal camping and partying on Refuge and other islands destroys vegetation, generates litter and disturbs wildlife
 - Wading birds, shorebirds and migratory waterfowl:
 - disruption of feeding and resting habitats
 - destruction of seagrass banks important for food production
 - Bird nesting and roosting islands disturbed, sometimes intentionally

II. PROPOSED 4 - POINT PROGRAM TO REDUCE CURRENT IMPACTS AND REHABILITATE DEGRADED SHALLOW WATER HABITATS:

1. Education:

- a. - Informational brochure mass produced:
 - Why protect seagrass habitats
 - How and why to use channel markers
 - How to read the water
 - Requirements to minimize disturbance to nesting birds during critical periods
 - Potential penalties for prop dredging and water quality degradation
- b. - Media information:
 - Public service announcements
 - Articles in local publications
 - Presentations to Power Squadrons, Civic Groups, schools, etc. using video and slide shows
 - Interpretive signage at marinas, ramps, etc., as used for current reef protection program
- c. - 4 Point program supported by a coalition of affected industries, conservation and civic groups and government resource agencies
- d. - Peer pressure:
 - from professional guides, retail tackle shops, marinas, boat manufacturers, etc.
 - prop dredging and disturbance to fish and wildlife become issues on the local

conservation agenda

2. Expanded and improved channel marking program:
 - a. - The Monroe County Boating Improvement Fund returns boat registration dollars to Monroe County and is the logical source of funding for an improved channel marking program in the Keys
 - b. - New program and approach to deal with problem areas, not areas with little or no boating impact or natural limitations to access
 - c. - Problem areas identified and photographed through aerial surveys and best method of eliminating impacts determined for each site through interagency and Work Group effort
 - d. - Special approval (FDNR and USCG) obtained for directional arrows (as in Everglades National Park) along with other required symbols; use less expensive marker than currently placed
 - e. - Legal mechanisms established to encourage use of marked channels when available
 - f. - One time program to identify problem areas and place markers with routine maintenance contracted out using B.I.F \$, no ongoing program necessary; only a finite number of areas to be marked.
 - g. - Prop dredging and violations of water quality standards not to be accommodated in marked channels
 - h. - Private, illegal aids to navigation prohibited and existing illegal aids removed where prop dredging is resulting or a dangerous situation is created
 - i. - Avoid overmarking waters of the Keys; no or few markers to be placed north of U.S. 1 in the lower Keys National Wildlife Refuges
3. Enforcement:
 - a. Monroe County:
 - Include planning strategies for boats and boaters in the current rewrite of the Comprehensive Land Use Plan.
 - Enact a "minimum wake" ordinance within

600' of all shorelines and unsafe bridges for human safety as well as environmental considerations

b. State of Florida:

- FDCA and FDNR involved in design and implementation of 4 - Point program since public resources on state owned lands in an Area of Critical State Concern are being impacted
- The Florida Marine Patrol and the FDER to enforce current state law prohibiting ongoing prop dredging and destruction of state owned baybottom
- Water quality violations of high turbidity created by vessels, particularly willful and repetitive activities stopped; existing oversize commercial, dive, sportfishing and charter vessels currently causing problems warned that different routes, speeds or shallower draft vessels will be required to stop impacts

c. Federal:

- The U.S. Fish and Wildlife Service to protect resources of 4 Keys National Wildlife Refuges and cooperative agreements for shared responsibility to be entered into with the FDNR
- The Army Corps of Engineers to enforce federal regulations pertaining to prop dredging cooperatively with the State of Florida

4. No Access and Restricted Access Areas:

- a. - As in Everglades National Park, where an existing program is being expanded, important bird nesting and roosting islands identified, marked and protected by wide no access zones
- b. - Restricted access, such as "no motor" zones, created around islands with formal Federal Wilderness designation
- c. - Seasonal closures appropriate for some areas
- d. - The tour boat and "safari" guide businesses in the Keys evaluated and regulated from a biological perspective
- e. - Criteria established to designate certain suitable open, deep water areas for particular uses (i.e. thrillcraft use, airboats, and power boat races).

Prepared by the Florida Keys Boating Impact Work Group:

Florida Keys Audubon Society
The Wilderness Society
National Audubon Society
Florida Keys Chapter of the Izaak Walton League
Florida Keys Fishing Guides Association
Big Pine Key Civic Association
Florida Keys Citizen Coalition
Last Stand
U.S. Fish and Wildlife Service
National Marine Fisheries Service
Florida Game and Freshwater Fish Commission

October, 1990

THE PREDICTED IMPLICATIONS OF PROPELLER DREDGING IN SHALLOW WATER SEAGRASS BEDS OF SOUTH FLORIDA: THE SCENARIO WHEN A SERIOUS HURRICANE OCCURS. W. Judson Kenworthy, NMFS, NOAA and Curtis Krueer, Florida Keys Audubon Society.

Recent interest in the large scale disappearance of seagrasses in Florida Bay and concern for the degradation of water quality, altered water flow and the general decline of seagrasses in south Florida has instigated a discussion of the role of hurricanes in the maintenance of seagrass ecosystems. It has been postulated that the lack of these high energy storms during recent decades has allowed for the accumulation and expansion of unconsolidated sediments over the bedrock in shallow waters of south Florida. According to Ziemann's model (1972), the expansion, development and maturation of seagrass beds is a function of the areal extent and depth of unconsolidated sediment. Observations in Biscayne Bay, Florida Bay, and throughout the Keys indicates that sediments have been accumulating in the absence of severe hurricanes while seagrass beds have matured generally supporting Ziemann's hypothesis.

The expansion and elevation of carbonate mud banks is an intricate and important ecological component of the south Florida coastal ecosystem. Nowhere is this more obvious than in Florida Bay where the latticework of mud banks represent nearly all of the bays sediments, support half of the seagrass standing crop, provide most of the wading bird foraging habitat and establish physical boundaries that create unique subenvironments (Powell et al. 1989; Wanless and Tagett, 1989).

Seagrasses play a major part in trapping and stabilizing sediments by baffling water currents and waves and forming a complex organic matrix of roots and rhizomes (Ginsburg and Lowenstam, 1958; Fonseca and Fisher, 1986; Kenworthy and Thayer, 1984). These features contribute to bank formation and stabilization of unconsolidated sediments. The extent to which the vegetated mud banks become elevated may be limited by sediment supply and the ability of the seagrass to resist desiccation and high water temperatures during relatively lower water levels when the tops of the banks are exposed. This may have been part of the natural process contributing to the recent seagrass declines in Florida Bay (Ziemann et al., personal communication). In Florida Bay the recent geological record indicates that seagrasses have been episodically eliminated during the past 3,000 to 4,500 years (Wanless and Tagett, 1979), suggesting that the development of mud banks and the elevation of unconsolidated sediments may be periodically interrupted by climatic events and storms having considerable energy.

The effects of a hurricane or series of hurricanes on seagrass beds is very difficult to predict. It appears as though relatively undisturbed and intact healthy beds have survived major storms. However, in 1985, a near miss by Hurricane Kate resulted in the displacement of sediment from, and the

enlargement of large prop scars on a seagrass bank in Seven Mile channel in the Florida Keys. The situation as it is today in south Florida is much different than previous decades when major hurricanes have occurred. Areas more susceptible to initiating a loss of seagrass are associated with blowouts (Patriquin, 1975; Zieman, 1982). Blowouts are localized holes in grassbeds naturally occurring where there is strong unidirectional current, some form of bioturbation, or herbivore grazing. Today, sources of blowouts and diminished seagrass cover from human disturbances are much more common. A major source includes deliberate, accidental and unintentional propeller dredging. The mechanical damage from propeller dredging and turbulence removes seagrass leaves displaces sediments and destroys the integrity of the rhizome and root mat. Loss of the organic matrix removes the fabric that binds the unconsolidated sediments while loss of the leaves diminishes the current and wave baffling capabilities of the bed. In some cases, displaced sediment buries adjacent seagrasses, creating another unstable area. The result of prop dredging may be the loss of seagrass cover for as long as 10 years (Zieman, 1976), leaving portions of beds unprotected and susceptible to physical energy events for an extended period of time.

Although it would appear that a narrow swath representing a single prop scar would do little damage to a grass bed, the cumulative effects of numerous scars can impact entire meadows. The aerial photos in the accompanying were obtained over a period of 12 years of systematic observations in the Florida Keys and clearly illustrate the detrimental effects of power boat operation in shallow water. We conservatively estimate that between 5000 and 10,000 acres of seagrass in the Florida Keys are experiencing this level of impact. The noticeable increase in prop scarring has accompanied the near exponential growth in boat registrations that has occurred in Florida during the past decade (Figure 1). The increase in vessel registrations have been accompanied by an increase in vessel size and draft and the development of vessel and power technologies that allow boats of very shallow draft and large horsepower to travel in shoal water. With the unconsolidated bottom elevations rising, the absence of new large scale dredge projects to create "vessel highways", and no systematic channel marking system or driver education programs, there can be little doubt that the propeller dredging will continue to impact seagrass beds.

In this scenario we predict that the hurricane or series of hurricanes will constitute an event that will be a two edged sword. On the one hand, it may seem from the Florida Bay experience that a hurricane could behave as fire does in some terrestrial ecosystems; serving as a natural perturbation important in the long term maintenance of an ecosystem (Meeder and Meeder, 1989). The effect of a major hurricane or a series of storms on healthy, naturally developed beds with their inherent physical integrity will be far less than beds where there is moderate or extensive prop dredging. This scenario could lead to large scale blowout formation and destabilization

of unconsolidated sediments over enormous acreage. Sediments underlying disintegrating seagrass beds would be shifted, resuspended and eventually redeposited, possibly onto existing live hard bottom habitat, finger coral banks, or even nearby coral reef habitats. The implications of the physical destabilization of seagrass beds can extend far beyond their immediate boundaries. These wide scope of impacts were dramatically illustrated following the eelgrass wasting disease earlier in this century (Thayer et al., 1984).

Given the present concern and mounting evidence for nutrient enrichment by septic tanks and other sources in the keys and the large amount of nutrients that will be released following the storm, the predictions worsen. A major loss of seagrass and unconsolidated sediment will make available a large amount of hard substrate for macrophytic and microscopic algae that will respond to the available nutrient loads, thereby shifting the dominance within the overall aquatic plant community. With the loss of unconsolidated sediments the recovery of seagrasses will be slow (Zieman, 1982; Fonseca et al., 1985), and in the presence of nutrient enrichment we predict that the opportunistic algal communities will dominate, leading to major changes in secondary production by fish and crustaceans as well as loss of foraging habitat and shelter for sea turtles, marine mammals, fish, wading birds, raptors and many other species of wildlife. Even under the best conditions in the absence of competition with algal communities, the intermediate and climax seagrass meadows existing today in the Florida Keys will take decades or perhaps hundreds of years to recover.

Unless immediate steps are taken to curtail the further physical degradation of seagrass beds by propeller dredging, the living marine resources that depend on seagrasses could be severely impacted by the long-term loss of the beds following a hurricane or series of hurricanes. Some of these resources are endangered species for which a great deal of financial and human resources have been devoted to conserve and restore. The economic impact of this ecological catastrophe will be felt in the recreational and commercial fishing industries as well as the tourism industry. Based on biological, physical and economic information available, the cost of enhancing the recovery of this system would be beyond the scope of available resources, therefore it is important that these impacts are avoided by developing a resource management plan to minimize deliberate and accidental propeller dredging in shallow water.

REFERENCES

- Fonseca, M.S. and Fisher, J.S. 1986. A comparison of the canopy friction and sediment movement between four species of seagrass with reference to their ecology and restoration. *Mar. Ecol. Prog. Ser.*, 29: 15-22.
- Fonseca, M.S., W.J. Kenworthy, G.W. Thayer, D.Y. Heller, and K.M. Cheap. 1985. Transplanting of the seagrass Zostera marina and Halodule wrightii for sediment stabilization and habitat development on the east coast of the United States. U.S. Army Eng. Waterw. Exp. Stn., Vicksburg, Miss., Tech. Rep.
- Ginsburg, R.N. and Lowenstam, H.A. 1958. The influence of marine bottom communities on the depositional environment of the sediments. *J. Geol.*, 66: 310-318.
- Kenworthy, W.J and Thayer, G.W. 1984. Aspects of the production and decomposition of roots and rhizomes of the seagrasses, Zostera marina and Halodule wrightii, in temperate and subtropical marine ecosystems. *Bull. Mar. Sci.*, 35: 364-379.
- Meeder, J.F. and L.B. Meeder. 1989. Hurricanes in Florida: a dominant physical process. *Bull. Mar. Sci.* 44(1).
- Patriquin, D.G. 1975. "Migration" of blowouts in seagrass beds at Barbados and Carriacou, West Indies, and its ecological and geological implications. *Aquatic Botany* 1: 163-189.
- Powell, G.V.N., W.J. Kenworthy and J.W. Fourqurean. 1989. Experimental evidence for nutrient limitation of seagrass growth in a tropical estuary with restricted limitation. *Bull. Mar. Sci.* 44(1): 324-340.
- Thayer, G.W., W.J. Kenworthy, and M.S. Fonseca. 1984. The ecology of eelgrass meadows of the Atlantic coast: a community profile. U.S. Fish and Wildlife Biol. Serv. Program, FWS/OBS-84/02. 147 pp.
- Wanless, R. and G. Taggett. 1989. Origin, growth and evolution of carbonate mudbanks in Florida Bay. *Bull. Mar. Sci.* 44(1).
- Zieman, J.C. 1972. Origin of circular beds of Thalassia (Spermatophyta: Hydrocharitaceae) in south Biscayne Bay, Florida, and their relationship to mangrove hammocks. *Bull. Mar. Sci.* 22: 559-574.
- Zieman, J.C. 1982. The ecology of the seagrasses of south Florida: A community profile. U.S. Fish and Wildl. Serv., Biol. Serv. Program. FWS/OBS-82/25. 185 pp.
- Zieman, J.C. 1976. The ecological effects of physical damage from motor boats on turtle grass beds in southern Florida. *Aquatic Botany* 2: 127-139.

Marine Seagrasses: A Funeral Dirge?

By DR. JEFFERY C. CARRIER and BILL BECKER

"Prop-dredging," mostly by large commercial vessels, is a growing problem in the Keys.

The sudden wail of an outboard motor striking bottom in shallow water assaulted our ears, shattering the elegant calm of a Florida Keys sunrise. We stopped poling to watch.

Then the breathless morning carried only the rantings of an embarrassed skipper as he first attempted to pole and then was forced to wade through the turtle grass, dragging 24 feet of fiberglass, V-4 power and 2,500 pounds of cargo for his "day at sea." A disheartened crew trudged alongside until the boat found sufficient water to support its bulbous hull.

We continued our quest for bonefish, the clear water somewhat tainted by a plume of sediment and blades of turtle grass which floated by. *Dad's Delight* disappeared, leaving another scar on the flat.

Observations of an occasional grounding on shallow grass beds are generally not cause for alarm. However, after having flown into Key West following a brief venture north, and admiring the Keys from the air, I couldn't help but notice the tremendous amount of scarring which has occurred from boats and their encounters with the flats. Anyone who has flown over the Everglades and observed the scarification from "buggy trails" would be sur-

prised to see a close resemblance in many heavily used areas in the Keys. It's not that the Keys are so very unusual—shallow water is everywhere. But the water clarity of the Keys makes such tracks much more visible than scarred areas in less-clear waters.

While grass beds may have numbers of natural threats, including possible storm damage and turbidity from many natural sources, there is little doubt that one of the greatest potential sources of damage continues to be human activity. The dangers of eutrophication or more serious chemical damage from improper waste disposal or runoff are still under study. But the difficulties some grass beds face from boat traffic is also disturbing. Biologists suggested as early as 1878 that prop scars on turtle grass beds may require from two to five years to recover.

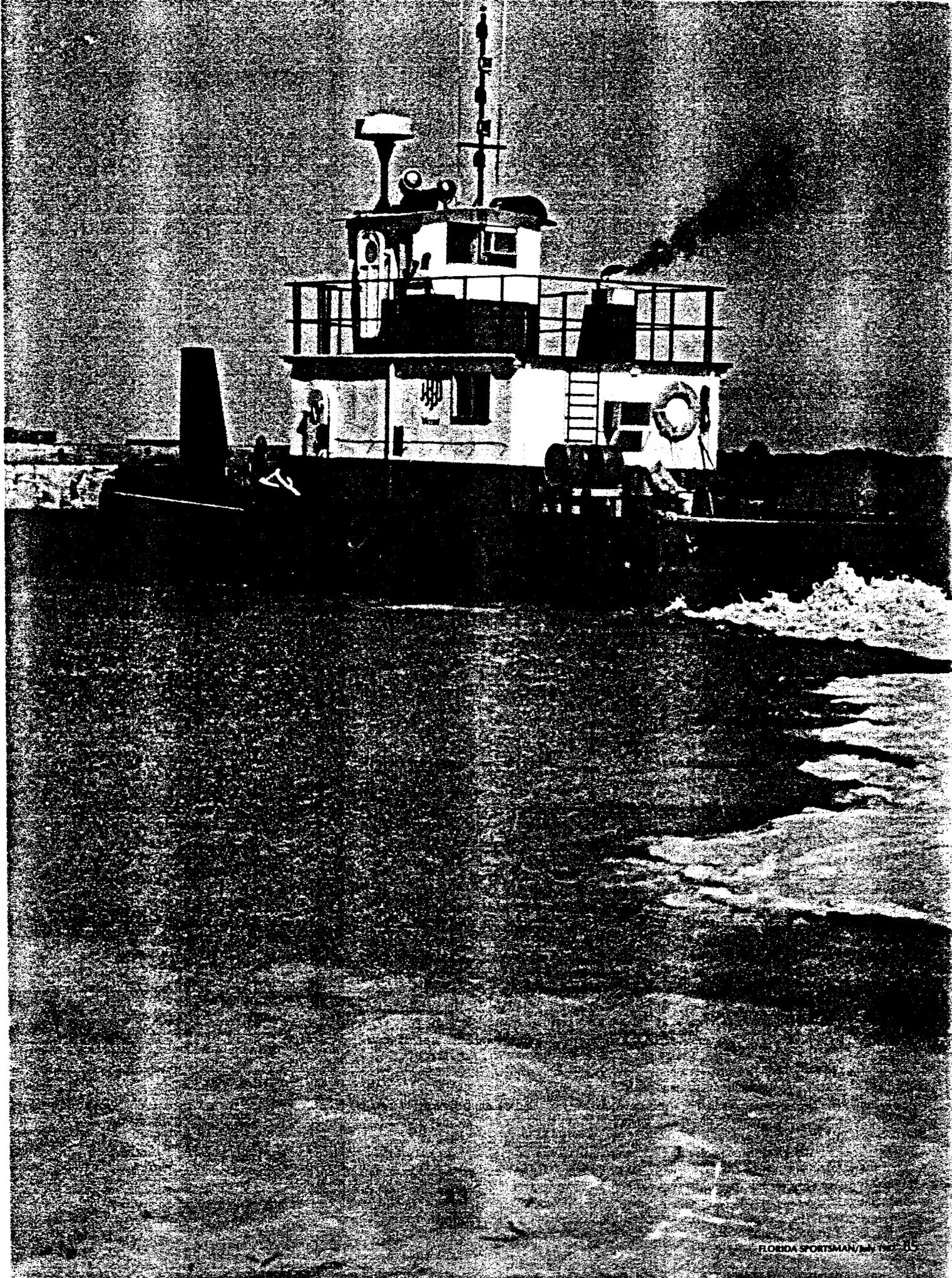
In recent years in the Florida Keys, an increasing awareness of seagrass destruction has resulted in several court cases. The Army Corps of Engineers (COE) and Florida Department of Environmental Regulation (DER) have been instrumental in attempting to enforce regulations which provide some degree of protection for seagrass habitats and have received support

from the judicial branch of government.

In the early 1980s, the many bridges linking the Florida Keys via the Overseas Highway were replaced. Among the contractors was MCC of Florida, Inc., a firm contracted to construct the bridge over Niles Channel between Ramrod and Summerland Key in the Lower Keys. Segments of the new bridge were built on Conch Key, some 40 miles away and transported by barge to Niles Channel, crossing the boundaries of the Key Deer National Wildlife Refuge and the Great White Heron National Wildlife Refuge.

During the construction period, the tugs and barges approached Niles Channel on the gulf side. After numerous observations

Barge activity related to building new bridges was devastating to the bottom in the Lower Keys, according to the Corps of Engineers and the Florida DER.



of the tug's difficulties in these shallow waters, Curtis Kruer, the Army Corps of Engineers field biologist in the Keys, and David Bishof of the the Florida Department of Environmental Regulation, began to gather evidence which suggested a wide-scale destruction of seagrass beds in the areas being traversed by the tugs. The agencies determined that this destruction constituted "prop dredging" and was in violation of the Rivers and Harbors Act and the Clean Water Act. Regulations promulgated by Federal agencies to enforce the CWA include seagrasses as wetlands or wetland communities, and prohibit activities which destroy or jeopardize the health

The fisherman reportedly ran his 40-footer back and forth to create a new channel from his dock.

of these habitats unless specifically authorized by permit.

On numerous occasions, Kruer and DER representatives dove in the wake of the tubs and photographed the destruction of the bottom. Underwater photographs that show five-foot-diameter tunnels dug by a tub's twin propellers are sobering. Mud plumes extending for miles behind a tug, and the documented destruction of about 27 acres of seagrass habitat were apparently convincing to the court.

In 1982, a judgment was brought against MCC by the U.S. District Court. MCC was determined to be liable for the seagrass destruction and was ordered to pay \$200,000 for restoration projects and a \$20,000 civil penalty. A subsequent appeal was upheld by an appeals court, but the court remanded back to the trial court the order requiring the company to pay \$200,000, instead ordering the firm to prepare and submit a substitute plan of environmental restoration which the court was to approve and oversee. MCC has continued their fight to the Supreme Court. The issue is still pending.

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Kruer and Randy Grau, an enforcement specialist for DER, believe the issue and the damage extend beyond the obvious destruction of bottom habitats. Water quality alteration in adjacent areas and a wider ranging destruction of habitats, they believe, is a consequence of the seagrass destruction which is too often overlooked. Additionally, it is their contention that the normal "sheet flow" of water across these shallow flats can become redirected into channels when this type of destruction occurs. If this is truly the case, then a redirected water flow could result in a stronger current through the new channels, an erosion of the sediments down to bedrock, and a depositing of different types of sediments in the area. In this way, the nature of the original grass bed could be drastically altered.

There is little doubt that a large-scale, willful destruction of the type demonstrated by MCC should not be tolerated. What about lesser damage?

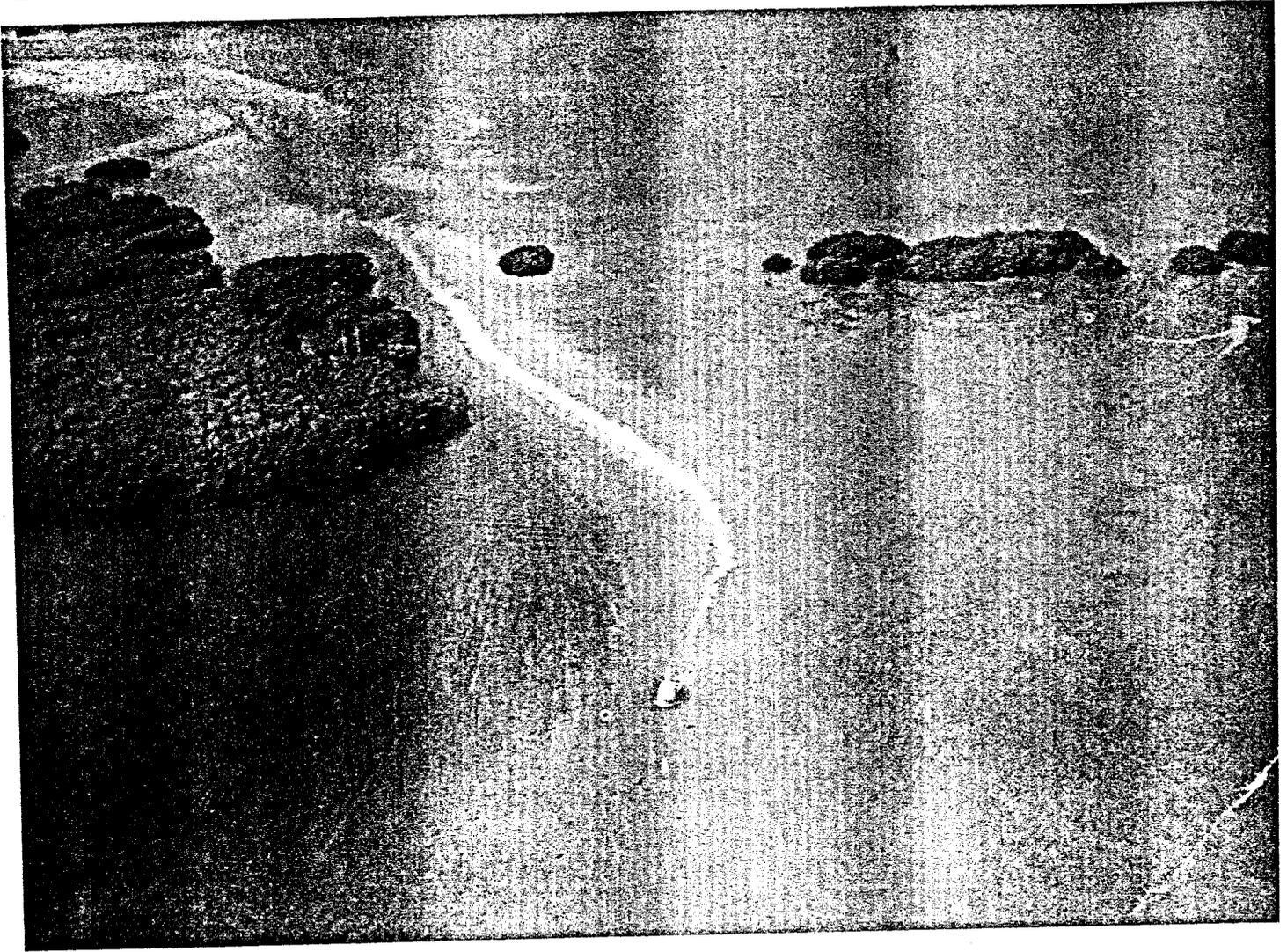
In early 1984, the DER's Grau investigated a complaint of prop dredging by a fisherman in Bonefish Bay, located near Marathon. The fisherman was supposedly running his 40-foot boat back and forth over a shallow grass bed, attempting to create a new access channel from his dock to a deeper, adjacent channel. Photographs of the area taken at low water illustrate the ability of the props to dig these channels. A civil proceeding was brought against the fisherman. The action was eventually settled out of court. The fisherman was fined \$13,000 and was prohibited from using his dock for commercial purposes.

If anything, the problem observed by DER, the Corps and others seems to be increasing in the Florida Keys. Grau commented: "Over the last few years it has become apparent that prop dredging in the Keys is accelerating and becoming a bigger problem for various reasons. I think it's due to a combination of factors including larger boats, a bigger population down here (with more coming), and an increase in boating traffic by novice boaters . . . It is becoming a severe problem in the Keys.

"In the last couple of years, we've documented more boats and larger boats using the channel on the bayside of the (Niles Channel) bridge. A deep-water channel starts at the bridge and heads north, but it gradually shallows out into a long, low grass flat, probably averaging three to four feet of water. A number of boats draw more water than that. Therefore, they are often prop-dredging seagrass beds . . ."

In late December, Grau sent a letter to 14 commercial fishermen who he believed could potentially damage grassbed habitats in the area of Niles Channel. The letter indicated that documentation of a vessel engaged in "willful prop or keel dredging"

(continued on page 93)



could result in "... imposition of civil penalties, damages, and/or criminal penalties to \$25,000 per day of violation and one year in jail ..."

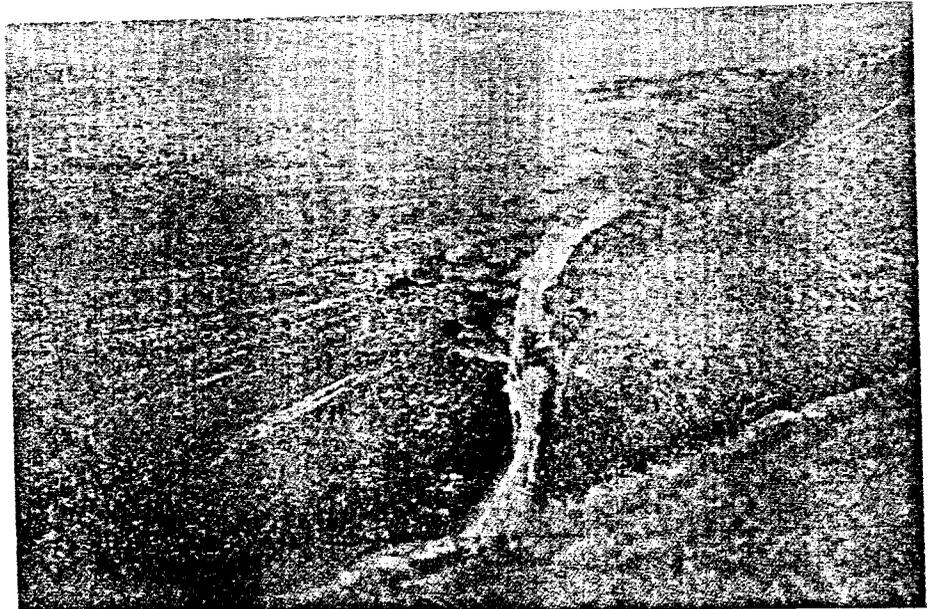
Needless to say, Grau's letter has sparked some controversy. Bill Moore, a commercial fisherman himself and president of the Organized Fishermen of Florida (OFF) disagrees with Grau. He asserts that "... they had a tremendous problem with some big towboats and barges in Niles Channel. That's a channel that fishermen have historically been using. That prop-dredging was really significant, and we certainly don't condone that sort of thing.

"But we have to go to and from the fishing ground with our boats, carrying the traps as we've always done. I don't think the problem has increased any—the boats are a little bigger and we are fishing a few more traps. Everything down here is getting bigger and harder, and we have to go right along with that in order to survive ... DER and the Army Corps are saying, 'you people are going to have to just go slower or go at high tide,' but they're talking about an 18-hour round trip just to go out to pull some traps. OFF's recommendations to various legislators and agen-

cies are addressing this, and we hope we'll get some response."

In addition to Moore's concerns, local politicians have become involved. Eugene Lytton, recently elected as a Monroe County Commissioner, has indicated in a letter to Gov. Bob Martinez that he was

Aerial photography shows devastating effects of large vessels churning up the soft bottom. Prop scars from small boats also are evident, and these too are beginning to cause concern.



outraged upon hearing of DER's letter. He asserts that "Commercial fishermen . . . are members of a responsible and traditional industry in a concentrated water-oriented county . . . (and) are very aware and solicitous of the environment as its continued preservation and well-being controls the future of their livelihood." He defends the fishermen by stating that ". . . because of the shallow gradient of the Keys platform these fishermen have been required to operate, from time to time, in minimal depths of water. They have become very expert and adept in so doing. Limited superficial scarification has occurred in, and been limited to, access or transit channels that have been used for decades."

DER's stand on the Niles Channel problem does not agree with Lytton. Dale Twachtmann, Secretary of the Department of Environmental Regulation, has indicated that "Based upon aerial photographs and other knowledge of Niles Channel, the Department has graphic evidence that it has never been a significant historical or traditional access channel between the Gulf of Mexico and the Atlantic Ocean, except for shallow-draft craft. Navigational charts show areas of good depths, but (show) other areas consisting primarily of shallow, submerged grass flats."

Twachtmann further suggests that interested parties consider the possibility of applying for a permit to dredge a channel. It could then be determined whether current rules and regulations would permit the construction of such a channel and placement of appropriate markers to channel boat traffic into appropriate areas.

Even this alternative is complicated. In recent months, the Coast Guard has indicated that it no longer intends to maintain the aids to navigation in the shallow east-west channel of the Lower Keys backcountry areas. Critics of this decision suggest that not only will navigation through these waters become more difficult, but the damage to submerged habitats can only be expected to increase as inexperienced boaters stray from the shallow channels into surrounding grassbeds.

Moore believes the problem can be averted by having an agency other than the Coast Guard mark the channels. "For several years now, we've been asking for markers, and we've been continuously ignored . . . I think the solution is simply to mark the channels and allow the fishermen to use those channels. Even in places of extra sensitivity they could put up signs that say 'Do not go out of the channel . . . \$50 fine' or whatever. We would support that. We don't want to lose the seagrasses."

Monroe County Extension Agent Jeff Fisher says he has only recently been approached about marking Niles Channel. Fisher advises the County Commission on project expenditures of Boating Improve-

ment Funds which come from the county's share of state fees for recreational boating registrations. It has been suggested that the county assume the responsibility for marking some of the channels when Coast Guard maintenance ceases.

Fisher notes that marked channels prevent boaters from "wander(ing) aimlessly on grass flats . . . We assume skipper intelligence. We assume that if a channel happens to be two and a half feet deep, it's more or less a small boater's channel. We would assume that a person with a 55-foot vessel would not want to try to go through that. It's marked on the chart . . . we assume people read the charts."

It seems that at least a part of the issue is what is defined as a pre-existing channel. Fishermen might interpret a channel brought into existence by repeated use (a so-called prop channel) as being one that could hereafter be used. The Engineers and DER in the Keys disagree with this interpretation. Nevertheless, both groups seem to be united in their belief that recognized channels must continue to be marked, and that some agency will necessarily have to assume the responsibility in order to prevent further loss of productive seagrass community.

While Niles Channel remains a focal point for prop dredging and seagrass survival in the Lower Keys, it cannot be regarded as the only area under threat. A flight over the Keys or Biscayne Bay reveals prop scars over virtually every shallow grass bed or shoal adjacent to residences or marinas.

What are the broader implications of degradation of the seagrass habitats? How do alterations in an isolated area affect overall water quality or adjacent habitats? What effects are occurring to organisms other than the seagrasses? How are fish and invertebrates that inhabit the grassbeds affected when the food chain is disrupted or the nursery grounds altered? How can we assess the impact to wading birds which rely on the areas for food?

A more important question is: How can the existing problems be solved and future seagrass habitat damage be averted? Without a doubt, the stressed or threatened regions must first be identified and the nature of the specific problem recognized. While enforcement efforts must be redoubled against those skippers of larger boats who regularly and willingly dredge their way through the shallows, a strong effort should also be made to inform novice and visiting boaters about local aids to navigation, and how best to navigate in the unique shallow areas which characterize South Florida and the Keys.

As boating continues to increase in popularity, we can only wonder if we are on the verge of the destruction of some of the very reasons we take to the water. **FS**



THE WILDERNESS SOCIETY

September 20, 1990

Honorable Bob Butterworth
Attorney General
The Capitol
Tallahassee, Florida 32399

RE: Damage to Shallow Water Habitat in the Florida Keys

Dear General Butterworth:

Florida waters adjacent to the Keys contain extensive shallow water seagrass beds, soft coral formations and mangrove islands. The State's largest harvest of pink shrimp and spiny lobster is directly dependent upon the vitality of this shallow water system. The Keys' food and sport fisheries are world renowned; even President George Bush visits the Keys for recreational fishing.

Seagrass beds form a crucial part of the food web for a number of species, including avifauna such as the Great White Heron, for which a national wildlife refuge was established in 1938. By Resolutions dated August 12, 1936 and January 31, 1940, the Trustees of the Internal Improvement Trust Fund dedicated the islands, banks and water bottoms in much of that refuge to become "an inviolate sanctuary for all forms of bird life...." (see attached).

Unfortunately, these irreplaceable resources are suffering a precipitous decline. Boating impacts account for much of the damage, particularly impacts from propeller dredging of shallow water habitats and seagrass beds. No person can visit the Keys, by land, sea or air, without observing numerous "prop scars". (see enclosed photograph).

Boats and personal watercraft also figure prominently in the disturbance of fish and wildlife, which regularly occurs in protected areas such as the Key West National Wildlife Refuge, the National Key Deer Refuge, the Great White Heron National Wildlife Refuge and in State aquatic preserves.

According to the Southeast Fisheries Center of the National Marine Fisheries Service, between 5,000 and 10,000 acres of seagrasses in the Keys have been impacted by propeller dredging. Such disturbances to seagrasses beds often take ten years to

General Butterworth
September 20, 1990
Page 2

recover under favorable conditions; areas of repeated propeller dredging never recover. In the event of a hurricane, large scale blowout formation and destabilization of substrate is likely to occur in areas criss-crossed with propeller scars.

Recently, the Florida Department of Environmental Regulation released a Preliminary Report entitled "The Effects of Propeller-Dredging on Benthic Macrofauna in Shallow Seagrass Beds in the Florida Keys" (Bishop and Kent, July, 1990). The preliminary results indicate a large decline in the biodiversity of macroinvertebrates in "prop scars". I have attached a copy of the report.

Throughout the Keys our natural areas are destroyed and our fauna disturbed on a daily basis. Sadly, little is done to stop the widespread destruction of seagrass beds and disturbance of shallow water habitat despite the adverse aesthetic, ecological and economic consequences.

The Wilderness Society has been an active participant in a local Boating Impact Work Group which includes representatives of the Florida Keys Audubon Society, National Audubon Society, Florida Keys Chapter of the Isaac Walton League of America, Florida Keys Fishing Guides Association, Big Pine Key Civic Association, Florida Keys Citizens Coalition, United States Fish and Wildlife Service, National Marine Fisheries Service, and Florida Game and Fresh Water Fish Commission. We have developed a four-point program to reduce current impacts and to rehabilitate degraded shallow water habitats: education, an expanded and improved channel marking program, enforcement, and creation of no-access and restricted access areas.

We have advocated codification of the four-point program within the context of Monroe County's consideration of a local boating ordinance, but months have elapsed and there is considerable uncertainty about the fate of local legislation.

Although local protection of shallow water habitat is desirable, the vast majority of these resources in peril are held in the public trust as sovereignty, submerged lands by the Trustees of the Internal Improvement Trust Fund. Sections 253.03 (1) and 253.12, Florida Statutes. The Florida Marine Patrol is the only entity within the Department of Natural Resources with the personnel and craft to protect shallow water habitats in the Keys. Unfortunately, the Marine Patrol contends that the problem is the responsibility of the Divisions of State Lands and Marine Resources. Further, the Marine Patrol lacks understanding of its legal authority to protect seagrass beds from "prop dredging".

General Butterworth
September 20, 1990
Page 3

Given the continued depreciation of our shallow water habitat in the Keys, The Wilderness Society respectfully requests that you direct the Department of Natural Resources to provide you with its assessment of the problem and how it can best be addressed. Concurrent with the Department's report, we would like the opportunity to present our views on the matter, illustrated with aerial photographs. We would also be happy to provide our interpretation of those statutes and rules which might be cited to protect shallow water habitats, the existence of which is crucial to our fisheries, wildlife and economy.

We appreciate your demonstrated commitment to the proper stewardship of Florida's natural resources and believe that this problem is worthy of your attention.

Respectfully,



Ross S. Burnaman
Florida Keys Representative

encl.



STATE OF FLORIDA

OFFICE OF ATTORNEY GENERAL

ROBERT A. BUTTERWORTH

October 16, 1990

Mr. Tom Gardner, Director
Florida Department of Natural Resources
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Dear Mr. Gardner:

Enclosed is a copy of a letter from Mr. Ross Burnaman, Florida Keys Representative for The Wilderness Society, concerning impacts to shallow water habitats and seagrass beds in the Florida Keys from boating activities, including propeller dredging.

According to Mr. Burnaman, the Southeast Fisheries Center of the National Marine Fisheries Services has determined that between 5,000 and 10,000 acres of seagrasses in the Florida Keys have been impacted by propeller dredging.

As Trustees for the submerged lands affected by such activities, and as head of the Department of Natural Resources with responsibility for the marine resources of the state, the Governor and Cabinet must evaluate the extent of this problem and take prompt and effective action to address it.

Accordingly, I request that you study the information provided by the Wilderness Society and initiate a coordinated effort between the Marine Patrol, the Division of Marine Resources, the Division of State Lands, the Marine Fisheries Commission, and environmental and industry groups to develop a method to protect these resources. I would appreciate a report on your findings and recommendations to the Governor and Cabinet at the second meeting in January, 1991, if possible.

Seagrass beds and other marine resources of the Florida Keys are extremely fragile. Human activities that adversely affect these resources also impact the fisheries in the area and the economy. A comprehensive strategy to eliminate damage to these resources from these activities will help forestall their decline.

Mr. Tom Gardner, Director
Page Two

I look forward to working with you on this issue. Please contact
Diana Sawaya-Crane in my office of Cabinet Affairs should you
have any questions or need additional information.

Sincerely,



Robert A. Butterworth
Attorney General

RAB/esc

Enclosure

cc: The Honorable Bob Martinez
The Honorable Jim Smith
The Honorable Gerald Lewis
The Honorable Tom Gallagher
The Honorable Doyle Conner
The Honorable Betty Castor
Monroe County Board of County Commissioners
Mr. Ross Burnaman ✓
Dr. Thomas Fraser

STATE OF FLORIDA
DEPARTMENT OF NATURAL RESOURCES

Marjory Stoneman Douglas Building • 3900 Commonwealth Boulevard • Tallahassee, Florida 32399

Tom Gardner, Executive Director

October 23, 1990

The Honorable Robert A. Butterworth
Attorney General
The Capitol
Tallahassee, Florida 32399-1050

Dear General Butterworth:

Thank you for your letter of October 16, concerning resource protection in the Florida Keys.

The problem is much broader than propeller scaring and requires a much more comprehensive resource protection approach. For too long Florida's aquatic natural resources have been considered to be vast and undepletable. The visible resource destruction in the Florida Key's represents a good example of abuse through reckless and uncontrolled use. The time has come to control our citizen's use of aquatic resources to insure preservation of those resources for future generations. Just as the Governor and Cabinet took bold action to protect the endangered manatee, it is now time to protect the State's endangered aquatic resource.

While there are similar problems in every coastal county of the State, the destruction is more dramatically visible in Monroe County because of the magnificence of the live corals and the contrasting colors of the grassbeds and the sandy and hard bottoms. If the State of Florida can't protect the aquatic resources in Monroe County with, literally, the support of the world's environmental community, then it has no chance of protecting the resource in its remaining 34 coastal counties.

My staff has been reviewing this problem for several months and is ready to present a management concept to the Trustees that begins to address the problems. An item for discussion will be placed on the agenda for the November 15, meeting of the Governor and Cabinet.

Sincerely,


Executive Director

cc: The Honorable Bob Martinez
The Honorable Jim Smith
The Honorable Gerald Lewis
The Honorable Tom Gallagher
The Honorable Doyle Conner
The Honorable Betty Castor
Monroe County Board of County Commissioners
The Honorable Larry Plummer
The Honorable Ron Saunders
Mr. Ross Burnaman
Dr. Thomas Fraser



Administration Beaches and Shores Law Enforcement Marine Resources Recreation and Parks Resource Management State Lands

Bob Martinez
Governor

Jim Smith
Secretary of State

Bob Butterworth
Attorney General

Gerald Lewis
State Comptroller

Tom Gallagher
State Treasurer

Doyle Conner
Commissioner of Agriculture

Betty Castor
Commissioner of Education

STATE OF FLORIDA DEPARTMENT OF NATURAL RESOURCES

Marjory Stoneman Douglas Building • 3900 Commonwealth Boulevard • Tallahassee, Florida 32399
Tom Gardner, Executive Director

June 4, 1990

Mr. Ross S. Burnaman
Florida Keys Representative
The Wilderness Society
8065 Overseas Highway
Marathon, Florida 33050

SUBJECT: Permitting of Uniform Waterway Markers in Monroe County

Dear Mr. Burnaman:

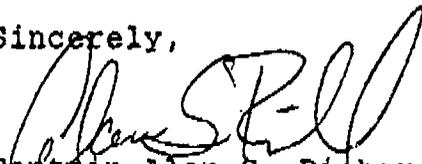
This will confirm our telephone conversation of this afternoon concerning the issuance of permits for placement of uniform waterway markers in Monroe County:

1. As far as I am aware, there are no lawfully placed uniform waterway regulatory markers in all of Monroe County. The City of Key West made some initial inquiries concerning the marking of a swimming area, but did not follow through with an effective application. We are processing a permit application for the establishment of a mooring field at or near Fleming Key.

2. There are numerous channels and fairways within Monroe County which have been marked by lawfully permitted private aids to navigation (channel markers). Permit number 89-010-ATN authorizing placement of these markers has been issued by this department. We have periodically amended this permit as addition markers have been placed. It is my understanding that the appropriate permits have also been obtained by Monroe County from the United States Coast Guard.

If there is any further information or assistance that I can provide, please do not hesitate to call me.

Sincerely,


Captain Alan S. Richard
Deputy Coordinator
Boating Safety Section
Florida Marine Patrol

ASR/asr



State of Florida



Department of Natural Resources

Memorandum

October 29, 1990

TO: Director D.N Ellingsen
Florida Marine Patrol

FROM: Major R.H. McCullers *Bem*
District Nine

RE: "Prop Dredging"

RECEIVED

OCT 30 1990

FLORIDA MARINE PATROL
DIRECTOR'S OFFICE

In response to our phone conversation of October 29th, the following information is offered for your review.

Prop dredging has been an ongoing issue in District Nine since my arrival here in 1984. As you are aware the majority of the navigable waters in the Keys are open water, and unmarked. The lack of marked channels in the 2500 sq. miles of State waters in the Keys leads to the vast majority of the "prop dredging" complaints received in this office. Most of these incidents are merely inexperience on the boat operators behalf. No knowledgeable boat owner/operator intentionally uses his boat to dredge channels, the damage and cost of marine equipment repairs makes this practice impractical.

A continuing target of these complaints has been commercial crawfish and crab boats. Most of these vessels are in the 35ft. to 40ft. class and draw 3ft. of water when loaded and underway. While in transit from the docks to their fishing areas they do turn the bottom, especially on the bayside. However, so do large recreational vessels. This has been an issue utilized by the recreational fishermen in an ongoing publicity campaign against commercial fishing in the Keys. It is a frequently cited complaint by Keys environmental groups also.

Over the past four years a total of 74 complaints have been handled by the District, relating to "prop dredging". Two arrest citations and one written warning has been issued as a result of these complaints. One of the arrests has not gone to trial as of this date.

State of Florida



Department of Natural Resources

Memorandum

Page 2

The other arrest was made in Marathon in June of 1986, with the assistance of D.E.R. enforcement supervisor Randy Grau. The charges against the defendant was "Nolle Prosequied" by Asst. State Attorney Henry McHale, due to our inability to show "intent" by the defendant.

Under the current criminal statutes that we have to utilize for this type of violation we are handicapped when it comes to proving "intent". The State Attorney's Office continues to be reluctant to prosecute this type of case. Additionally, with misdemeanor violations the response time to the site of the alleged violation severely restricts our ability to take definitive action once on scene.

The issue of prop dredging has been dealt with in a forthright manner in this district. Unless new statutes are promulgated to more adequately address this sensitive situation I would urge that we continue to use good discretion in our enforcement efforts for this type of violation.

I have attached various items of documentation for your review. Please let me know if you desire further input or action on this matter.

cc: Col. Akey
Attachments

LEGAL AUTHORITY REGARDING BOATING DAMAGE
TO FLORIDA'S SEAGRASS BEDS

By Ross S. Burnaman, Esquire
Florida Keys Representative
The Wilderness Society
November 12, 1990

Most of Florida's seagrass beds (or meadows) are located on public property. The Board of Trustees of the Internal Improvement Trust Fund (Board) holds title to sovereignty, submerged lands in public trust on behalf of Floridians. Section 253.03, Florida Statutes. The Board has a statutory duty "to police, protect, conserve, improve, prevent trespass, damage or depredation" on State lands. Section 253.04, Florida Statutes.

Although Section 253.05, Florida Statutes, requires Florida's law enforcement community and the Department of Natural Resources' Executive Director to see that State lands are not damaged and trespassed upon, prosecutions for boating damage to seagrasses are exceptionally rare. State officials contend that the civil and administrative remedies in Chapter 253, Florida Statutes, are not an effective means to protect seagrass beds and shallow water fish and wildlife habitat from boating impacts.

The Department's Marine Patrol is authorized to prosecute all violations of Florida criminal law. Section 370.021 (5), Florida Statutes. Section 806.13, Florida Statutes, makes it a crime to willfully injure or damage by any means the real property of another person. Section 327.33, Florida Statutes, prohibits reckless operation of a vessel. Both statutes require a showing of willfulness by the violator.

The Marine Patrol may also prosecute criminal violations of State pollution laws. Section 403.161, Florida Statutes, makes it a crime to cause pollution which harms health, animal, plant or aquatic life without a permit. The statute provides penalties for willful violation and for "reckless indifference or gross careless disregard".

Criminal prosecutions for boating damage to seagrass beds are considered impractical because of the problem of proving intent or reckless indifference. Accordingly, Florida's law enforcement community does not prosecute that type of environmental crime.

Unless the Department and the Board can obtain new authority to protect seagrasses and shallow water habitat, or create incentives to secure better use of existing legal authority, Florida's most productive marine plant communities will continue to decline, even in areas subject to "special protection" like the Outstanding Florida Waters of the Florida Keys.