Floating fish camps on the Apalachicola River, Florida: Increases and Implications

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Abstract

Peoples from various cultures and locations have been living on the edge or margin of water-land interfaces in floating houses of various types, either permanently or part-time. In some cases, people build these to access natural resources from both water and land environments. Through fieldwork on the Apalachicola River and branches, including the lower Chipola and Brothers Rivers in the Florida panhandle, a large variety of floating camps were observed. The purposes of this paper are to: 1) review historical information on the occurrence of floating dwellings and camps worldwide to give context to the study area; 2) map patterns and change since 1994 in different parts of the basin, including whether adjoining public or private lands to interpret potential areas of concern; and 3) examine the vernacular architecture of floating structures. Much of our discussion concerns current policy regarding floating structures in light of the need to maintain the ecological integrity of the river.

The earliest known references to floating homes or camps in the study area date back to the Great Depression of the 1930s, when society was in need of low-cost housing. Rather than being clustered in communities, the fish camps of the Apalachicola River and branches are spaced across this system. The number of floating camps along the Apalachicola River and some of its major branches, as measured using Google Earth and historical aerial photography, has increased from 63 in 1994 to 132 in 2004 to 177 in 2015. Since dredging associated with the Navigation Project stopped in 2002, 78% of the growth or 34 of 45 new floating structures has been on the main-stem Apalachicola River, compared to 54% or 37 of 69 from 1994 to 2004. Nearly half of the fish camps are located next to public lands, which in some cases are impacted by people residing within the camps. The rustic structures typically are built of reused building materials; amenities can include air conditioning and satellite dish television, and decorations include flags or name plaques. Studies of floating dwellings elsewhere, and communication with local officials, provides some guidance on the benefits and concerns for these increasingly numerous dwellings in terms of public safety, crime, and environment in relation to existing and potential policy.

Key words: Fish camps, floating structures, houseboats, shanty boats, Apalachicola River, Chipola River, Florida

Introduction

Floating camps occur in various parts of the world and are built for a variety of reasons. Because of limited land in low-lying areas, they are growing in number, perhaps as an adaptation to living in flood-prone areas such as the Netherlands (Rijcken 2005; Haasnoot et al. 2012; Strangfeld and Stopp 2014). In Appalachia, families evicted from their farms and towns by TVA dams, by the creation of the Smoky Mountain National Park, by the Great Depression of
the 1930s, or by the Oak Ridge nuclear facility, found refuge on rivers in houseboats or “shantyboats” where no one could displace them from their homes (Obermiller and Wagner 2017). In some cases, people reside for years in remote camps adjoining rivers to avoid civilization (Roland 2006). Historically and currently, communities and individuals have located at riparian areas for access to both aquatic and terrestrial habitats and because edges between two habitats often exhibit high levels of productivity and species richness or biodiversity (Odum 1971; Turner, Davidson-Hunt, and O'Flaherty 2003). One such place that has attracted more than a million people is Tonlé Sap, a seasonally inundated freshwater lake and river connected to the Mekong River in Cambodia with floating villages with markets, churches and a basketball court. (Keskinen 2006; Keskinen, Nuorteva, and Varis 2010)

In the Seattle, Washington area there is a long history of houseboat communities with needs that changed over time (Means and Keasler 1986). The first boats were built on mobile rafts to house workers of the logging camps who followed logs along the rivers. Later, in the 1920’s, houseboats were summer homes for the wealthy and permanent homes for working-class families of fishermen, boat makers, and others. The numbers of houseboats exploded during the 1930’s when people collected old logs and debris floating around the lakes and built temporary quarters during the Great Depression. At the time, there were 2000 houseboats in the area. As of 1986, there were about 480 houseboats remaining, occupied by bohemians, students, and those of means (Means and Keasler 1986).

These floating structures are the subject of a variety of questions and studies. Important questions in case studies include legal status in Latvia (Dambite 2011), floating markets as sites of trade and tourism in Thailand (Pongajarn, van der Duim, and Peters 2016), leases for moorings vs. development in Seattle (Means and Keasler 1986), diet, social status, norms, and folklore in Ohio River bottomlands (Bennett 1943), fishermen’s lifestyles in the upper Mississippi in the early 1900s (Carlander 1954), and water quality impacts in the Netherlands (Foka 2014). Other case studies focus on entrepreneurship and tourism in Kerala, India (Kokkraniikal and Morrison 2002), socioeconomic analysis of floating villages in Cambodia (Keskinen 2006), adapting to rapid urbanization and climate change in Makoko floating village, Lagos, Nigeria (Adeyemi and Disu 2012) and dengue fever outbreaks in Vietnam (Le Viet et al. 2015). These studies show that floating houses and communities demand attention from human and environmental geographers.

Given the wide variety of water bodies with roughly 7,800 lakes and more than 1700 rivers and streams located in Florida (Brenner, Binford, and Deevey 1990; Nordlie 1990), many parts of the state are suited for floating camps and homes. At the land-water boundary, Turner et al. (2003) suggests that human societies situated “on the edge” ecologically and geographically are likely to benefit from this increased diversity by being more flexible and resilient than those people situated within more homogeneous environments. However, the opposite may be true for ecological communities. Because edges between two habitats often exhibit high levels of productivity and species richness or biodiversity (Odum 1971; Turner, Davidson-Hunt, and O'Flaherty 2003), additional precautions may be needed to prevent potential problems to species that are vulnerable.
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Several floating fish camps observed during field excursions on the Apalachicola and branches, the lower Chipola and Brothers rivers, in the Florida panhandle (Figure 1) were the inspiration for this study. The term fish camp fits best, because of their aquatic location and usage predominantly for recreation rather than as primary residence. Fish camps have been on these rivers for many decades but they have not received much scholarly attention from government agencies or academics. Photographs of floating camps in the Apalachicola River in archives date back to at least 1965 (Holland 1965) and modern witnesses have verified their long-standing presence in the study area (McClellan 2012; Tolbert 2017). Oral histories compiled by Eidse (2006) include an interview with a preacher who lived in a floating home in the Apalachicola River floodplain during the 1930s. As described in Sorset (2013), Memory et al. (1998) observed that many individuals built fishing camps and hunting cabins along the banks of Chipola and Apalachicola River during the mid-20th century. Camps on the Apalachicola were also noted by Clewell (1977). Generally, prior works have anecdotal references to camps, but whether these camps are floating or on land is unknown, so clearly additional research is needed.

Largely because of reduced flows from the upstream irrigation and urban use and differences in timing of water inputs, the non-profit organization American Rivers (2016) identified the Apalachicola-Chattahoochee-Flint or ACF basin as the most threatened river system in the USA. Yet, the aquatic resources in the river and estuary system are still abundant, and support threatened and endangered species of freshwater mussels, Gulf sturgeon, which is threatened throughout its range, and economically important species including oyster and blue crab. Damming, dredging and other impacts altered the river as part of an ambitious navigation scheme by the US Army Corps of Engineers to provide a 2.7 m (9 ft) deep and 30.5 m (100 ft) wide navigation channel from the Gulf of Mexico to Columbus, Georgia, on the Chattahoochee River (U.S. Army Corps of Engineers 1939). After many years of alteration associated with this expensive and minimally used navigation project (Stein et al. 2000; U.S. Senate Committee on the Environment and Public Works 2002) with 29.6 X 106 m$^3$ of sediment dredged between 1957-2002, removal of over 215,000 snags, and six artificial cutoffs (Mossa et al. 2017; Light, Darst, and Grubbs 1998), the river is recovering since the navigation maintenance ceased in 2002. Over time, the state and non-profits have purchased floodplain lands, thus much of the current floodplain is forested conservation lands or private timber (Figure 1). Dredging barges and related structures (Figure 2) occupied much of the channel and disposed material on sand bars, which might have kept people from building floating structures on the main-stem Apalachicola River where damage from the dredging activity was possible.

The goal of this study is to characterize floating fish camps along the Apalachicola River in Florida and some of its branches over about a twenty-year period. These structures have received little attention from geographers. This study uses field observations, geospatial data from government agencies, Google Earth and high resolution aerial photography from 1994 to 2015 to document the location of floating fish camps within the Apalachicola River and its branches. These datasets enable us to quantify changes in the number of floating fish camps over the past couple of decades, as well as examine their spatial distribution along the river and its branches. Our field photography documents the vernacular architecture, amenities and
decorations of these floating structures. A related objective is to review of the current situation to inform policy. To this end, it is relevant to identify where floating fish camps adjoin public or private lands and whether their presence adversely impacts conservation lands. Additionally, through review of international problems and state regulations, and discussions with agency field personnel, we address some policy implications.

Methods

Our systematic survey examined changes over time from Google Earth and historic aerial photography. We acquired black and white panchromatic photography for periods in 1994 (1/14/94, 2/13/94, 3/2/94); more recent imagery from 2004 (3/10/04, 4/3/04, 4/4/04) and 2015 (most of river 10/16/15, upper river 11/28/14 or 5/5/17) are color images. Most of the fish camps are the size of medium and larger sheds and can be distinguished by their rectangular shape, brightness compared to surrounding features, and relative location away from floodplain communities (Paine and Kiser 2012). The resolution and scale of the imagery was sufficient to distinguish the artificial feature from a feature such as a tree or small island, however, it is possible that a few camps were mistaken for covered docks or vice versa. If there was a wooden walkway to land with a house nearby, we interpreted that the structure was a covered dock and not a camp. Because there was some uncertainty in aerial photo interpretation, these were not included in our camp census. If in error, some camps may have been omitted from our mapping.

We examined the entire length of the Apalachicola River, from its beginning at Jim Woodruff Dam, along the Florida-Georgia border near Chattahoochee, at river mile 106 all the way down near the small town of Apalachicola on the Gulf of Mexico (Figure 1). Leitman (1984) divided Apalachicola River into three sections, upper, middle and lower based on the physiographic and geomorphic differences. Each section of the river has a different character (tidal influence, width, floodplain channels) and history, particularly related to dredging. We individually counted camps in Brothers River (a side channel from River Mile or RM 12 to RM 24), the lower Chipola River (a branch and tributary connecting to the Apalachicola River near RM 28 and RM 42, and Florida River, a small tributary near RM 43 (Figure 1). Dividing the river into sections and branches also highlights potential areas of concern. In a Geodatabase we added the points mapped from Google Earth and 2015 imagery, and included layers of hydrography. We also acquired geospatial data as feature layers (vector format) for Florida conservation lands from the Florida Natural Areas Inventory to determine the percentage of fish camps adjoining public lands (Table 1).

The qualitative portion of our study was in the field. We took several trips on the Apalachicola River and side branches (mostly in the lower Chipola River) between RM 14 and RM 80 between August 2015 and August 2017. During field excursions, we photographed many of the camps to evaluate their attributes, features, and visible impacts on the floodplain. We did not conduct a complete census or classification (Kniffen 1936) of all camps, but instead chose camps that had different types of vernacular architecture as examples of the range of structures and features. A few camps were occupied during our field excursions, but we did not interview any owners or view the inside of any camps.
Results

Numerical Increases and Adjoining Lands

Aerial photo interpretation reveals that the number of floating fish camps in the study area increased from 63 in 1994 to 132 in 2004 to 177 in 2015 (Figures 3 and 4). The portions of the river system that were never dredged, namely Brothers River, lower Chipola River and Florida River, show fewer new floating structures or more graduate increases in number than the Apalachicola River. In 1994, there were 40 floating camps on the Brothers River, lower Chipola River and Florida River compared to 23 on the entire Apalachicola River mainstem. In 2015, there were 83 camps on the Brothers River, lower Chipola River and Florida River compared to 94 on the Apalachicola River mainstem. The cessation of dredging operations may be a factor causing more growth on the Apalachicola, as the dredge barges and associated components occupied much of the river (Figure 2) and possibly could have caused damage to camps located near channel margins. Overall, during the study period, floating fish camps increased in all three sections of the mainstem, but the total numbers are greatest in the lower and middle Apalachicola Rivers.

Approximately half (49.1%) of the fish camps adjoin public lands managed by the Apalachicola National Estuarine Research Reserve (AENRR), Northwest Florida Water Management District, Florida Park Service or conservation land that is managed, although not necessarily owned, by the Nature Conservancy (Figure 5). Nearly all fish camps in the lower Apalachicola River adjoin public property. Nearly 60% of the camps in Brothers River, which is also toward the lower end of the basin and connects with the Apalachicola at RM 12 and RM 21, adjoin conservation lands. The lower Chipola River is the Apalachicola River’s largest tributary, connects with the Apalachicola at two places (RM 28 and RM 41), and has a large number of fish camps, mostly (78%) bordering private lands (Figure 5). Next to private lands on the lower Chipola River and Brothers River are clusters of fish camps that were established by 1994 (Figure 3); owners of these camps might be family or friends with strong social connections. Proportionately fewer (38%) of the fish camps in the middle Apalachicola River are next to conservation lands, and all of the fish camps in the upper Apalachicola River are located next to private lands.

Observations of Vernacular Architecture, Amenities, Decorations and Impacts

Most of the structures observed were not boats or vessels, in the sense that they lacked motors or a means of steering. These floating camps are tethered with ropes to trees in the floodplain and snags on the river bottom. They are typically on the channel margins and some use solar panels or generators for power and cisterns for capturing precipitation. Many of these camps have lighting, window air conditioning units, freezers or refrigeration, and satellite dishes or antennae allowing viewing of television (Figure 6). One has a separate but related structure where the framing is mostly surrounded by clear plastic (6C). Another camp located across from Torreya State Park at Ocheesee Landing had an accompanying floating raft with a pool slide. These amenities exceed those typically associated with hunting and fishing camps in remote areas.
Also observed was some decorating and naming of the fish camps (Figure 7). Camps are sometimes adorned with the symbols or flags. Some display the American flag (Figure 7C), whereas others identify with their favorite university (Figure 7B, here University of Florida) or show southern identity with a Confederate Flag (Figure 7A). Sometimes the camps are named, for instance, one owner self-identifies as “The Redneck Yacht” (Figure 7D).

Structurally, there is some variation in their construction and adornments. The dwelling components can be placed on pontoon boats, barges, but are most commonly a wooden platform overlying Styrofoam or empty metal barrels. The covered portions are often sheds or built of recycled materials typically with metal roofs and multiple windows (Figure 8). Porches are commonplace on the floating camps, with many being constructed of recycled materials, including metal, wooden fencing, and wooden pallets. Many fish camps have an open-air deck with a roof and railings, replete with barbeque grills, lawn chairs and porch swings (Figure 8). Some of Kniffen’s (1936) classifications of porch and roof types of Louisiana folk housing might form the basis for a future study where fish camps could be classified.

In some cases, the nearby floodplain was modified by clearing of underbrush, cutting trees, and building docks to the adjoining public lands (Figure 9). Observations include land cleared to place a satellite dish, plastic lawn chairs, tarps, laundry on clotheslines, and large metal barrels (Figure 9). Clearing practices are potentially of concern to the environment, as they make the local land more susceptible to erosion and contribute to sediment movement into the river. Non-tethered items could be carried into the river by floods. Additionally,

**Discussion**

An important finding of this study is that the number of fish camps is growing rapidly. Over time, the state has acquired more floodplain lands, and currently about half of the floating structures adjoin public property. Before it radically alters the character of a mostly natural, ecologically important river, some questions should be asked. How many fish camps are sustainable along a given reach of the river? Does it matter if the owners of fish camps build docks to public lands or alter them? Would it be preferable to have fish camps clustered rather than dispersed? Are existing regulations sufficient?

In some other communities, such as Seattle, houseboats are confined to specific portions of the river such as marinas (Toft et al. 2003). Along the Apalachicola, however, fish camps are sprawled across a mixture of private and public property. Because the number of floating fish camps is increasing, a review of their status and impacts may be in order to provide decision makers with information to shape appropriate policy and regulations. There are many potential impacts to water quality and environment including floodplain alteration, noise, littering, spills, and waste disposal, and other concerns such as navigation safety and theft of non-titled property that could result in local disputes.

Regulation controls waste disposal for enclosed cabins with berthing facilities (Florida Legislature 2017; Tolbert 2017). On houseboats, these must be permanently installed toilets; on other floating structures without motors or steering, which most fish camps fall under, toilets
can be portable or permanently installed. Regulations prohibit discharge of raw sewage in Florida waters, thus any waste needs to be disposed in an approved waste reception or pump-out facility. Violations, if not corrected, go to county court within 30 days in order to authorize removal of the vessel or floating structure at the owner’s expense. It also might be helpful to compare local regulations to those in other states, such as the recently approved regulations on houseboats or floating camps at the Louisiana Department of Wildlife and Fisheries (2014) (Title 76, Part IX, sections 105, 115 and 117).

Because these floating structures lack titles unless they are vessels, a problem occurs when the camps sink and then are left in the river creating obstructions to navigation and possibly pollution. Registering floating structures might be a method for holding camp owners accountable for rectifying the situation. Leaving the camp or boat to decay for a long time is undesirable, particularly for conservation areas. The contact information associated with registration could be used to inform the owner of the camp or boat that they must remove it or that it would be removed for them as part of a clean-up effort and that they might be liable for any navigation hazards which resulted from the sunken boat. A registration process has been suggested in the past, but never left legislative committee; in lieu of this, the next best solution for dealing with potential problems including theft, damages, or sunken structures are labelling the structure in multiple locations with identifying information such as name and phone number (Tolbert 2017).

Some efforts and state statutes exist to deal with derelict vessels, defined in Florida Statute Section 823.11 as “a vessel . . . that is left, stored, or abandoned . . . in a wrecked, junked, or substantially dismantled condition upon any public waters.” (Ankersen et al. 2015). Procedures exist in the statutes for handling vessels that are hazardous to navigation. However, most of these floating camps are not vessels or “ships or large boats” per se. Only a few were converted pontoon boats or other boats with registration numbers, capable of motoring and steering. In 2013, the U.S. Supreme Court issued a ruling that these types of floating structures did not meet the definition of a “vessel”, and therefore are not subject to federal admiralty or maritime laws but could be subject to state or local regulation (Ankersen et al. 2015).

Still, some practices described in Ankersen et al. (2015) are relevant and transferable to the fishing camps, in that Florida Fish and Wildlife Conservation Commission (FWC) catalogs vessels that are derelict or “at-risk” of becoming derelict in a statewide tracking database, a first step to identify owners and begin removal. By common practice, most floating fish camps are made of recycled materials which to some may appear “junked” and used only intermittently, which makes it harder to identify as “abandoned”, but the FWC suggestion of labelling can resolve any confusion (Tolbert 2017). Other challenges include minimizing potential environmental impacts during removal, and securing funding for the removal process.

Anchoring or tethering is another issue for consideration. Navigation rights are protected at the federal level and anchoring is considered incidental to navigation rights and remains protected by federal law (Ankersen et al. 2015). In some other communities where anchoring is regulated, safety seems to be a concern, particularly lighting. Although not subject to the same regulations as vessels, these riverine fish camps might benefit from minimal safety
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regulations such as the use of multiple reflectors on all sides of the structure instead of lighting, which might be detrimental to wildlife. Insights from both agencies and the public might address other concerns on both sides.

Removal of abandoned floating structures and boats might be of interest to a salvage business, costing the owner or state less by cooperating with those working with reuse and recycling of boat and building materials. Florida Regulators should look at the history of issues and concerns of larger and long-term floating communities elsewhere, such as in Seattle, which struggled to cope fairly and effectively with these structures. Means and Keasler (1986) documented controversies and legislation with Seattle houseboats, including moorages in the face of increasing land-based waterfront development. The authors found that when residents and businesses started to move, houseboat owners formed the Floating Homes Association (FHA) to come up with a unified response and financed the building of moorage and their own sewer line. Currently, these houseboats are no longer structures for the poor, being listed for sale at prices ranging from $500,000 to $2.67 million (Lloyd 2017).

As the Apalachicola is Florida’s largest river in terms of streamflow, hosting a diverse freshwater sport and commercial fish population, it is not surprising that the number of fish camps has been increasing. The Apalachicola is the only river on the Florida Gulf Coast that has a natural Gulf striped bass population (U.S. Fish and Wildlife Service 2017). On the tidal or lower end of the river, aquatic resources in Apalachicola Bay include oysters (the Bay historically provided about ninety percent of Florida's oyster harvest, and fifteen percent of the nation's harvest), large shrimp, blue crab, and finfish (Wilber 1992; Chanton and Lewis 2002). These estuarine habitats are dependent on riverine inflows to provide floodplain detritus during the high-flow period and dissolved nutrients for estuarine primary productivity during the low-flow season. Although reduced freshwater input from upstream (Mossa et al. 2017) has had a pronounced impact on aquatic habitats and communities, the area is still rich in aquatic resources.

Floating fish camps along the Apalachicola River are relatively inexpensive for owners compared to conventional housing in that land ownership is not needed and there are no property taxes. Additionally, owners could move floating fish camps to different portions of the river if problems arise. Construction of the fish camps provides part-time or temporary work. Fish camps also provide a means for locals to supplement their income with resources derived from the river and floodplain. They also provide local recreation and dollars as many of the owners are likely to have sport fisheries licenses, hunting licenses and may harvest crab, oyster, cypress or other resources. However, there can be frustrations when people enjoying nature hikes or the wilderness camping near Torreya State Park, find themselves in within hearing distance of a noisy generator on the opposite bank, and as the number of structures grow, noise will grow as an added concern.

Future study of floating fish camps would benefit from in-person interviews to learn about the people who use such camps. What are the characteristics of those who inhabit or visit fish camps, mostly male or entire families? Why did they choose these specific sites? When did they establish camp on the river? What are the frequency, duration and timing of use in
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relation to fishing and hunting? What are the features of the interiors? What activities do they do while there? What are the social and economic connections between fish camp owners? Are they aware of and do they follow existing regulations? What provides electric power or do they do without? Are they marking these structures with personal identification? Do owners think future growth should be managed? As of present, these are mostly unknown.

Conclusion

Floating fish camps have become a notable, vernacular feature of the cultural landscape of the Apalachicola River and connecting branches in northwestern Florida, showing a variety of features and styles. From a geographic perspective, more work could be done to understand the owners, their stories and varied decisions. Specific positives include some benefits to the local economy and their flood resilient nature.

In our study area, these date back at least to the Great Depression of the 1930s and have grown in number from 63 in 1994 to 177 in 2015, with the main-stem Apalachicola River showing the greatest increases. Nearly half of the fish camps adjoin public lands; some of the adjacent lands show floodplain alterations such as clearing, outdoor seating, and small docks, as well as tarps and laundry. Currently, state agencies that enforce regulations do not consider these a major problem but management intervention will be required if floating structures sink, continue to grow unchecked, create too much noise, or result in impacts to water quality. Before such a quandary, a review may be in order by relevant state agencies or local communities.

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## Appendix: Tables and Figures

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Table 1. Images and data sources applied in this study.
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Figure 1. Study area along the Apalachicola River. Major waterways where fish camps were mapped are labeled. The land use land cover map was created by the North West Florida Water Management District and local counties.
Figure 2. Dredging barge in Apalachicola River (RM 45) from 1994 aerial photo. Image captured from Google Earth and original from USGS.
Figure 3. Fish camps in 1994, 2005, and 2015 in the study area in relation to 2017 public lands. Each symbol represents one floating structure, which grew in number from 63 to 177 over the study period.
Figure 4. The number of fish camps per river reach for three periods between 1994 and 2015.
Figure 5. The number of fish camps by river reach in 2015 that adjoin or are adjacent to private and public lands. Nature Conservancy lands were categorized as public due to the conversation management purpose.
Figure 6. Different amenities of fish camps include solar power, satellite dishes, air conditioning, outdoor lighting, and screened-in covered porches. All photos were taken in the middle Apalachicola River.
Figure 7. Examples of fish camps that display flags and/or labels (American, University affiliation, Confederate, “The Redneck Yacht”). Such features represent an expression of ‘identity’ through flags. Photo A, B were taken in the lower Chipola River; photo C and D were taken in the middle Apalachicola River.
Figure 8. Porch variations and features: an open-air deck with a roof and railings, replete with barbeque grills, lawn chairs and porch swings. Photo A was taken in the Chipola River, photo B, C and D were taken in the middle Apalachicola River.
Figure 9. Modifications to the floodplain adjacent to fish camps include clearing underbrush, cutting trees, and building docks to the adjoining public lands. Photo A shows plastic lawn chairs, barrels and other non-tethered materials that could be transported into a river during flood events. Photo B shows clearing to build a pole for a satellite dish. Photo A, B and C were taken in the lower Chipola River and photo D was taken in middle Apalachicola River.