Watercraft Safety Report

MARYLAND NATURAL RESOURCES POLICE

BOATING OPERATIONAL SAFETY REVIEW

Of the United States Department of Agriculture Wildlife Services

PURPOSE: To conduct an on site review of Wildlife Service boating operations with emphasis on operational hazards, safety policies and procedures, initial and recurring training, accountability of crews, safety equipment, boat handling, operator certification, and compliance with Federal, State, and industry standards. In addition, the site of the March 2006 fatality in Clear Lake Washington would be reviewed.

EXECUTIVE SUMMARY:

USDA Wildlife Service (WS) mission is to provide Federal leadership in managing problems caused by wildlife. The Wildlife Service utilizes a variety of different vehicles and control tools to accomplish this mission. WS employees also use many different vessel types, classification, and size to complete their missions on or near the water. These vessels include: one and two person kayaks, canoes, standard outboard motor boats, Beaver Tail long shank air cooled outboards, high power jet boats, and Jon boats.

Operational environments include: the turbulent waters adjacent to huge hydro-electric dams, some of America's largest rivers and swamps in the Southeast, structures like bridges and ferry docks on the West Coast, the busy intra-coastal waterway, and floating marshes on the Eastern Shore. WS employees often work at night, or at sunset. They may work alone, or sometimes from their own homes, resulting in supervisory accountability challenges. Many missions require lengthy trips to remote areas, work on shore in difficult terrain, and a return by boat late in the day or the next morning. Operators and crew often wear heavy warm clothing and hip waders. Vessels are often loaded with equipment including Beaver traps, poles, chain, pyrotechnics, and shotguns.

Maryland Natural Resources Police (NRP) reviewers visited several WS sites throughout the country. Interviews were conducted with supervisors and staff. The

reviewers accompanied boat operators on site as WS personnel performed typical duties; examined safety equipment and vessels; and reviewed written policies. Without exception, the reviewers were treated cordially, and in a highly professional and open manner by all WS employees. The reviewers were impressed by the dedication to the WS mission and the concerns for safety demonstrated by all staff including supervisors. The reviewers wish to acknowledge the exceptional safety record overall of Wildlife Services since its inception.

At most sites, reviewers found little or no written policies concerning basic safety requirements including use of Personal Flotation Devices (PFDs). One notable exception was a State that had a policy stating: "that lifejackets must be worn while operating all types of watercraft." There were few written policies regarding certification of boat operators, inspection of safety equipment, checklists, or emergency procedures. No state or district had written polices regarding specific and documented initial and/or recurring training on the various types of vessels, or on float plans and accountability. There were no safety oriented posters, literature, or warnings posted at or near work sites. With the exception of WS vessels operating on Corps of Engineers activities, there were no formal float plans accounting for people and vessels while on the water.

The basic WS safety requirement is that all vessels and operators follow those requirements established by the laws and regulations of the state in which they operate see appendix for WS Safety Directive 2.601. This is not sufficient in that the work environment of WS employees is far more hazardous than recreational boaters for whom state laws were designed to provide minimum safety requirements.

The NRP reviewers recommend that:

1. ***PFD use (actual wearing while underway) is mandatory at all locations.***

2. ***Each site obtain the styles and types of PFD's most likely to be worn including float coats, Auto Inflatable PFD's for hot weather, and comfortable vest style Type 3 PFD's***

3. ***Safety officers are appointed for each district. These individuals, in cooperation with supervisors and managers, will develop, in final form, a written policy. This policy would include initial and recurring training, certification of boat operators, emergency operations, search and rescue, safety equipment inspections, float plans, accountability, and proper loading of equipment on the vessel.***

4. ***Suggestion for locations where WS staff work near/under piers with large ship or ferry traffic: Memorandum of Agreements should be signed requiring that a WS supervisor is contacted NLT 1 hour prior to the large ship or ferry boat's scheduled morning run by ship or port operations if there is no record of WS crew calling clear of the area.***

5. ***Purchase handheld GPS chart plotters (such as the Garmin Map 76 monochrome unit). Training, on the unit should be conducted prior to issue along with periodic refreshers each year.***

6. ***WS should maintain strict adherence to vessel placards in regards to weight and number of passengers on board. Safety Officers should develop easy to read examples of typical loading which approach weight limits. Example: "Two male adults 10 beaver traps, two fuel tanks, a crate of chain, etc = 550 pounds……" These examples should be provided to all staff and could be also conspicuously mounted in poster style where the boats are stored.***

7. ***WS Safety Officers should obtain (often free from boater safety organizations) and post conspicuously signs and safety posters. This sends a message that safety is important!***

REVIEWERS:

Cpl. Richard Banks Kaufmann is a Senior Boating Instructor at the NRP Training Academy and holds a current 50 ton USCG Masters License. Ms. Ann Rogers is Boating Safety Education Coordinator for Maryland's Natural Resources Police. Ms Rogers has been involved with the Maryland mandatory boater education law since 1988. These two reviewers were accompanied by Mr. Kevin Sullivan, State Director for Maryland, Delaware and DC to all the sites.

SITE HAZARD SUMMARY:

SITE 1: NUTRIA TRAPPING. Operators use vessels as transport for themselves and gear (including nutria traps and poles) to nutria trapping sites. They often wear waders while walking along in the Eastern Shore marshes to the trapping sites. The marshes can be treacherous due to soft spots. Operators also set traps from the vessels, or by wading close to the shore. A prime hazard is stepping in a hidden soft spot in shallow water -- locals call the oozy muck "black molasses." The shallow water is also littered with hidden obstacles including tree roots and stumps. An additional hazard unique to the equipment is the short and long shaft Beaver Tail air cooled outboard engines. These heavy (200 pounds) 27 HP motors have no reverse due to the float pods. With only a throttle, the operator must lift up the lower unit to stop.

Another unique challenge is that many boat operators work alone, and some directly from home, thus supervisors may not have daily accountability of staff.

KOHLER AIR COOLED BEAVERTAIL MUD MOTOR.
NOTE MUD!

SITE 2: CORMORANT HARASSMENT. Boat operators and crew work in remote areas harassing cormorants at their roosting areas, usually at sunset. They use shotguns and pyrotechnics. Poisonous snakes along the shore and swimming in the rivers pose the greatest hazard, not to mention a large population of alligators. WS boat crews also utilize small craft in their other major mission of beaver trapping. Cpl Kaufmann also noticed that the brush and branches along the shore line were often razor sharp and were at eye level for a small boat operator.

CORMORANT HARASSMENT ON YAZOO RIVER.

SITE 3: NESTING BIRD PROTECTION. WS wildlife specialists in the South West use small craft primarily to reach the sandy rookery islands managed by the Port Authority, just north of the National Sea Shore. WS personnel control predators such as wild hogs, coyotes, and raccoons that devastate roosting birds such as pelicans, rails, egrets, and skimmers. They use a variety of methods to reduce predation, including firearms and traps. Hazards on the island include: rattlesnakes, wild hogs, and rough terrain. Conditions that may affect crews heading to the island include: unpredictable

weather and huge ships traversing the shipping and inter-coastal channels. Reviewers noted that the only PFD's issued were the bulky and uncomfortable Type I and II style.

Reviewers noted poor cell phone coverage in several areas covered by WS, thus VHF radios are vital to personnel safety.

SITE 4: NUTRIA AND BEAVER TRAPPING; WOODEN DOCK AND PIER BIRD CONTROL. WS boat operations include: nutria and beaver trapping, goose "round ups" in summer, and night operations to reduce the large number of pigeons and starlings under huge shipping piers and docks. The bird droppings are devastating to the wooden ferry piers. WS uses small boats at night when the ferries are not operating to conduct nuisance wildlife removal. One crew person is stationed on the dock for safety. Wind conditions must be less than 10 knots. Boats check in and out of station with ferry operations using a handheld radio which can communicate with USCG and ferry operations. When firearms are to be used, local police are also notified.

The reviewers noted the excellent safety equipment not only carried, but used such as Mustang inflatable PFDs and dry suits in winter. Major hazards are ship traffic, and sharp obstructions under the piers. There is the potential for a ferry undergoing maintenance to engage its engine in gear. There is also a significant tide in terms of both fetch and current.

WS CREWS WORK AT NIGHT UNDER THESE DOCKS

WS employees involved in the geese, nutria and beaver projects use Jon boats, canoes, 8' and 10' Aqua Pods, row boats, 8 and 10 foot craft with electric trolling motors, and a 16' outboard vessel. Several of the staff work out of their homes and often work alone -- an accountability challenge. However, all have cell phones and truck mounted radios.

The reviewer boarded the actual Aqua Pod that was the scene of the drowning on March 2, 2006. Cpl Kaufmann informally tested the crafts' stability. With no water inside the hull, it is surprisingly stable. However, two adults, gear and a dog would normally exceed the weight limit on the loading placard (shown below).

All staff demonstrated a keen sense of safety and demonstrated pride in their safety equipment. The biggest hazard is the notoriously rapid change in weather conditions.

REVIEWER ABOARD AQUA POD AT CLEAR LAKE

SITE 5: SALMON PROTECTION. WS crews also use one 22' outboard, a 26' twin outboard, and a 22' jet drive to haze and harass as well as reduce bird predation that has previously devastated the salmon population at hydro-electric dams on large rivers on the west coast. Terns and gulls previously consumed approximately10% of the young Salmon fingerlings at each dam as they traversed the fish ladders, the overflow chute, and the turbine channel swimming down stream.

WS crews use firearms, pyrotechnics, and an "avian exclusion wire" grid which forms a shield of stainless steel wires running from the top of the dams to the water to protect the fingerling salmon. WS crews also catch thousands of Pike Minnow (large members of the minnow family with ferocious appetites) that gorge on the juvenile salmon.

HYDRO ELECTRIC DAM AND SALMON PROJECT.
NOTE VERY UNUSUAL CALM WATER THIS DAY.

PFD use is mandatory, as is constant communication by radio with the dam operations unit. Float plans are mandatory. Hazards include: fierce currents near the dam, obstacles in the water, extreme depth fluctuations (depth can vary from 3' to 30'), and high winds. During periods of high turbulence and current, a man overboard or losing an engine can mean a fatality. During peak operations (March – October), staff increase from 8 to a total of 42. The increase includes 4 boat captains, 14 fishermen, and boat crew staff.

A full week of training, including 3 days on the rugged WS aluminum jet boat, has been completed and a one week refresher is planned. The instructor is an experienced jet boat captain and professional instructor. CPR is given every other year to staff. Reviewers were extremely impressed with the safety emphasis, and boating skills of the WS jet boat captain who took Cpl Kaufmann out on a major river. The boat captain demonstrated operations within a few feet of the hydro electric dams.

ACCOUNTABILITY ISSUES

There are two major sub issues under Accountability:

1. Who is specifically tasked with an effective safety program, and

2. How does a specific district account for the location and safe return of all WS staff.

WHO IS TASKED WITH DETAILS OF A SAFETY PROGRAM?

After 30 years as a military officer, and several more managing programs at the Federal and State level, this reviewer is absolutely convinced that even a small district should have one staff OTHER THAN THE SUPERVISOR appointed "Safety Officer" as

a major additional duty. Without exception, all supervisors we interviewed where totally committed to their staff in terms of both safety and welfare. They also have a myriad of other duties.

The responsibility of the supervisor should be to establish a district and state "culture" of safe operation, and to provide the Safety Officer with the tools, funding, time and support needed to perform the following:

1. Write safety directives,
2. Purchase or recommend the purchase of the most effective safety equipment,
3. Train on its use,
4. Ensure all WS staff receive new employee and recurring training on all boats,
5. Obtain and post safety posters and materials,
6. Conduct certified NASBLA* approved classroom training,
7. Ensure appropriate on- water training (meeting NASBLA* standards)
8. Write or obtain safety oriented checklists,
9. Provide training and assistance to WS staff regarding loading limitations,
10. Write a simple and practical "Search and Rescue" plan, and
11. Look for job site hazards needing a specific action or items to address.

*NASBLA is the National Association of Sate Boating Law Administrators.

The NRP reviewers recommend the following:

1. ***Safety officers are appointed for each district. These individuals, in cooperation with supervisors and managers, will develop, in final form, a written policy. This policy would include initial and recurring training, certification of boat operators, emergency operations, search and rescue, safety equipment inspections, float plans, accountability, and proper loading of equipment on the vessel.***

2. ***WS should maintain strict adherence to vessel placards in regards to weight and number of passengers on board. Safety Officers should develop easy to read examples of typical loading which approach weight limits. Example: "Two male adults 10 beaver traps, two fuel tanks, a crate of chain, etc = 550 pounds……" These examples should be provided to all staff and could be also conspicuously mounted in poster style where the boats are store.***

ACCOUNTING FOR EVERY CREW'S SAFE RETURN

Reviewers asked the same question at each site:

"How do you account for boat crews in terms of general location and actual return to the launch ramp?"

The majority of responses were that the supervisors knew the general location of the crews, and that in most cases if a crew did not return to the ramp, a spouse would call. All crews had cell phones, but coverage in some locations was poor. Some projects, such as working near hydro-electric dams, required positive contact from an operations center with time in and time out transmissions.

There is a similar requirement for under dock projects utilizing the ferry company operations center. However, it was not clear what would happen if a crew did not call at the end of their task. The reviewers did not have the opportunity to discuss this with ferry operations, but the assumption is the day crew would "assume" the crew was clear and the early morning ferry boats would commence operation. There is also some concern that night maintenance workers might need to start a ferry engine and briefly engage the propeller in gear. The turbulence under the dock might be catastrophic to the WS crews.

The NRP reviewers recommend the following:

1. ***A memorandum of agreement be signed requiring that a WS supervisor is contacted NLT 1 hour prior to large ship or ferry boat scheduled morning run by ship or port operations if there is no record of the WS crew calling clear.***

2. ***District Safety Officers determine which system of notification would ensure crews are notified if potentially dangerous night maintenance is planned.***

3. ***The District Safety Officer should come up with a plan tailored to the unique situation of the District to improve the likelihood that a supervisor is notified of a lost, disabled, ill or injured WS employee and is able to initiate a search.***

Some sites (above) did have a "sign out/sign back in" type of chart but they were seldom used. One site did have a policy of everyone returning to the launch ramp or office at the same time for accountability. This is not always possible.

NAVIGATION AND COMMUNICATION ISSUES

Reviewers noted that some crews used outdated GPS units. Others did not use GPS or felt they knew their areas sufficiently. We feel that having a waterproof, reliable and easy to use GPS is a vital piece of safety equipment.

The NRP reviewers recommend the following:

1. ***Purchase handheld GPS chart plotters (such as the Garmin Map 76 monochrome unit). Training, on the unit, should be conducted prior to issue along with periodic refreshers each year.***

The units cost under $200, float, and can operate on two AA batteries all day. NRP uses these units. Additional software, for named streets and outlines of water bodies, costs approximately $125.

The GPS is a vital lifesaving as well as on the job tool. The GPS operator simply looks at a screen and reads his/her exact location in latitude and longitude. The operator can move the curser to a specific road, landmark, or helicopter landing zone (LZ) and easily read the bearing and distance they are from that landmark. The supervisor, or crew person, could transmit the GPS latitude and longitude of the nearby LZ to a rescue helicopter as well as the bearing and distance to the WS crew requiring rescue or medical attention.

For crews involved in recording trapping or other sites, waypoints can easily be downloaded to a laptop computer. Once "SAVED", any waypoint may be navigated to by a "GO TO" command and by simply following a dotted line on the screen. Saving a waypoint, whether it is a trapping site or an emergency LZ, is performed by simply holding down the "ENTER" button, typing in a name for the waypoint ("LZ Blue"), and

clicking "OK." "LZ Blue" can be seen on the screen if the operator is near it, or found by looking in the GPS menu of saved waypoints. By pressing the "NAV" button, and selecting "GO TO" LZ Blue, the crew can find the LZ in the middle of the night in heavy fog!

GARMIN GPS MAP 76
(Black and White is recommended)

PERSONAL FLOATATION DEVICE (PFD) ISSUES

Of all the recommendations noted in this report, we feel that the issue of mandatory wear of appropriate PFDs is most important. The reviewers, and the majority of staff we interviewed, felt that all boat crews must at all times wear a Personal Floatation Device while underway. This is especially vital if the crew member is burdened with waders or heavy clothing. Every conservation and law enforcement agency in the U.S., as well as U.S. Navy and USCG require PFDs be worn while aboard a vessel. Supervisors should also be aware that during launch ramp operations, and boarding from a dock, are where many "overboard" situations occur. PFDs should be donned prior to boarding and removed only after the wearer is safely on the dock.

The NRP reviewers recommend the following:

1. ***PFD use (actual wearing while underway) is mandatory at all locations.***

2. ***Purchase of more practical Type III vests and auto inflatable PFDs which are far more likely to be worn.***

MANY BOATS WERE WELL EQUIPPED AND IMACULATE BUT WS SHOULD PURCHASE MORE PRACTICAL AND COMFORTABLE PFD'S THAN THOSE PICTURED ABOVE.

MORE COMFORTABLE ALTERNATIVES

AUTO-INFLATE

TYPE III FLOATATION AIDS

TYPE III "FLOAT COAT" (LONG)

CAMOFLAGE TYPE III (BOMBER)

The link below is to Maryland's Natural Resources Police on line course dealing with Maryland's recreational boating personal floatation device (PFD) legal requirements. It explains the various types of PFDs including the Type III models above. It also reminds readers that only Type I and II PFDs provide head support for an unconscious person in

the water. However, Type III "Floatation Aids" are more comfortable and more likely to be worn. Type III "Float Coats" and full immersion suits are excellent for cold weather while the Type III Auto-inflatable shown top left is comfortable in hot weather.

http://www.boat-ed.com/md/course/p4-7_pfds.htm

CONCLUSION

We again wish to thank all WS staff involved in this review for their assistance, cooperation, and high degree of professionalism. The WS record over the years in regard to both mission dedication and safety has been excellent. The one major gap in safety policy has been to defer wearing of a PFD while underway to individual State law. This leads to inconsistent policy Nationwide. The small size of most districts and the general working conditions of WS (working in remote areas, often alone, using small craft) are such that we recommend National policy regarding PFD use, training, communications, and safety officer responsibility. We recognize that many conditions are unique to the individual districts and states. Therefore we recommend that National WS policy allows adequate flexibility for individual supervisors and managers to tailor many policy issues such as staff accountability and the specific safety equipment purchased to their individual needs.

ATTACHMENT: SAFETY DIRECTIVE

United States Department of Agriculture
Animal and Plant Health Inspection Service

WS Directive

2.601 10/07/05

SAFETY

1. PURPOSE

To establish general Wildlife Services (WS) safety guidelines and responsibilities.

2. REPLACEMENT HIGHLIGHTS

This directive revises WS Directive 2.601 dated 4/15/98.

3. POLICY

WS supervisors will promote a safe working attitude among employees. Supervisors will identify hazards, including wildlife-borne diseases, in advance of work assignments. Supervisors will also provide employees with adequate information, training, and personal protective equipment to optimize employee safety. WS employees will adhere to safety requirements and use appropriate personal protective equipment provided for assigned work. Employees are required to immediately report unsafe working conditions to their supervisor and work cooperatively to minimize hazardous working conditions.

WS personnel may be required to participate in the APHIS Occupational Medical Monitoring Program (OMMP) as a result of their assigned position and/or occupational exposures. OMMP is designed to protect employees who may be exposed to hazardous chemicals, biologicals, radioactive materials, and noise hazards. Access to the OMMP is accomplished by completing APHIS Form 29, OMMP Occupational Exposures, for indicating potential or actual exposure to occupational hazards. Form 29 must be signed by the employee and verified and signed by the employee's supervisor. The completed form is then submitted to Federal Occupational Health (FOH) who administers the OMMP for APHIS. Employees may decline to participate, in writing, in the OMMP; however, refusal may be justification for reassignment or other action. Necessary inoculations may be made a condition of employment. All accidents will be reported by WS employees to their supervisor in a timely manner. Accidents involving aircraft or a human fatality will be reported immediately to the appropriate Director.

WS personnel are advised to alert their physician that they may be exposed to wildlife-borne diseases. Serious diseases including rabies, hantavirus, plague, Lyme disease, psittacosis, Chlamydia psittaci, or histoplasmosis may be misdiagnosed unless the physician is aware of the possibility for exposure.

For additional information contact:

a. The National Wildlife Health Center, 6006 Schroeder Rd., Madison, WI 53711, telephone number 608/270-2400;
b. The National Veterinary Services Laboratories, 1800 Dayton Ave., P.O. Box 844, Ames, IA 50010, telephone number 515/663-7200;
c. The Centers for Disease Control and Prevention, 1600 Clifton Rd., Atlanta, GA 30333, telephone number 404/639-3311.

The APHIS Safety and Health Manual provides additional safety and health regulations and procedures to assist managers and supervisors in accomplishing their program responsibilities.

4. REFERENCES

APHIS Form 29, OMMP Occupational Exposures (http://www.aphis.usda.gov/library/forms/pdf/aphis29.pdf).
APHIS Safety and Health Manual - APHIS 4790 (http://www.aphis.usda.gov/library/manuals/).

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