INTERIM REPORT
and Short-Term Recommendations

Montana Whirling Disease Task Force

June 1995

Prepared by
Policy Resources, Inc.
Helena, MT

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INTRODUCTION

The whirling disease parasite arrived in the United States from Europe about forty years ago. Since then, it has spread to 19 states, including many in the West. Several states have determined that the planting of infected hatchery fish has been a primary source for the spread of the disease in the wild, where it is especially devastating to rainbow trout fisheries. Until the 1994 discovery of whirling disease in Montana, the state was considered disease-free for the major trout and salmon pathogens.

Whirling disease has now been confirmed in several streams and lakes on both sides of the Continental Divide in Montana. Although the state's trout fishing opportunities presently remain unequaled in the lower 48 states, the potential harm from whirling disease – although not fully understood at this time – is unquestionably very grave. Governor Racicot, therefore, has appointed a Whirling Disease Task Force to study the issue and to provide both short-term and long-term recommendations.

This Interim Report is being distributed by the Task Force to provide background information concerning whirling disease and to summarize the short-term recommendations of the Task Force which should be implemented as soon as possible due to the onset of the summer fishing and field testing season. These recommendations were drafted based on a meeting of the Task Force in late May and subsequent review and comment by the Task Force Executive Committee and other Task Force members. A set of long-term recommendations are also under development and will be released for public comment later this year.

More information can be obtained on the Task Force and whirling disease by contacting the Montana Department of Fish, Wildlife and Parks at 1420 East Sixth Avenue, Helena, MT 59620-0701, or by calling:

FWP Public Information (Ron Aasheim)	444-4041
Task Force Information (Paul Sihler)	444-3186
Fisheries Division	444-2449

WHIRLING DISEASE BACKGROUND INFORMATION

The whirling disease parasite is of European origin, first described in Germany in 1903. It arrived in the United States about forty years ago, in a shipment of frozen, processed fish in Pennsylvania. The disease has subsequently spread to 19 states, including eight Western states – Nevada, Oregon, Idaho, California, Colorado, Wyoming, Utah and Montana.

Whirling disease was initially considered a disease of significance only in hatcheries. In recent years, however, it has been shown that whirling disease can be devastating to wild trout fisheries, with rainbow trout especially vulnerable. Several states have determined that the planting of infected hatchery fish has been a primary source for the spread of the disease in the wild. Because Montana's rivers and streams are virtually all wild trout fisheries, whirling disease has the potential to be particularly devastating in Montana.

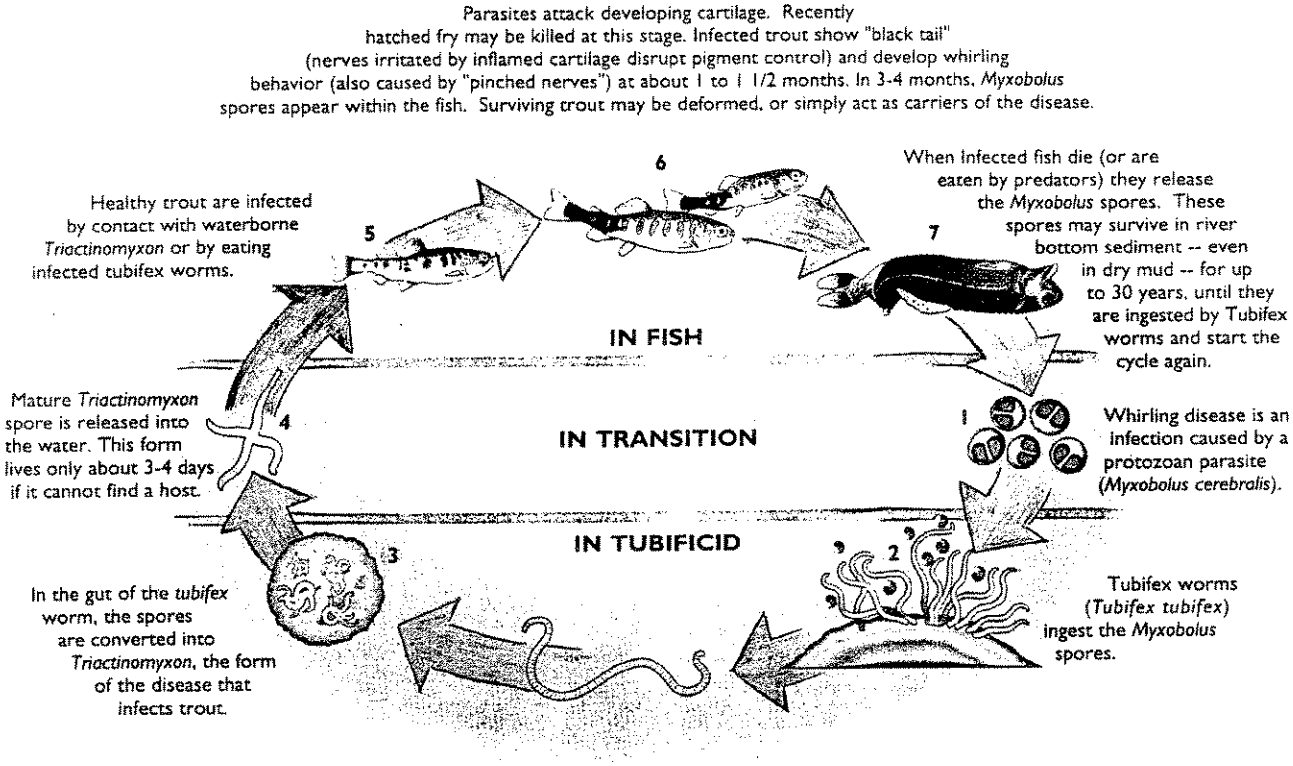
Until the discovery of whirling disease in Montana in late December of 1994, the state was considered free of all major diseases for trout and salmon. Following the discovery of whirling disease, all public and private hatcheries in the state were tested for the disease, and all tested negative. It appears, therefore, that stocking of hatchery fish by FWP is not the source of whirling disease in the state.

Whirling Disease Life Cycle

Whirling disease is caused by a microscopic, water-borne parasite that attacks the cartilage of young trout. Whirling disease spores (*Myxobolus cerebralis*) are released into the water when infected fish die and decompose, or when they are consumed and excreted by predators or scavengers.

As the chart on the following page illustrates, the parasite has a complex, two-host life cycle that involves the trout and the bottom-dwelling tubifex worm, which is found in streams, rivers and lakes throughout Montana.

While the parasite may not directly kill a trout, an infected fish's erratic tail chasing makes it extremely vulnerable to predation. The disease also makes feeding difficult for infected fish, which can eventually result in starvation and death.



(Borrowed from *Trout* magazine, Spring 1995)

The Life Cycle of Whirling Disease

As of this writing, whirling disease has been confirmed in the following ten Montana locations:

- Madison River – December 1994. Whirling disease found from below Quake Lake to just below Ennis Dam.
- Blaine Spring Creek (Madison River tributary) – February 1995
- Ruby River – February 1995
- Poindexter Slough (Beaverhead River drainage) – April 1995
- Willow Creek (Jefferson River drainage) – April 1995
- A spring that feeds the Red Rock River, about 1/2 mile upstream of Clark Canyon Reservoir – April 1995
- Clark Fork River below Milltown Dam, near Missoula – May 1995
- Red Rocks Creek at the Red Rocks National Wildlife Refuge – June 1995
- Ruby Reservoir – June 1995
- Clark Canyon Reservoir – June 1995

Importantly, a number of waters have also tested negative for whirling disease. These include:

- Big Blackfoot 15 miles east of Missoula
- Big Spring Creek in Lewistown
- Bitterroot River near Darby, Stevensville, Hamilton and Lolo
- Blue Water Creek near Billings
- Lower Rock Creek
- Flathead River above Flathead Lake
- Fort Peck Reservoir (for cisco, a forage fish)
- Gallatin River near Big Sky
- Kootenai River above Kootenai Falls (rainbow trout)
- Madison River above Quake Lake
- Missouri River near Townsend, below Holter and near Great Falls
- Smith River
- Warm Springs Creek near Anaconda
- Yellowstone River at Big Timber and Livingston

All Montana river basins are being monitored for trout population changes and for whirling disease; an inventory will be completed by year-end.

Egg-Taking

The discovery of whirling disease in Willow Creek and in the Red Rock/Clark Canyon system has temporarily stopped egg-taking in those locations (Willow Creek are DeSmet strain, Red Rock are Eagle Lake strain). Based on the scientific literature, it is believed that whirling disease cannot be transmitted either from or to trout eggs; the decision to suspend egg-taking in streams where the disease has been detected is a precautionary measure only.

Sculpin Ban

Sculpins taken from the Madison River and Willow Creek in April of 1995 were found to be carrying spores that resemble *Myxobolus cerebralis* (the whirling disease pathogen). Final confirmation of the spores' taxonomy will take up to a year (or more), since they must complete their complex life cycle to determine if the spore

As a precautionary measure, the collection of sculpins and the use of sculpins as bait are currently prohibited in Montana.

Madison River Closures

Portions of the upper Madison River were closed during the rainbow spawning season. The river's remaining wild rainbows could be extremely valuable if found to be resistant to whirling disease. To evaluate if angling pressure influences recovery of the Madison's rainbow trout, a 4.5-mile stretch of the upper river (between Squaw Creek and the Windy Point Access) is closed until February 29, 1996.

Species Susceptibility Research

The National Biological Service has agreed to investigate the susceptibility of arctic grayling, bull trout and cutthroat trout at their Fish Health Center in Leetown, West Virginia. As detailed later in this report, additional susceptibility testing is recommended by the Whirling Disease Task Force.

INTERIM REPORT

Since its creation in mid-May, the Montana Whirling Disease Task Force has operated on a fast track. The Executive Order authorizing the Task Force was subsequently signed by Governor Racicot on May 22 (see Appendix 1). In anticipation of the Executive Order, briefing materials were distributed to Task Force members (see Appendix 2) the previous week, and a first meeting was held in Helena on May 23, 1995. The Task Force participated in extensive discussions and presentations on whirling disease scientific issues, management policy, communication and education activities, current and potential social and economic impacts, and opportunities for organizing resources to address whirling disease. In addition to developing the recommendations which are detailed in this report, the Task Force also agreed to the creation of an Executive Committee and subcommittees which will coordinate efforts to implement Task Force recommendations.

Prior to the Helena meeting, several Task Force members participated in the Whirling Disease Working Conference, sponsored by the Whirling Disease Foundation in Bozeman, Montana. Fishery biologists, pathologists and managers from six western states reviewed recent experiences with whirling disease. According to the conference proceedings, ***"None of the biologists at the conference could suggest any other known infectious agent which might operate as a co-factor in the selective destruction of the rainbow trout in Montana or Colorado."***

During the Task Force deliberations, representatives from the Whirling Disease Foundation made the case even more strongly, stating that in their judgment there is now sufficient evidence to conclude that whirling disease is, in fact, the cause of the fish population declines in the Madison River. This clear statement of the culpability of whirling disease gives increased urgency to the work of the Task Force.

The sense of urgency was again heightened when it was confirmed on May 23 that whirling disease had been found in the Clark Fork River below Milltown Dam, near Missoula. This new site is the first infection found on the west side of the Continental Divide in Montana and eliminates hopes for containing the disease to east-slope fisheries.

TASK FORCE GOALS AND OBJECTIVES

Although the Governor's Executive Order asks the Task Force to develop an action plan to address the whirling disease problem, it does not lay out specific goals and objectives for the group. The Task Force, however, believes that the intent of the Executive Order is to develop clear recommendations and an implementation strategy, consistent with the following goal:

> **GOAL STATEMENT** – The overall goal of the Whirling Disease Task Force is to devise a strategy to reduce the damage which whirling disease has caused, and could further cause, to Montana's wild and native trout and other susceptible species.

In order to achieve this goal, the Task Force concluded that three broad objectives must be met:

- **Basic Research** — collect, assess and disseminate basic information about whirling disease, how much damage it has caused, and what its potential ramifications may be for the state.

- **Containment** — identify and recommend measures which should be taken to reduce the spread of whirling disease to currently uninfected waters.

- **Mitigation** — recommend measures to reduce the environmental, social and economic impacts of whirling disease in Montana streams, hopefully including the restoration of self-sustaining wild trout populations in affected areas.

The remainder of this report sets out a series of Findings by the Task Force during its first meeting, based on information provided by scientists at the Whirling Disease Foundation Working Conference, data presented by FWP fisheries biologists and managers, and discussions with various Task Force members. Specific short-term Action Recommendations are then provided.

FINDINGS

Based on the best available scientific information coming out of the Whirling Disease Conference and additional presentations during its first meeting, the Task Force has reached the following conclusions concerning whirling disease:

1. Whirling disease has the potential to devastate Montana's wild and native trout fisheries, which are unique in the lower 48 states. The evidence is compelling that the declines in rainbow trout populations on the Madison River are the result of whirling disease. While it is important to continue checking for possible contributing factors, there is no reasonable doubt that whirling disease is the primary cause of the drastic declines in rainbow trout populations which have occurred in some reaches of the Madison.

2. The vast majority of Montana's streams show no signs of the disease at this time. Furthermore, most brown trout populations in the state presently appear to be only minimally impacted by the disease. There is presently no reason why the public cannot enjoy very high quality trout fishing in Montana, and nonresident fishermen should have no reason to modify their plans to come to Montana on fishing vacations.

3. Rainbow, brook and cutthroat are known to be especially vulnerable to whirling disease. The survival rate for infected rainbow trout in the wild in several Western states is extremely low. Susceptibility of other trout species appears to be lower, but needs to be more fully evaluated, as does the susceptibility of other salmonids (e.g. grayling, whitefish) and non-salmonids (e.g. paddlefish).

4. There is no known health risk to humans from whirling disease.

5. At present, there is no known remedy for whirling disease once it has infected a body of water, nor is there any known way to prevent the disease from eventually spreading downstream once it occurs in rivers and streams.

6. Whirling disease spores can live for long periods of time in dead fish and in mud. As a result, there is a possibility that whirling disease can be spread by fishermen and other water recreationists. Precautions are needed, and specific recommendations in that regard are provided later in this report.

7. In addition to the natural downstream spread of the disease, and the potential spread of the disease by humans, the scientific evidence suggests that whirling disease may be spread in a number of other ways which are not fully understood. Possible nonhuman vectors include birds, sculpin and other fish and fish-eating mammals.

8. Research to date indicates that whirling disease cannot be spread through fish eggs taken from infected fish. However, precautions must be taken when collecting these eggs to insure the disease is not spread through water.

9. Hatcheries have been the primary source of whirling disease in western states. To date, however, all of Montana's hatcheries (public and private) have tested negative for whirling disease.

10. Four hundred new private fish ponds have been licensed in Montana in the last two years. Private ponds usually have mud bottoms which can provide habitat for the Tubifex worm which is the intermediate host for the whirling disease parasite. Therefore, it appears that private ponds are at risk for being infected with whirling disease and for being a source for spreading the disease to other waters. Specific recommendations to address this concern are detailed later in this report.

11. Current stocking practices by FWP do not appear to be a cause or contributor to whirling disease.

Based on these findings, a number of short-term actions have been identified which should be implemented as soon as possible – in addition to ongoing activities which are already in progress by the Department of Fish, Wildlife and Parks. These detailed "Action Recommendations" follow.

SHORT-TERM RECOMMENDATIONS

In order to develop specific short-term recommendations, during its first meeting the Task Force organized itself into three discussion groups which addressed actions which should be taken to achieve the objectives of information gathering, disease containment and mitigation. The groups were organized around science and management policy; communications, education and outreach; and social/economic issues.

Within each of these major categories, top priority activities were identified which need to be implemented as soon as possible in response to the summer fishing season. Other short-term tasks were also identified that should be implemented as soon as feasible, but which are not necessarily tied to the fishing season, per se. Some longer-term actions were also discussed, but because they have a longer planning and implementation horizon, they are deferred from this report and will be detailed in the Final Report of the Task Force, to be released later in the year.

Short-Term Recommendations: Science

The Task Force considered six different areas of scientific research on whirling disease: (1) causality of whirling disease as the source of fish declines in the Madison and other waters, (2) prevalence and incidence of whirling disease in Montana and the western states, (3) issues relating to the susceptibility of salmonids and nonsalmonids to the whirling disease parasite, (4) research directly concerning the whirling disease pathogen, (5) questions relating to prevention and/or containment of the disease, and (6) field testing issues. Based on the best available information, with regard to scientific/research activities, the Task Force recommends:

1. Expand field monitoring activities. To determine the distribution of whirling disease in Montana, field monitoring is a top priority – to look for infected fish in both clean streams and infected streams and to document population declines as infection progresses in an area. FWP has expedited a meeting to refine actions. Status: Cannot be done within existing resources. A dedicated three-person sampling team is required for a five-region area to effectively carry out this basic assignment in standardized fashion.

2. Evaluate susceptibility of various fish species to whirling disease. Studies utilizing fish in live boxes in infected streams are needed to evaluate the susceptibility of various species to length of exposure to whirling disease. Tests using live boxes in streams will be conducted on Blaine Spring Creek (USFWS) and Willow Creek (FWP).

3. Determine the sensitivity of the whirling disease parasite to water treatment and waste treatment facility protocols. Because it is legal to keep fish caught from some currently infected waters, there is a possibility that infected fish entrails which are put down kitchen disposals or sewers could move through a city's water treatment system and thus infect streams. Research is needed ASAP on whether current water treatment protocols will kill the parasite. In addition, information needs to be provided to the public on proper disposal methods for fish entrails and heads.

4. Develop a database of scientific literature on whirling disease and related issues needed to consolidate and integrate the available research in this area. MSU has the first bibliography ready for printing, which will be funded by FWP in July.

5. Expedite the development of polymerase chain reaction (PCR) as a diagnostic tool for detection of the whirling disease parasite in fish, worms and water supplies. Will require cooperative work between University of California, Davis and MSU. Status: No funds currently available. Initial need is $5,000 ASAP to send Dr. Knapp (MSU) and his associate to research facilities in Idaho and U.C.-Davis for technology transfer and cooperative planning.

6. Assess the distribution and abundance of the Tubifex worm in different watersheds. Partially funded. Technical Subcommittee to provide detailed assessment of needed funds and manpower by mid-June to do this work.

7. Investigate role of birds as vectors. We know that the parasite can be excreted by birds who eat infected fish. The Big Sky Wild Care Center will do testing to investigate how long ingested (uninfected) fish remain in eagle intestines, to check the likelihood that birds could carry the disease from one drainage to another. No cost.

8. Archive fish tissue samples for future analysis from infected and noninfected areas. Would require an expenditure of $10,000 for two ultra-low temperature freezers, one each in Bozeman and Great Falls. No funds currently available.

9. Cryo-preserve fish sperm samples as needed to prevent the loss of critical gene pools.

10. Determine the feasibility of establishing a fish disease research facility in Montana.

Short-Term Recommendations: Management/Policy

The rapid spread of whirling disease has already caused some changes in management policy relating to disease vectors. For example, new legislation was passed during this session of the legislature relating to the transport of live fish and private pond inspections. An emergency ban on sale of sculpin was enacted this spring. All known sculpin supplies were purchased by FWP and are being tested for whirling disease.

In addition, a variety of management and policy issues might need to be considered, and a plan for their implementation developed. These issues will depend on how the whirling disease issue evolves over time. At present, the Task Force recommends the implementation of four fisheries management activities:

11. Finalize hatchery protocols ASAP, including egg collection procedure, fish transport, stocking and disease testing/prevention. Insure that information about whirling disease, new protocols, procedures, etc. is provided to all hatcheries (public and private).

12. Coordinate activities of state, federal, tribal and private entities for fish collection, disease testing and other field season activities, and related areas.

13. Systematically examine FWP stocking practices. Public and private hatcheries in Montana have all tested negative for whirling disease. There is no reason to to believe, therefore, that stocking practices by FWP have contributed to whirling disease in the state. Nonetheless, a systematic review of stocking practices is recommended as a precautionary measure.

14. Develop protocol for the inspection of private fish ponds and procedures to be implemented when infected ponds are identified.

Short-Term Recommendations: Communication/Education/Outreach

Effective communication and education about whirling disease is of critical importance, in the judgment of the Task Force. Since the discovery of whirling disease in December, the Department of Fish Wildlife and Parks has undertaken a wide range of activities to inform the public about whirling disease (see Appendix 3 for details). In addition to these past and ongoing activities, the Task Force recommends:

15. Continue FWP's practice of releasing information as soon as it becomes available. This is a valuable public service and should be continued.

16. Develop a communications action plan. Work with the media to ensure that the public understands that whirling disease is, in fact, a cause of the dramatic decline in fish populations in the Madison and other waters and that containment efforts are needed. At the same time, efforts should be initiated to disseminate the message that while whirling disease is a very serious issue, "the sky isn't falling." Use of the Internet, state travel/tourism publications and other media should be evaluated and implemented where feasible.

17. Initiate containment efforts. All water recreationists need to understand what whirling disease is and what they can do to minimize the chance that whirling disease spreads to other waters. The Task Force recommends immediate development and dissemination of practical suggestions — specific DO's and DON'TS — for fishermen and other recreationists. This should be done at low cost (such as a pocket card) for widest possible distribution to fly shops, license agents (all license purchasers should be given a copy), guides and outfitters, and so forth. In addition, other steps should be taken to distribute practical containment information, including posting information at all access sites, development of PSAs, and so forth. Key safety precaution messages to be delivered are:

- DO remove all mud and aquatic plants from boats, trailers and waders while on site
- DO drain water from boats before leaving a lake or stream
- DON'T transport live fish – it's illegal in Montana's Western and Central fishing districts
- DON'T use sculpins – it's illegal everywhere in Montana
- DON'T dispose of fish or fish parts where they can reach any water supply – it can spread whirling disease

18. Target pond owners. Because summer pond fishing is popular in Montana, an advisory should be sent ASAP to all private pond owners in the state. The advisory should explain that whirling disease can be a serious problem in ponds and ask that pond owners who are uncertain about the health or disease testing status of their fish contact FWP immediately. An 800 toll-free number is needed ASAP to respond to the public's questions regarding whirling disease generally, and about possible disease problems in private ponds specifically. Similar efforts targeting private fisheries consultants is also recommended.

19. Inventory communications opportunities and resources. Development of a sustained summer communications campaign should begin ASAP. Activities should be developed and coordinated with FWP through a Task Force Communications Subcommittee, and may include the following:

    - Expand coordination and outreach activities. Efforts should begin immediately to identify state, national and international groups working on whirling disease. They should be contacted by letter, explaining the existence of the Task Force, seeking information on their activities/research, and offering any information which the Task Force can provide.

    - Use the Internet to distribute factual information on whirling disease, monitor and respond to questions, etc.

    - Improve the timeliness of information on the state bulletin board system.

- Encourage the conversion of the *Missoulian*'s series of articles on whirling disease to a pamphlet format for distribution or sale.

- Incorporate information on whirling disease into existing FWP youth information programs.

- Investigate how organizations such as the Canyon Ferry Limnological Institute can become involved in scientific and education efforts relating to whirling disease.

Short-Term Recommendations: Social/Economic

The Task Force considered ways to assess the potential economic and social consequences of whirling disease in Montana. The net economic value of coldwater fishing in Montana is estimated to be in excess of $270 million each year, plus another $18 million on fishing for warmwater species (see Appendix 4 for details). Obviously, with this magnitude of revenue being generated from fishing, whirling disease could have severe impacts on tourism and fishing-related businesses throughout the state. The Task Force recommends:

20. An angler survey and creel census should be completed on the Madison River this summer, from May 20, 1995 to September 30, 1995. This instrument should be designed to allow evaluation of any changes in the fishery, distribution of anglers, angler perceptions about the quality of Montana fishing, the seriousness of the whirling disease problem, impact on travel plans, and related issues.

21. A longitudinal study of guides and outfitters records should be done to assess changes in fishing pressure in infected and noninfected waters.

22. A study should be done to examine economic indicators such as bed tax collections, fishing license sales and other variables to assess direct economic impacts of whirling disease during the 1995 fishing season.

IMPLEMENTATION

In order to assist in the implementation of the preceding recommendations, the Whirling Disease Task Force authorized the formation of an Executive Committee and any subcommittees which may be needed to carry out the work of the Task Force. The Executive Committee is comprised of Marshall Bloom and Pat Graham (Task Force co-chairs), along with the chairs of three subcommittees: Tom Anacker (Science Subcommittee), Bruce Whittenberg (Communications Subcommittee), and Dud Lutton (Fundraising Subcommittee). Persons interested in assisting any of these subcommittees should contact its chairperson.

Each of these subcommittees will be meeting over the course of the summer to assist in implementing the short-term recommendations discussed above. They will also begin the process of developing long-term recommendations for the Task Force to consider as a whole during its next meeting, tentatively scheduled for late summer.

The Executive Committee will also be examining ways to enhance the organizational capacity of the Task Force and the activiites of its subcommittees over the next several months.

CONCLUSION

Given that the presence of whirling disease in Montana was discovered only a few months ago, a remarkable amount of work has already been completed, or is now underway, in response to this threat to our state's unique wild and native trout fisheries. Nonetheless, much remains to be done, as this report clearly demonstrates.

The Department of Fish, Wildlife and Parks has led the way and is committing substantial resources in this area. Private individuals and groups such as the Whirling Disease Foundation have also generously committed time and expertise to this problem.

The wide-ranging recommendations of this Task Force, however, make it apparent that the financial and human resources which are presently available to address the whirling disease problem are by no means adequate. Additional fundraising will be needed if the recommendations put forward by the Task Force are to be fully implemented, both for the short- and long-term.

Our state, and the nation, risk losing a unique treasure — the state's wild trout fishery — if adequate resources are not brought to bear on this potentially disastrous problem.

APPENDICES

APPENDIX 1
Task Force Executive Order

State of Montana
Office of the Governor

Executive Order No. 3-95

EXECUTIVE ORDER CREATING THE GOVERNOR'S WHIRLING DISEASE TASK FORCE

WHEREAS, whirling disease has been discovered in a number of Montana's wild trout streams; and

WHEREAS, this salmonid disease may have influenced a dramatic decline in the upper Madison River's wild rainbow trout population; and

WHEREAS, Montana manages its trout streams for wild trout and does virtually no stocking of its rivers and streams with hatchery trout; and

WHEREAS, whirling disease could impact Montana's wild trout fishery more than other hatchery-dependent states; and

WHEREAS, most scientific research on whirling disease has focused on fish hatcheries and hatchery-reared trout; and

WHEREAS, the manner in which whirling disease functions in wild environments is not well understood; and

WHEREAS, whirling disease could also pose a threat to Arctic grayling and bull trout, two native species already the

focus of state special management plans; and

WHEREAS, the net economic value of trout fishing in Montana is more than $270 million annually; and

WHEREAS, Montana's current wild trout management philosophy provides for more than 1.3 million fishing days for Montanans and its visitors; and

WHEREAS, Montana's trout streams serve as an international attraction and the whirling disease issue is of such a concern that there is a need to build New Partnerships among public and private interests; and

WHEREAS, there is an opportunity for the people of Montana to benefit from a vast national pool of scientific expertise.

NOW, THEREFORE, I, MARC RACICOT, Governor of the State of Montana, by virtue of the authority vested in me by 2-15-122, MCA, do hereby create the Governor's Whirling Disease Task Force.

I. PURPOSE

A. The Whirling Disease Task Force shall:

1. create a public-private partnership to examine and identify issues relating to whirling disease in Montana;

2. develop an action plan to address the whirling disease problem. The action plan shall encompass short- and long-term recommendations and focus on: (a) scientific research, (b) communication and education, (c) fisheries management and policy, (d) economic and

social impacts, (e) additional coalition building to assist the Task Force and (f) establish a fund-raising procedure to support recommended research;

3. publish its recommended action plan in two phases. Phase I should focus on short-term recommendations, and Phase II should address long-term solutions.

B. The Whirling Task Force shall appoint technical committees comprised of technical and scientific specialists to assist the Task Force in making informed recommendations.

II. COMPOSITION

The Whirling Disease Task Force shall be composed of not more than 20 members. The names and addresses of members who shall serve at the pleasure of the Governor shall be submitted by separate letter to the Department of Fish, Wildlife and Parks and the Secretary of State.

III. DURATION

This Task Force shall remain in existence until January 1, 1996, unless extended or terminated by subsequent Executive Order. This Order is effective immediately.

GIVEN under my hand and the GREAT SEAL of the State of Montana, this 22nd day of May, 1995.

MARC RACICOT, Governor

ATTEST:

MIKE COONEY, Secretary of State

APPENDIX 2
Roster of Task Force Members

Patrick Graham, Co-chair
Director, Department of Fish, Wildlife & Parks. Fisheries biologist. Helena, MT.

Marshall Bloom, M.D., Co-chair
Research Medical Officer, Rocky Mountain Lab, U.S. Public Health Service. Montana Trout Unlimited State Council member (former chairman), National TU Regional Vice President. Hamilton, MT.

Jim Ahrens
President of the MT Hospital Association. Active in state and national programs. Currently a member of various health-related boards and committees. Helena, MT.

Kirby Alton, Ph.D.
Senior Vice President for Product Development, AMGEN. Ph.D. Molecular geneticist with AMGEN, a biotechnology company involved in medicine. Owner of a ranch on the Madison River. Thousand Oaks, CA. Local Address: Ennis, MT.

Tom Anacker
Attorney. Member of TU and serving as Madison-Gallatin Chapter VP and on MT State Council. Member of Madison Coalition. Founding member of Whirling Disease Foundation. Bozeman, MT.

John Bailey
Owner of Bailey's Fly Shop. Livingston, MT.

Matt Cohn
Director, Travel Montana. Montana Department of Commerce. Helena, MT.

Robin Cunningham
Executive Director of Fishing Outfitters Association of Montana (FOAM). Licensed fishing outfitter for Headwaters Guide Service. On the Montana Board of Outfitters. Gallatin Gateway, MT.

Mike Hayden
President/CEO of American Sports Fishing Association. Former Governor of Kansas, former Assistant Secretary of the Interior for Fish, Wildlife and Parks. Alexandria, VA.

Roger Herman, Ph.D.
Director of the National Fish Health Research Laboratory. Fish pathologist. Held faculty position with various universities since 1959. Kearneysville, WV.

Karl M. Johnson, M. D.

Member, Madison Coalition. Whirling Disease Foundation founding member. Former Chief, Special Pathogens Branch, Virology Division, Centers for Disease Control and Prevention, Atlanta, Georgia. Bozeman, MT.

Bob LeFeber

Owner, Fran Johnson's Sport Shop. Butte, MT.

Bud Lilly

Owner, Bud Lilly's Angler Inn. Member of MT Ambassadors. Past National Director for TU; Board Member of MT River Action Network; Served on Greater Yellowstone Coalition Board. Bozeman, MT.

Dud Lutton

Development Director of the Montana Nature Conservancy. Helena, MT.

Art Neill

Executive Vice President and Director of Montana Power Company. Responsible for MPC hydro power systems and relicensing. Butte, MT.

Chris Somers

Attorney in private practice. Founding board member of Big Hole River Foundation. Interest in The Complete Flyfisher, Wise River. Butte, MT.

Marsha L. (Josh) Turner

Owner, Turner and Associates, a consulting firm specializing in management, public relations, and public policy consulting. Helena, MT.

Bruce Whittenberg

Publisher, Independent Record, since 1993. With Lee Enterprises for 15 years. Helena, MT.

Ed Williams

Owner, Rainbow Valley Motel; President Ennis Chamber of Commerce; President Elect Ennis Lions' Club. Ennis, MT.

Science Subcommittee

The following scientists and fisheries professionals participated in the first meeting of the Task Force and have agreed to serve on the Science Subcommittee for the Whirling Disease Task Force:

– Karl Johnson, M. D. (chair)	Whirling Disease Foundation
– Tom Anacker (Exec. Comm. Liaison)	Whirling Disease Foundation
– Rick Barrows	USFWS, Bozeman Fish Technology Center
– Dan Gustafson, Ph.D.	Montana State University
– Cal Kaya, Ph.D.	Montana State University
– Stu Knapp, Ph.D.	Montana State University
– Tom McMann, Ph.D.	Montana State University
– Beth McConnell, Ph.D.	USFWS, Bozeman Fish Technology Center
– Dick Oswald	FWP Fish Biologist
– Larry Peterman	Administrator, Fisheries Division, FWP
– Jim Peterson	FWP Fish Pathologist
– Dick Vincent	FWP Fisheries Manager
– Bob White, Ph.D.	Unit Leader, Cooperative Fisheries Research Unit
– Dennis Workman	FWP Region 2 Manager
– Al Zale, Ph.D.	Assist. Unit Leader, Coop. Fisheries Research Unit

APPENDIX 3
FWP Communications Activities and Plans

Objectives:

FWP immediately recognized and understood the volatile nature of the discovery of whirling disease in Montana. FWP's key objective was direct and simple: **Tell the public what we know when we know it.**

Key Messages:

Throughout the FWP information effort the key message has been:

(1) It is certain that whirling disease has been discovered in Montana and that some wild rainbow trout populations have experienced dramatic declines.

(2) What is uncertain is whether whirling disease caused a direct mortality of trout, or if its effects are indirect in combination with other factors.

(3) In their search for answers, FWP fisheries biologists are now attempting to learn as much as possible, as fast as possible, about whirling disease and how it functions in the wild.

Target Audiences:

Dec./Jan. – Montana residents via Montana news media
– FWP Employees

Feb./March – National outdoor and fly-fishing media

April/May – Montana Chambers of Commerce
– Fly-fishing outfitters, specialty shops, licenses agents
– Federal natural resource agency offices in MT, including Yellowstone National Park and all Forest Service offices

Action Items:

May/June
- "How You Can Help" to prevent the spread of WD campaign
- No Sculpins campaign ... sculpins are banned fish bait in Montana
- Pocket Cards for anglers: lists prevention precautions
- Signing at selected Fishing Access Sites *(under consideration)*
- Radio and TV Public Service Announcements
- WD news feature written by FWP for Montana newspapers
- WD update in Fishing Opener Press Kit
- Distribute 22,500 WD brochures
- Continuing community meetings on WD
- Assist WD Task Force

July
- *Montana Outdoors* magazine article on the WD parasite
- Radio and TV Public Service Announcements
- Continuing community meetings on WD

On-going
- News released as it develops
- Cooperation with local angling and sporting clubs to assist in prevention efforts

Long-term
- Develop communication campaign aimed at private pond owners, asking cooperation with FWP efforts to prevent the spread of WD
- Establish an 800 toll-free phone number
- Assist WD Task Force

APPENDIX 4
The Economic Impact of Fishing in Montana

Estimated Annual Economic Value of Montana Streams

RIVER	ANGLER DAYS			EXPENDITURES ($)			NEV[3] VALUE	TOTAL USE VALUE
	Resident	Nonres.	Total	Resident[1]	Nonres.[2]	Total		
Madison	52,145	93,894	146,039	$1,564,000	14,647,000	$16,212,000	$31,544,000	$47,756,000
Beaverhead	10,241	10,495	20,736	$307,000	1,637,000	$1,944,000	$2,675,000	$4,619,000
Big Hole	42,006	21,241	63,247	$1,260,000	3,314,000	$4,574,000	$9,171,000	$13,745,000
Gallatin	44,936	26,193	71,129	$1,348,000	4,086,000	$5,434,000	$14,510,000	$19,945,000
Jefferson	14,230	2,635	16,865	$427,000	411,000	$838,000	***	
Upper Yellowstone	56,415	23,303	79,718	$1,692,000	3,635,000	$5,328,000	$22,401,000	$27,728,000
Region 3	272,376	200,127	472,503	8,171,280	31,219,812	39,391,092		
State	923,105	396,448	1,319,553	27,693,150	61,845,888	89,539,038		

Notes:
(1) Based on resident expenditures of $30.00/day (1993 dollars)
(2) Based on non-resident expenditures of $156.00/day (1993 dollars)
(3) The net economic value of fishing in Montana, 1987 ($67.25/day)

Estimated Annual Economic Value of All Fishing in Montana

WATER TYPE	ANGLER DAYS	EXPENDITURES	NET ECONOMIC VALUE
Cold Lakes	966,939	$46,300,000	$90,800,000
Warm Lakes	120,553	$7,200,000	$8,100,000
Coldwater Streams	923,105	$89,500,000	$180,000,000
Warmwater Streams	84,112	$5,000,000	$5,600,000
Total Lakes and Rivers (State)			
Cold Water	2,286,492	$135,900,000	$270,800,000
Warm Water	204,665	$12,300,000	$18,800,000
Total - All Waters	2,491,157	$148,200,000	**$289,600,000**

Source: Department of Fish, Wildlife and Parks