# Fish Deformities in the Vicinity of Fort Chipewyan, Alberta

#### in the Public Interest

by

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15 February 2009

#### Introduction

In recent years, there has been increasing concern raised by traditional and commercial fishermen about fish deformities in the vicinity of Fort Chipewyan. Many fishermen indicate that they are seeing both more kinds of deformities and an increased frequency of deformities.

At the same time, I have received numerous requests from the media and various organizations for photographs of deformed fishes. Until February 2009, only one bona fide photograph of deformed fishes from the Fort Chipewyan area was publically available (two pickerel (walleye) with multiple deformities, caught in Lake Athabasca in summer 2007, photographed by Lawrence Carota, Vancouver, BC).

The purpose of this brief report is two-fold: (1) to begin to gather photographs of deformed fishes from the Fort Chipewyan area and to disseminate information about deformities; (2) to suggest ways for local people to initiate and participate in a program to monitor fish deformities in the area.

Fish deformities are not necessarily related to water pollution or toxic discharges. Injury, disease, parasites, stresses related to spawning, unusual water quality conditions (e.g., high temperatures), poor nutrition, and toxic algal blooms can also cause abnormalities. On the other hand, fish hatching alterations, increases in mortality, spinal malformations, reduced size, cardiac dysfunction, edema, and reduction in the size of the jaw and other craniofacial structures have been observed in fishes exposed to Athabasca River contaminants.

Through careful monitoring and study questions about the local fish deformities can be answered. With sufficient observations and the cooperation of scientists, it should be possible to corroborate or determine if, how, and why fish deformities are changing over time.

#### **The Photographs**

During a January 2009 visit to Fort Chipewyan, Robert Grandjambe and I visited three fishing nets and documented three deformed fishes (a white sucker with scoliosis and a lesion; a northern pike with a lesion; and a lake trout with a yellow spot on its jaw and a 'pinhead' growth form).

During that visit, I was shown a set of photographs of deformed fishes that were taken recently by local guide and fisherman (Robert Grandjambe). Images of 13 fishes were photographed with a digital camera. I have included them below.

This small collection of photographs and notes is a starting point. There are two sets of images below. The "A" set, photographed by Kevin Timoney, is of the three fish caught by local fishermen in their gill nets at two sites on 20 January 2009. The Quatre Fourches site is at (UTM zone 12) 482891 E, 6501150 N; the Rochers River site is at 488701 E, 6507034 N.

The "B" set is of the 13 fish earlier photographed by Robert Grandjambe.

I would be grateful for any comments that people may have in regard to the deformities. Viewing some of the pictures on a computer screen at 200% magnification can show interesting details.

1a. White sucker female with crooked spine (scoliosis), view from above, 20 January 2009, Quatre Fourches River



1b. lesion on the same fish



## A.

1c. dissection of the female white sucker to show rotational scoliosis (yellow arrow)



2. Lesion on northern pike, 20 January 2009, Rochers River; the lesion might be a predator scar



3a. Lake trout, yellow spot on jaw, 20 January 2009, Rochers River near Mission Creek; what is the cause?



3b. same fish, pinhead shape (big head relative to body, especially tail-ward of the dorsal fin)



We ate this lake trout. In agreement with what people are saying, the flesh was softer, less tasty, and more watery than normal. The fillets curled strongly when boiled, indicative of excessive water in the meat prior to cooking. The flesh color was nearly white, not the yellow or orange typical of lake trout; the white flesh color may have been due to a diet of fishes.

B.

Below is a subset of 13 photographic prints of 13 individual deformed fishes. The original photographic prints were taken by fisherman Robert Grandjambe of Fort Chipewyan, Alberta. The fishes were all caught in the vicinity of Fort Chipewyan; dates of capture are unknown, but all are recent.



1. lake whitefish with large tumor

2. walleye with scoliosis (i.e., crooked spine; view from above)



3. large, watery, purulent "cyst" on belly and side of walleye; infection, cancer, or both?



4. patch with lack of scales and mucus (black arrow), with a red border (red arrows) on back of northern pike; former wound?; might the yellow-arrowed area be a secondary infection?



5. tumor above the left pelvic fin, northern pike; to left, large area lacking scales and mucus



6. lesion (and tumor?) on right side of lake whitefish below the dorsal fin; note the 3-4



brownish "mushroom-like structures" protruding from the upper edge of the lesion (yellow arrow) 7. reddened fins and skin on walleye; due to a bacterial infection?



8. tumor on dorsal fin (and perhaps anal fin) of northern pike; the growths looked like red raspberries, so it resembles lymphocystis; hand is shielding glare on original photo; perhaps a rare kind of cancer?



9. reddish growth on lake whitefish; perhaps a rare cancer?



10. reddish growth on another lake whitefish; perhaps a rare cancer?



11. bulbous black growth on snout of walleye; rare?



12. either walleye dermal sarcoma or lymphocystis (probably the latter) on walleye



13. walleye with either dermal sarcoma or lymphocystis (probably the latter)



#### A Suggested Fish Deformity Monitoring Program

The people of Fort Chipewyan have much at stake in determining the nature of fish deformities in the area. Given the failure of the Regional Aquatics Monitoring Program's (RAMP's) fish deformity monitoring, the people of Fort Chipewyan might want to consider taking the initiative—they are, after all, the most directly-affected people and the best-suited to conduct local fish monitoring.

Ideally, a fish monitoring program independent of RAMP, industry, and the provincial government could be established. Once local participation is ensured, funds should be sought to preserve and transport deformed fishes to a university (such as the University of Alberta) where specimens could be studied and preserved. Given the support and participation of the people of Fort Chipewyan, knowledge of fish deformities will grow quickly.

In the interim, people who catch deformed fishes can contribute by using the form (below). Note that it is crucial for the deformed fish(es) to be frozen as soon as possible.

On the form, please record:

1. Your name, address, phone number, and email address.

2. The date the fish was caught,

3. The exact location (coordinates, written description, or circle the place on a map).

For well known locations, a few words will suffice (for example, "Dog Camp").

4. How the fish was obtained (angling, gillnet, found dead, other).

5. Photographs (digital or film) of the fish and its deformities, with notes. If the

photographs are from a digital camera, record the photo number with your notes.

6. If more than one fish was caught, please record the total number of fishes by species, both deformed and normal. If you caught 20 total fish in a net, it is useful to know, for example, that you caught 10 northern pike, 5 lake whitefish, 3 pickerel, and two white suckers.

7. Note how many of the fishes were deformed, such as one pickerel and one northern pike. Record your observations and notes about the deformed fish(es).

8. Place each deformed fish in a clear plastic bag. Label the bag (use indelible marker) with your name and date of collection. Place the bag in a freezer.

9. Make a copy of your notes and put the notes in a safe place.

10. Call or email Kevin Timoney, 780-922-3741, email: ktimoney@interbaun.com to inform him of the deformed fish(es). When there is a sufficient number of fishes, someone will travel to Fort Chipewyan to preserve the fishes for transportation to a university and to gather your notes and pictures. All information gathered by study of the fishes will be communicated to you as soon as available.

### Fish collection form

Name:	Address:				
Phone #	Email:		Date fish caught:		
Location (geographic coor	dinates, word descript	tion, o	r attach map):		
How were the fish obtaine gillnet angling found	d? (circle one): d dead other (expla	ain)			
Photograph Notes:					
Your total catch: the number of fish caught by species (both normal and deformed)					
Northern Pike:	Burbot:	Lake	e Trout: Other:		
Walleye (Pickerel):	White Sucker:	Long Suck	gnose ter:		
Lake Whitefish:	Goldeye:	Cisc	0:		
Deformed fishes: the number of deformed fish caught by species					
Northern Pike:	Burbot:	Lake	Trout:	Other:	
Walleye (Pickerel):	White Sucker:	Long Suck	gnose er:		
Lake Whitefish:	Goldeye:	Cisc	<i>o</i> :		
Notes on the deformities:					

External deformities include:
lesions (open sores),
tumors and cysts,
crooked spines,
missing or mishaped fins,
big heads and little bodies,
'bug' eyes,
misshaped skulls and jaws,
abnormal colors or spots,
areas lacking mucus or scales,
"pus"-filled cavities,
etc.—whatever is not normal.

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