# Skin tumours of fishes

(*various viruses*)

## in Alberta

S Spencer Fish & Wildlife Alberta SRD


### Common name

lymphocystis, lymphosarcoma, fibroma, fibrosarcoma, dermal sarcoma

### Scientific name

various viruses

## What's Bugging Wild Critters?

Fact sheet #26: Lymphosarcoma

## Significance

*Tumour viruses are relatively common components of the biodiversity of the province. Occasionally anglers see lumpy irregular growths (=tumours) on the body and fins of a variety of fishes (mainly walleye and northern pike) and are concerned about the health and edibility of the fish. These viruses are not known to infect mammals.*

## What? Where? How?

There is still much to learn about skin tumours in fish. Many, but not all, are associated with viruses that survive in water and readily enter preexisting cuts and abrasions on the surface of fish. These viruses have world-wide distribution and can survive in various species, although some fishes appear to provide better conditions and thus are more likely to be inhabited by specific viruses. Once inside suitable cells, the viruses take control and begin to replicate. The cells expand to make room for all the new viral particles and get bigger and bigger. Affected cells eventually burst, releasing millions of viral particles to invade new cells. The mass continues to grow and soon becomes visible to those who handle such fish. This fact sheet provides an overview of some of the more common skin growths seen on fishes in Alberta.

*Lymphocystis*, by far the most common fish tumour, occurs in most watersheds in North America and the virus can survive in over 100 species of freshwater and marine fish. However, walleye seem to provide the optimum habitat for this particular virus. The lumpy white growths are actually greatly expanded skin cells and can occur on the body as well as the fins. *Lymphosarcomas* are common on northern pike. These tumours generally occur on the fins or in the muscle tissues, often in the pelvic region. In some cases, the virus also invades inner organs, including liver, kidney, and spleen. White blood cells (lymphocytes) provide the specific habitat for this virus and lymphosarcoma is similar to leukaemia in mammals. The resulting red sores range in appearance from reddish, ulcerative blisters to a thickened mass expanded over portions of the body or much of the fin. Both *lymphocystis* and lymphosarcomas occur most often on fish after spawning, less so in summer and winter. The increased contact and activity of fishes as well as changing water conditions in spring and fall may work in favour of viral invasion.

*Fibromas* (benign solitary masses) and *fibrosarcomas* (malignant cancerous growths) can occur in various fishes; however, northern pike and perch seem to provide the best opportunities for this type of growth. The specific cause is unknown. The tumours are solid white or pink masses that may hang from affected fish or be deeply embedded in skin and underlying muscle tissues of the body, head, fins, or gills.

*Dermal sarcoma* virus is specific to walleye and the tumours often are similar to fibrosarcoma tumours. Although variable in appearance, these tumours are most often raised whitish to yellowish areas with a cauliflower-like appearance. They may have a pinkish to red appearance if the tumour has been rubbed or ruptured. Most occur on the body of affected walleye.

Pub.No:
I/185
ISSN:
1710-4327
ISBN Print:
0-7785-3612-2
ISBN Online:
0-7785-3613-0

# Skin tumours of fishes in Alberta

(*Various viruses*)

## Transmission Cycle

Viruses replicate in large numbers within invaded cells (different cell types are used by different viruses). When such cells rupture, massive numbers of viral particles are released into the water, particles which are highly infectious to other fish. Physical contact between fish during spawning, a time when fish congregate and increased activity invariably leads to nicks, cuts, and abrasions to the skin, likely promotes transmission of the viruses to other individuals.

## Distribution in Alberta

Skin tumours are relatively common in walleye and northern pike, particularly in northern lakes, such as Primrose, South Buck, Touchwood, and Wolf lakes. Occasionally the external lumps are seen on perch in lakes near Ft. McMurray.

## Importance for Wildlife Management

The majority of skin tumours in fish are not associated with mortality or even serious damage to affected fishes. Growth generally is self-limited and the tumour remains relatively small. Tumour masses eventually die and either fall off the fish or are replaced with white scar tissue.

There are no documented effects of tumour viruses on fish populations. For the most part, the viruses live in harmony with the fishes the tumours exist for a short time and then disappear. In rare cases, the tumour may get unusually large or occur in vital tissues such as the gills. Such growths may result in stunted growth, lower fitness, and even death of individual fish.

## Public Significance

Although the viruses themselves are not harmful to people and there is no evidence of a link between fish tumours and cancer in humans, it is probably not appropriate to eat affected fish or feed them to pets. Affected fish should be released unharmed. They do not pose a threat to other fish and do not affect the number of future tumours in a lake. Affected fish usually survive infection and show no signs of the previous tumours.

## Prevention/Control

Tumour viruses are a natural component of watersheds around the world. Currently there are no control methods in place nor are any warranted for these viruses in wild populations.

## Summary

*Most skin tumours in fish are caused by viruses. Walleye are suitable habitat for a variety of tumour viruses but growths on northern pike and perch also occur. Tumours disappear from infected fish and usually have no lasting effect on the health of the fish. Infected fish are not a known human health risk and may be eaten although the aesthetics of that may put many people off. Many anglers release affected fish.*

## Additional Information

Canadian Cooperative Wildlife Health Centre: http://wildlife1.usask.ca/ccwhc2003/newsletters/newsletter3-2.htm#besoin

Government of Saskatchewan, Environment: http://www.se.gov.sk.ca/media/saskatchewan%20environmentnewsline/fish_disease.htm

Government of Maine: http://www.state.me.us/ifw/fishing/fishlab/vol4issue12.htm

Great Lakes Fishery Commission: http://www.glfc.org/tumor/tumor2.htm

For more information on wildlife diseases in Alberta: http://www3.gov.ab.ca/srd/fw/diseases/index.html

Alberta
SUSTAINABLE RESOURCE DEVELOPMENT
Fish & Wildlife

2004