Understanding Lake Ice Q&A

Q: What affects when a lake starts to freeze?

A: Temperature is the biggest factor. Water needs to cool to the freezing point before ice forms. The more water volume a lake has the longer it takes to cool to the point where it will freeze.

Q: What do size, shape and depth have to do with lake ice formation?

A: It's all about removing heat from the water. Lake size, shape and depth tell us how much water there is to cool.

Q: Does this mean that other lakes could have different ice conditions than Lake Chaparral's?

A: Yes. Different lakes have different amounts of water. Once the ice starts to form, the temperature, wind and amount of snow cover on the ice surface determines how fast ice gets thicker.

Q: How does Ice get thicker?

A: Ice forms from the top down into the lake. The top layer of ice is called primary ice. The ice that forms down from the top layer is called secondary ice.

Q: Can ice get thicker any other way?

A: Yes, snow or water on top of ice can cause slush which eventually freezes to ice. This is called superimposed ice.

Q: How does slush happen?

A: Water can come up through lake ice through cracks caused by pressure, from melting snow or rain.

Q: Does a layer of snow slow down ice getting thicker?

A: Yes, snow does not pass heat as easily as ice or water. The more snow, the slower it is for heat to escape the ice and the slower the ice growth from the bottom.

Q: Do snow and slush eventually freeze into ice?

A: Yes, how fast this happens is related to temperature and how much snow is on top of the water or slush. Snow and slush that freezes on top of primary ice is called superimposed ice.

Q: Can you predict how thick ice will be?

A: Maybe, it's pretty complicated and not always accurate. Lake Chaparral doesn't predict ice thickness, we do testing on the lake to find out what our ice thickness and quality actually is.

Reference: River and Lake Ice Engineering By George D. Ashton:

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