Sockeye, coho and king salmon are very vulnerable to pike in the lakes and waterways where they spend their first year of life. A recent study on pike diets in two Susitna River tributaries, the Deshka River and Alexander Creek, found that salmonids were the pike's dominant prey during the summer (Sepulveda et al, 2013). The researchers discovered up to 47 salmonids per pike stomach. Juvenile sockeye salmon have a better chance of escaping predation in lakes with deep water but those are rare in the Mat-Su watersheds.

This pike had recently consumed over 50 juvenile salmon. Many studies have documented pike's appetite for juvenile salmonids in northern waters around the world. Research has also been done in the Mat-Su to confirm this feeding habit here. ADF&G conducted one such study in 1996 and 1997 that captured 389pike in four tributaries of the Susitna River. Among the 249 pike that had something in their stomachs, 80% had eaten juvenile salmonids (Rutz, 1999). The recent study in the Deshka River and Alexander Creek confirmed that salmonids are the pike's dominant prey. Those and other studies have shown that when pike run out of their preferred prey, they will eat anything, including other pike. (ADF&G photo)

In 1989 ADF&G studied 24 of the sockeye producing lakes in the Susitna River drainage to measure their biological capacity for rearing sockeye salmon (Tarbox, 1989). The results from the study indicated a potential capacity for a sockeye return to the Susitna of around one million fish. Actual returns are now about half of that.

Data collection in the Mat-Su basin has been very irregular over the years and methodologies have been inconsistent. Since 2006, ADF&G and the Cook Inlet Aquaculture Association have been counting sockeye spawners and smolts in some of the lakes that were in the 1989 sockeye rearing capacity study. This recent data shows:

- At least 14 of the original 24 lakes studied are known to contain pike.
- Six of the lakes with pike (Chelatna, Fish, Fish Creeks, Hewitt, Shell and Whiskey) had a combined potential production capacity of 596,800 adult

Source: Catherine Cassidy and Erik Huebsch. 2013

sockeye but now have a combined average of less than 62,000 adult spawners per year.

- Five of the lakes with pike, (Caswell, Neil, Red Shirt, Sucker and Trapper) had a combined potential capacity of 116,000 sockeye but now have zero adult spawners returning.

- Chelatna Lake, the largest in the system, has pike but also has deep water which increases the chances of salmon fry survival. Chelatna Lake's potential capacity was measured at 389,200 sockeye. Adult sockeye escapement into the lake averaged 41,444 from 2008 through 2012.

- Judd and Larson Lakes do not have pike. Their combined potential capacity was measured at 104,600 sockeye. The actual escapement of adult reds averaged 77,900 from 2006 through 2011. If you add the number of fish harvested in the commercial and sport fisheries (combined average rate of 39-42%) to the average escapement, then the average return has been 108,000-110,600 sockeye in these lakes.

As of 2010, ADF&G had identified 135 lakes, rivers and streams in the Mat-Su Basin as pike infested. Many additional tributaries and lakes are still at risk in those watersheds and around Cook Inlet.

Source: Catherine Cassidy and Erik Huebsch. 2013