Water Quality Monitoring in Nez Perce National Historical Park (NEPE) - Weippe Prairie

Importance

Freshwater habitats are diverse and productive ecosystems, providing habitat for aquatic plant, invertebrate, and vertebrate species including many fishes and birds. Rivers and streams are intimately connected to riparian zones, providing habitat for many specialist species. Additionally, most upland animals rely on aquatic habitats to one degree or another.

Water resources in the semi-arid west have been strongly affected by human activity, and many Upper Columbia Basin Network (UCBN) streams and rivers are listed by states as impaired for one or more parameters. Most UCBN waterbodies and many aquatic resources, such as migratory fish, are strongly influenced by activities in the larger watersheds outside park boundaries. Understanding the current status of freshwater ecosystems will help guide management and restoration efforts and provide insight into ecosystem change in a landscape with shifting climate and dynamic human influences.

Jim Ford Creek water quality monitoring station, July 2011.

Status of Jim Ford Creek in NEPE - Weippe Prairie

Threats to water resources in NEPE have been listed as: point and non-point discharge from upstream sources, agriculture, logging, grazing, recreation, highway runoff and urbanization. In 2010 Jim Ford Creek was listed as a category 4A water for temperature, sedimentation/ siltation, fecal coliform, and nutrient eutrophication meaning that it has a pollution problem, but has total maximum daily loads (TMDL) being actively implemented. In 2011 the UCBN monitored 5 core water chemistry parameters in Jim Ford Creek including: dissolved oxygen, pH, specific conductance, temperature, and turbidity. Each parameter was evaluated hourly between the months of June and October using a continuous water quality monitor. In addition, aquatic macroinvertebrates were collected according to United States Forest Service (USFS) - PACFISH/INFISH Biological Opinion Effectiveness Monitoring (PIBO-EM) Program protocol. For more on macroinvertebrates please see the integrated water quality annual report for NEPE on the UCBN website listed below:

Jim Ford Creek looking downstream, July 2011.

- Water temperature exceeded the TMDL and state standard designated for cold water aquatic life (MDMT <22 °C and MDAT< 19 °C) during 5% and 42% of observations respectively. These data suggest the need for an increase in stream shading via riparian vegetation basin wide. In addition, lack of summer stream flow contributes to high water temperatures.
- Minimum dissolved oxygen levels occasionaly (1%) exceeded the criteria of 6.0 mg/l and were largely attibutable to lack of stream flow and elevated water temperatures.

UCBN water quality monitoring is conducted on a 3 year rotating panel. Jim Ford Creek will be sampled for water chemistry and macroinvertebrates again in 2014. The following table is a summary of findings from 2011 monitoring along with state regulatory thresholds for Jim Ford Creek.

Jim Ford Creek Water Chemistry Summary 2011

Measure	*Current Condition (June-October, 2011)*	*State DEQ Thresholds[a]*	*% Exceedance[b]*
Temperature (*MDMT, **MDAT)	*MDMT=22.26 °C **MDAT=21.68 °C	*MDMT<22 °C **MDAT<19 °C	5% 42%
Specific Conductance (mean)	108.7 µS/cm	N/A	N/A
Dissolved Oxygen (mean daily min)	6.6 mg/L	>6.0 mg/L	1%
pH (mean daily max)	7.36 pH Units	9.0 pH Units, Max	0%
pH (mean daily min)	7.12 pH Units	6.5 pH Units, Min	0%
Turbidity (mean daily max)	---[c]	< 50 NTU over background (instantaneous) < 25 for 10 consecutive days	Insufficient data
E. coli	33.5 MPN/100 ml	< 406 *E. coli*/100 ml	0%
Fecal Coliform	33 MPN/100 ml	< 500 cfu/100 ml	0%

**MDMT – Maximum Daily Maximum Temperature, **MDAT – Maximum Daily Average Temperature, [a] Mix of TMDLs and criteria for cold water life designation, [b] Proportion of samples above water quality standard, [c] Poor data quality precludes reporting, see annual report for more details.*

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http://science.nature.nps.gov/im/units/ucbn/monitor/waterquality/waterquality.cfm

November 2011

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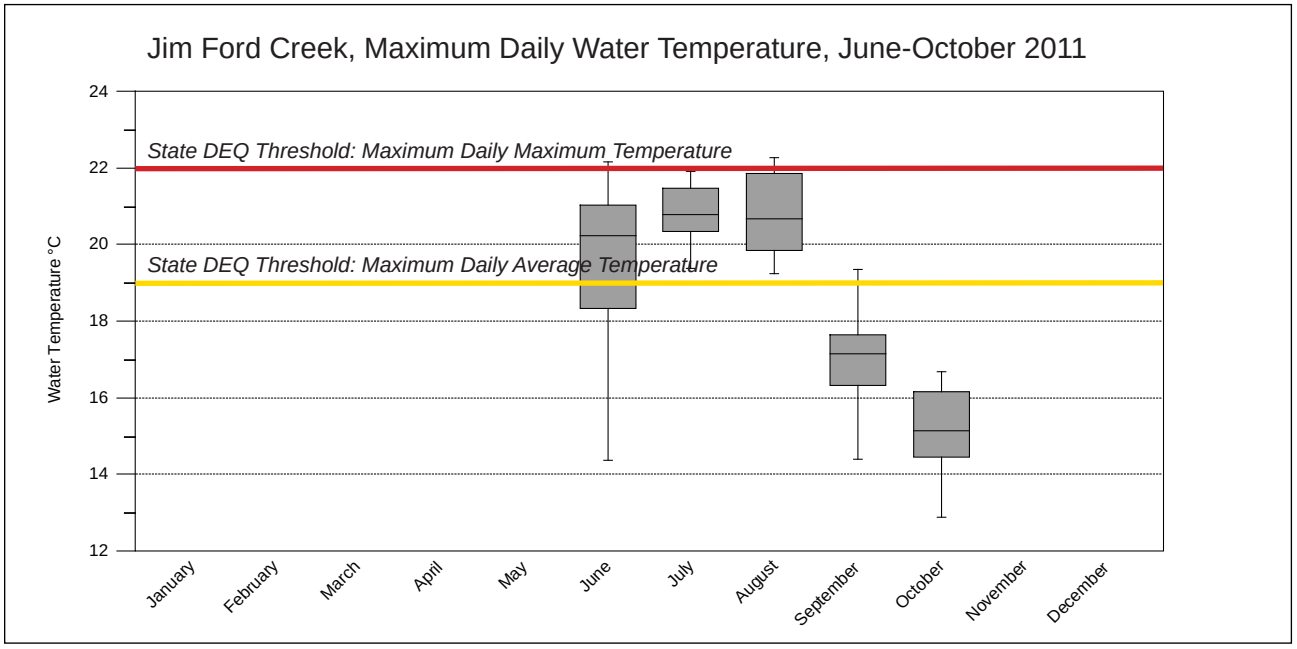
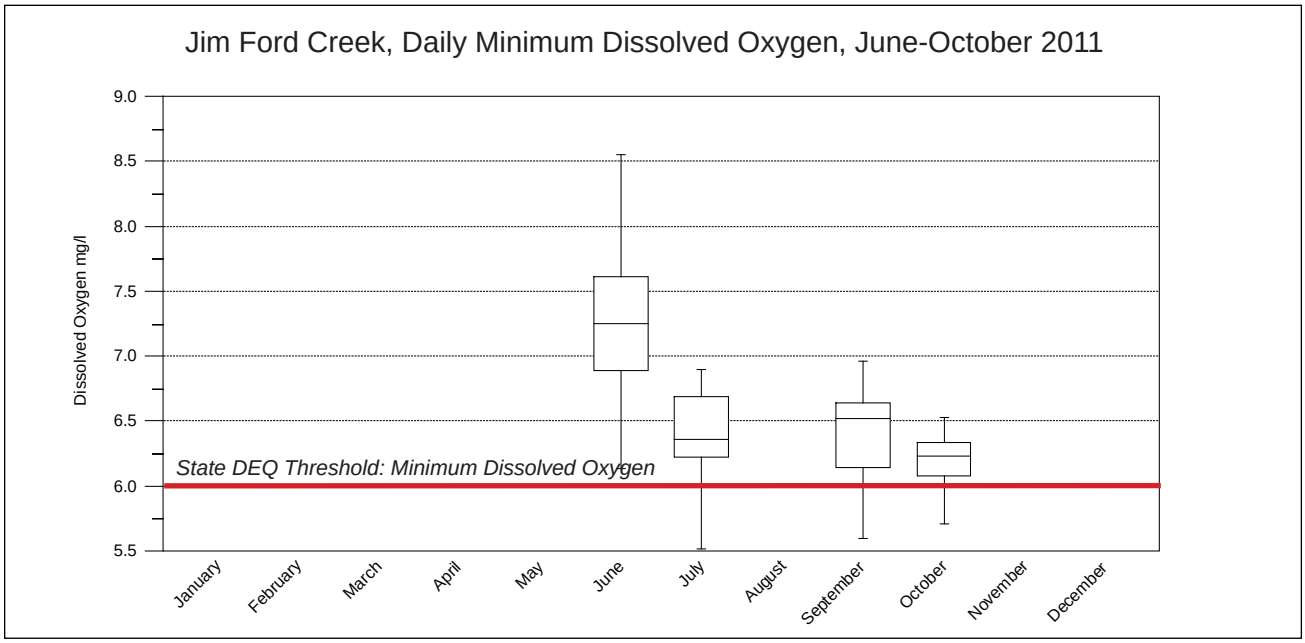


Jim Ford Creek, June 2011

Jim Ford Creek, July 2011

Jim Ford Creek, October 2011



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